

Best Execution Under MiFID II

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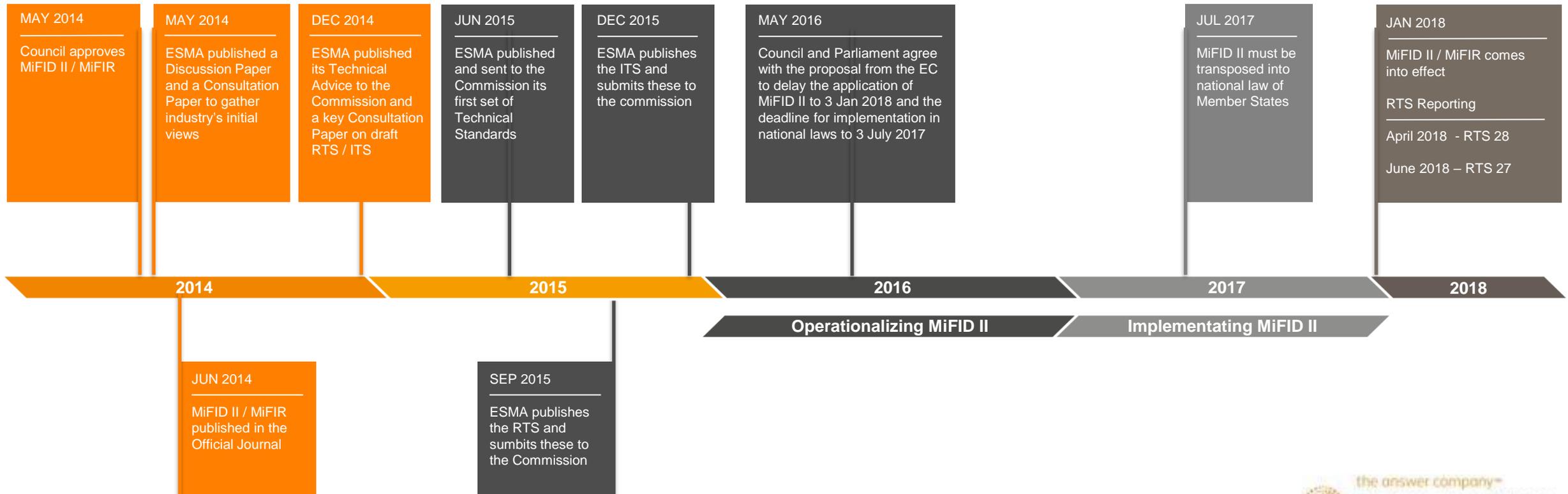
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Best Execution - MiFID I to MiFID II

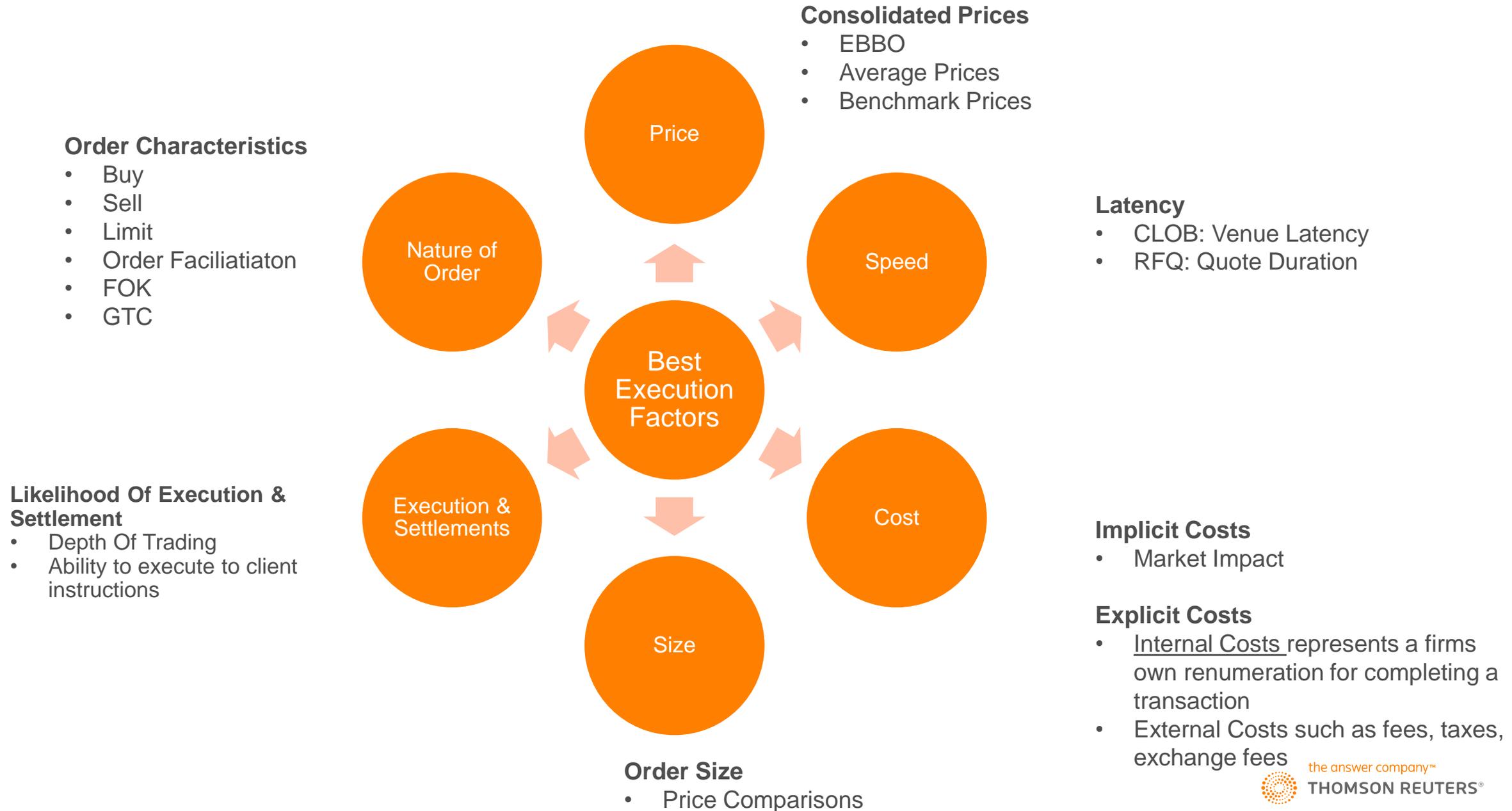
	MiFID I	MiFID II
Requirements	The overarching Mifid II best execution obligation requires firms to take all reasonable steps to obtain the best possible result, taking into account a range of execution factors, when executing client orders or placing orders with (or transmitting orders to) other entities to execute.	The overarching Mifid II best execution obligation requires firms to take all sufficient steps to obtain the best possible result, taking into account a range of execution factors, when executing client orders or placing orders with (or transmitting orders to) other entities to execute.
Instrument Scope	<ul style="list-style-type: none">• Equities <p>*All asset were under scope but due to lack of data it was difficult to prove best execution in non-equity markets</p>	<ul style="list-style-type: none">• Equities & Equity-like• Bonds• Derivatives• Structured Finance Products• Emission Allowances
Importance and Change	<ol style="list-style-type: none">1. to ensure protection for investors;2. to sustain the integrity of the price formation process, which itself underpins all trading activity;3. to promote competition among trading venues in increasingly fragmented markets.	<ol style="list-style-type: none">1. Introduction of price transparency across all instruments to aide better price discovery2. Greater focus across to prove Best Execution across non-equity asset classes

MiFID II TIMELINES

The timeline for MiFID II compliance is now clear but time is passing. There is so much work to do before January 2018 that it is important to act now to ensure your business and operations will be MiFID ready in time. Once you have the right solutions and services in place, the challenging workload that MiFID II requires will be easier to get to grips with.



Best Execution Factors



Best Execution – Market Structure

Trading Venue			Off-Venue / OTC	
Multilateral			Bilateral	
Regulated Market (RM)	Multilateral Trading Facility (MTF)	Organized Trading Facility (OTF)	Systematic Internaliser (SI)	Non-SI
Listed	OTC Instruments			

New	No	No	Yes	No	No
Discretionary	No	No	Yes	Yes	Yes
Pre-trade transparency	Yes	Yes	Yes	Yes	No
Post-trade transparency	Yes	Yes	Yes	Yes	Yes
Examples	LSE, LIFFE,...	TR Matching, FXALL	Brokers,...	Banks	Bilateral Counterparties

Best Execution Obligations for Professional and Retail Clients

New Obligations

- ◆ Upgrade in MiFID II from “take all reasonable steps” to “take all *sufficient* steps” to achieve the best possible results for their clients

New Reporting requirements

- ◆ Investment firms who execute client orders will be obliged to report **top five execution venues** where they executed client orders in the preceding year and information on the quality of execution obtained
- ◆ Trading venues, *Systematic Internalisers* and other execution venues (Market Makers & Liquidity Providers) are required to make data relating to the quality of execution **available to the public at no charge.**



Best Execution – Building & Maintaining Policies

Requirement for a Policy

- Firms to establish and implement an order execution policy to allow them to obtain, for their client orders, the best possible result

Detail by Product Class

- The order execution policy shall include, in respect of each class of financial instruments, information on the different venues where the investment firm executes its client orders and the factors affecting the choice of execution venue.

Clarity

- That information shall explain clearly, in sufficient detail and in a way that can be easily understood by clients, how orders will be executed by the investment firm for the client.

OTC Trading

- Where the order execution policy provides for the possibility that client orders may be executed outside a trading venue, the investment firm shall, in particular, inform its clients about that possibility... obtain the prior express consent of their clients

Policy Effectiveness

- Investment firms who execute client orders to monitor the effectiveness of their order execution arrangements and execution policy in order to identify and, where appropriate, correct any deficiencies. In particular, they shall assess, on a regular basis, whether the execution venues included in the order execution policy provide for the best possible result for the client or whether they need to make changes to their execution arrangements., taking account of, inter alia, the information published under paragraphs 3 and 6.(Execution Venue Report & Investment Firm Report)

Best Execution – Client Categorisation and Onboarding

The obligation applies to executing orders in any type of financial instrument, including OTC derivatives.

It applies when a firm executes orders, provides portfolio management and when receiving and transmitting orders; not applicable if client gives specific instruction.

Applies to both retail and professional clients (not including ECPs).

It applies to different trading models, including RFQ.

CESR Q&A of May 2007 in relation to RFQ still relevant.

Four-fold cumulative test to take into account when categorizing professional clients:

- Who initiates the transaction: if a firm suggests that a retail client enters into a specific transaction, the client is more likely to rely on the firm
- Market practice: in markets where it is common to shop around for a quote, there is less expectation that the chosen party will provide best execution
- Relative transparency of the market: clients rely more on the firm to price the transaction where they have less access to prices than the firms
- The way the firm may have described the relationship is relevant but not determinative.

Starting position for all market models is that Best Execution should apply to all firms which owe agency or contractual obligations to their clients

Best Execution Reporting Scenarios



Best Execution Reporting – RTS 27

Frequency

Produced every quarter by Execution Venues: Trading Venues, Systematic Internalisers

Market Makers and Liquidity Providers – Most Banks!

Content Highlight

- **Market Information** – Identification, Outages, Auctions, Failed Transactions
- **Intraday Pricing** – Periodic Record of Prices by Size by instrument (up to 4 times a day)
- **Daily Pricing** – Average Transaction Price, VWAP, High, Low
- **Costs by instrument** – Description: Execution Fees, Settlement Fees, Market Data Fees
Nature/Scale: rebates, non-monetary benefits and taxes/levies
Total value: rebates, non-monetary benefits and taxes/levies
Total value: Execution Fees, Settlement Fees, Market Data Fees
- **Likelihood of Execution:** Number of Orders/RFQs per instrument, execution ratios, execution value, size info
- **(For CLOB: Best Bid/Offer and corresponding sizes 4 times a day)**
- **For CLOB: Average spread, vol at BBO, no. of cancellations/mods, FOK failures, LIS executions, interruptions, etc)**
- **For RFQ** – Mean and median time between RFQ & Quote. Mean and Median time Execution request & execution

Annex I			
Table 4 - price information to be published in accordance with Article 4(1)(b)		published in accordance with Article 4(1)(a)	
simple average transaction price		Table 7 - likelihood of execution information to be published in accordance with Article (1)	
Average speed of execution for unmodified passive orders at best bid and offer		Bid Size	Offer Size
Number of Fill or Kill orders that failed		Book depth	
Number of Immediate or Cancel orders that got zero fill		Average duration of trading interruptions	
Number of transactions executed on the trading venue that are Large in Scale pursuant to Article 4 or 9 of Regulation (EU) No 600/2014		Number of suspensions	
Value of transactions executed on the trading venue that are Large in Scale pursuant to Article 4 or 9 of Regulation (EU) No 600/2014		Nature of suspensions	
Number of transactions that were executed on the trading venue pursuant to Article 4 or 9 of MiFIR, except for orders that are held in an order management facility of the trading venue pending disclosure and not Large in Scale		Average duration of suspensions	
Value of transactions that were executed on the trading venue pursuant to Article 4 or 9 of MiFIR, except for orders that are held in an order management facility of the trading venue pending disclosure and not Large in Scale		For continuous quote venues, number of periods during which no quotes were provided	
Number of trading interruptions		For continuous quote venues, average duration of periods during which no quotes were provided	
Number of designated market makers		Average quote presence	
		Table 9 - information required under Article 8	
		Mean time elapsed between acceptance and execution	
		Median time elapsed between acceptance and execution	
		Mean time elapsed between request and provision of any corresponding quotes	
		Median time elapsed between request and provision of any corresponding quotes	
		partial execution	

Best Execution Reporting – RTS 28

RTS 28 Reports

Frequency

Produced on an annual basis, firm must provide a report by asset class (defined groupings)

Content Highlight

- Importance price, costs, speed, likelihood of execution, etc when making assessment of BestEx
- Any close links, conflicts of interests with execution venues used to execute orders
- Specific arrangements with any execution venues re payments, discounts, rebates or benefits
- Factors that led to a change in list of execution venues if a change occurred;
- Explanation of how order execution differs according to client categorisation;
- Retail only: explanation of when other criteria were given precedence over immediate price and cost
- Data and/or tools used to judge the quality of execution
- If applicable, how output of a consolidated tape will allow for the development of enhanced measures of execution quality or any other algorithms used to optimise and assess execution performances.

Annex II

Class of Instrument	
Notification if <1 average trade per business day in the previous year	Y / N

Class of Instrument	
Notification if <1 average trade per business day in the previous year	Y / N

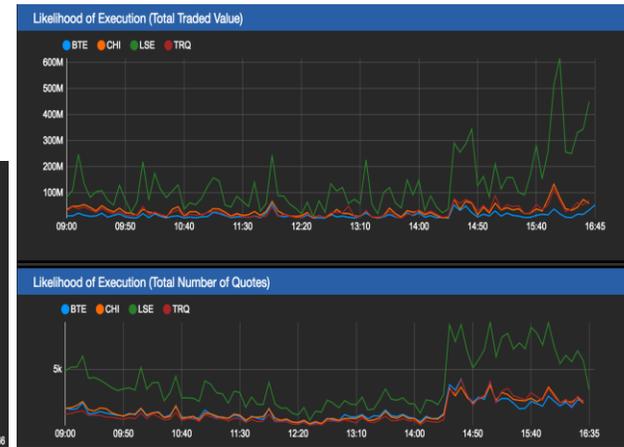
Class of Instrument	Yes / No	
Notification if <1 average trade per business day in the previous year	Yes / No	
Top 5 Venues ranked in terms of volume (descending order)	Proportion of volume executed as a percentage of total in that class	Proportion of orders executed as percentage of total in that class
Name and Venue Identifier(MIC or LEI)		
Name and Venue identifier(MIC or LEI)		
Name and venue identifier(MIC or LEI)		
Name and venue identifier(MIC or LEI)		
Name and venue identifier(MIC or LEI)		

Best Execution Monitoring – Central Limit Order Books



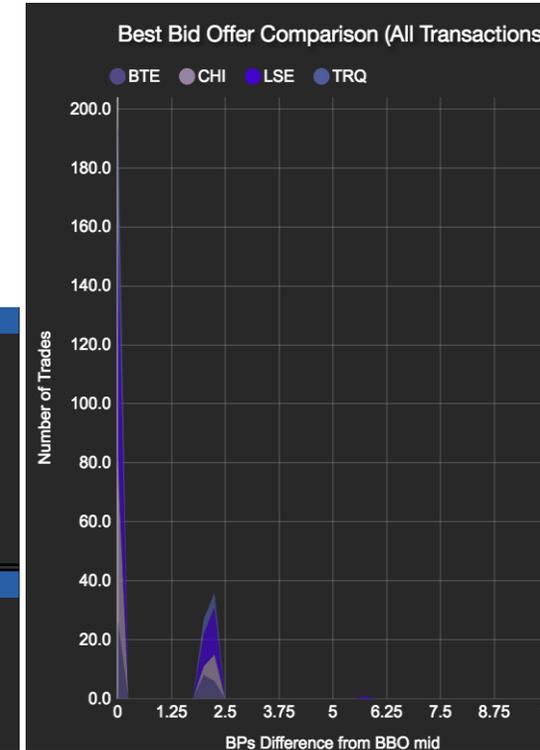
Price

- EBBO
- VWAP, IVWAP
- TWAP
- PWP
- Open
- Close



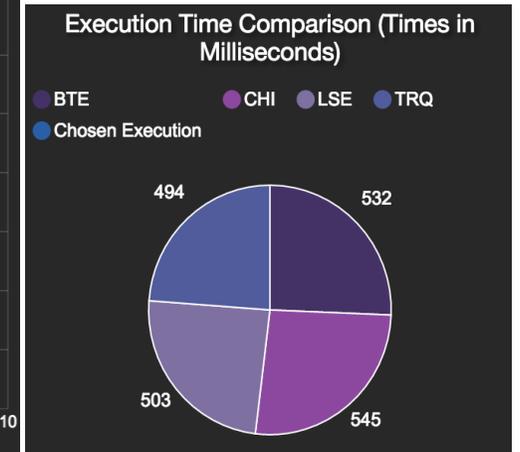
Likelihood Of Execution

- Depth of Market
- Liquidity
- RFQ Hits/Rejects
- Venue Analysis
- Fill Percentages



Cost

- Spreads
- Market Impact



Speed

- Fill Latencies

Best Execution Monitoring – RFQ: Pre-Trade Market Quotes

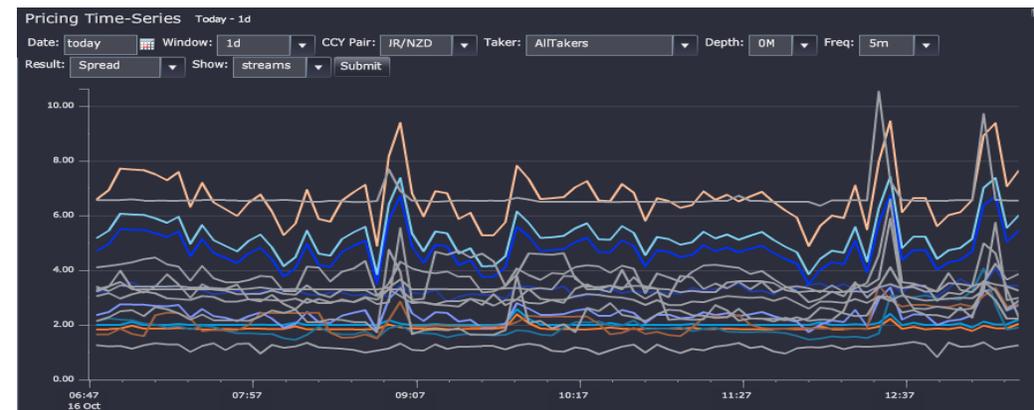


Dashboard showing the consistency of spreads from a liquidity provider



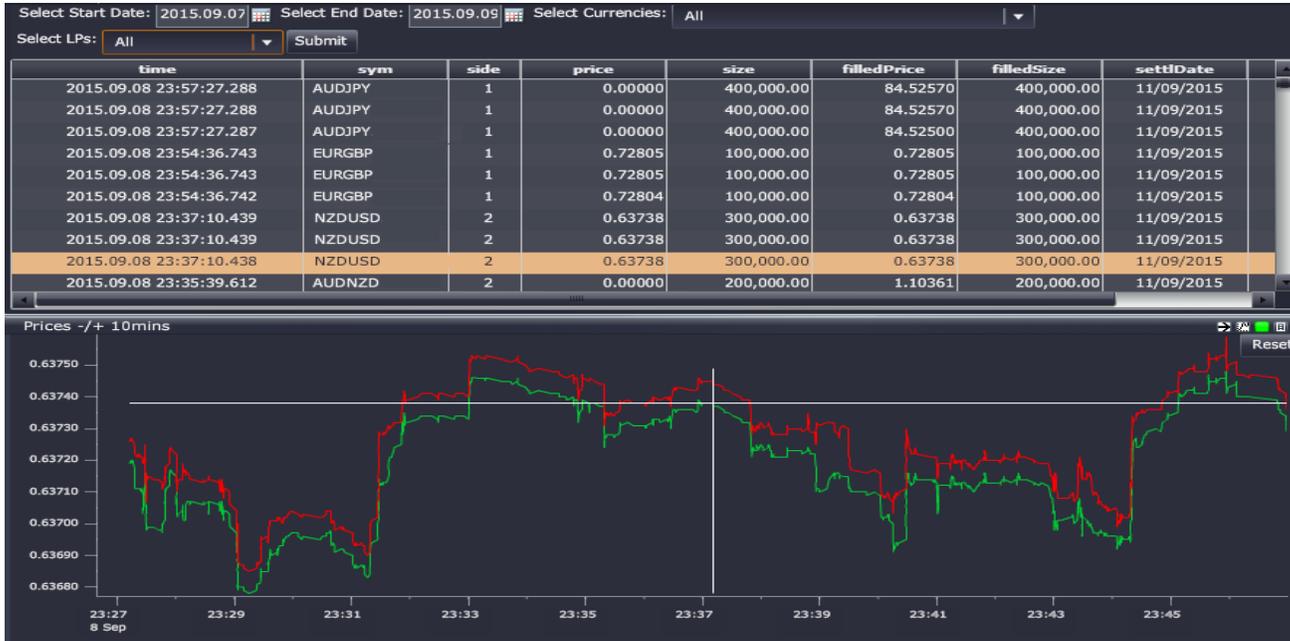
Dashboard showing quality and consistency of spreads from all LPs, EUR/USD

- Historical comparative spreads
- Average Spreads
- Spreads by Time (percentage of time at each unique spread level)
- Spreads by amount
- Spread Time series (Ability to select multiple streams for comparison)
- Bid/Offer Time Series
- Spread Ranking
- Quote duration / refresh rates
- Leaders and followers of price moves



Dashboard showing historical relative spreads from all LPs

Best Execution Monitoring – RFQ: Execution Analysis

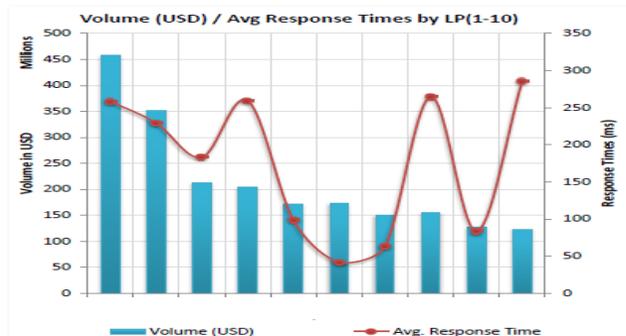


- ❑ Full execution transparency - clear audit of every trade to show execution at best price available
- ❑ Display market prices before, at and after trade execution
- ❑ Monitor LP hold times - and compare to rejections - are you being last-looked?
- ❑ This analysis allows you to address any issues you discover directly with your LPs, to improve your overall execution

Chart showing market pricing around trade execution

LP	Requested		Trades	Rsp Time(ms)		
	Vol (USD)			Min.	Max.	Avg.
XXX	458,376,345.03		576	237	631	259
XXX	351,253,998.15		614	226	241	229
XXX	213,054,733.37		502	172	627	183
XXX	204,467,542.57		305	52	592	280
XXX	172,027,906.40		185	21	222	99
XXX	173,086,455.62		329	20	933	42
XXX	150,510,886.42		156	28	996	63
XXX	154,450,145.36		156	256	717	265
XXX	127,679,067.57		122	74	578	83
XXX	123,271,693.84		224	100	615	286
XXX	93,551,091.58		131	152	497	259
XXX	87,481,759.18		120	302	537	313
XXX	91,225,916.47		120	182	217	203
XXX	49,956,968.81		66	137	303	152
XXX	42,255,388.52		114	24	951	383
XXX	19,192,040.31		39	117	367	229
XXX	10,069,548.24		20	114	996	738
XXX	5,682,711.10		29	42	933	163
XXX	5,401,604.45		15	97	485	229
XXX	8,677.70		7	106	178	135
Total	2,533,004,480.68		3,830			

Analysis of Liquidity Provider hold times



Summary		Type	Instrument	Request Amount	Limit Price
Client Order ID	108280000000340002	Owner	EUR/GBP	1,000,000.00	
Account	108280000000340002	Requested By	GTC Market	Filled Amount	1,000,000.00
Trade Date	19.10.2015	Account	Client Buy/Sell	Counter Amount	731,560.00
Value Date	21.10.2015	Transaction Time	Owner Buy/Sell	Requested Quote ID	Round Trip (ms)
			Buy EUR		6
					Reason

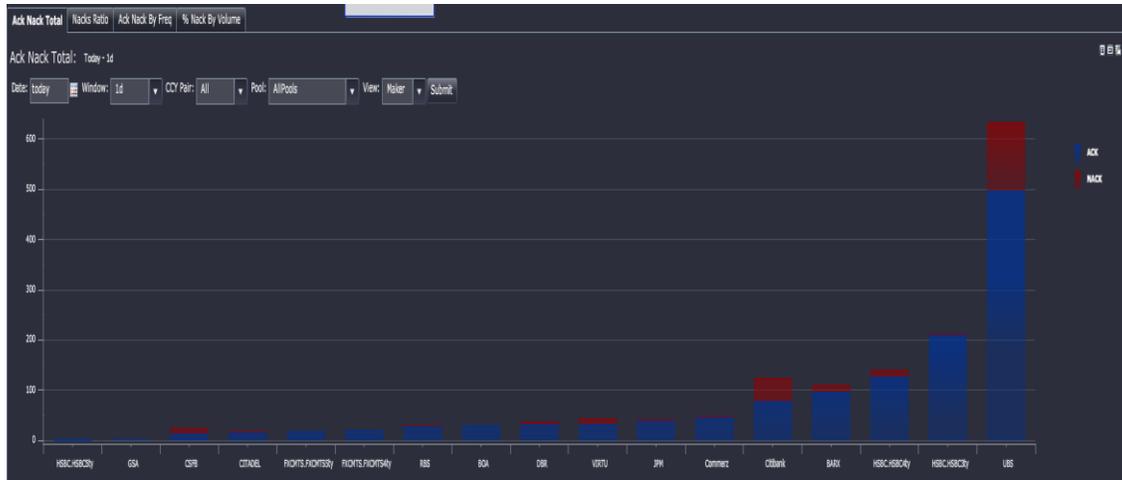
TimesLamp	Party	Owner	Type	Status	Details	Exec ID	Order ID
12:43:15.009932000	SalesDemo	Owner	Request	New	GTC market buy EUR 1000000 EUR/GBP	108740000000410004	108280000000340002
12:43:15.006642000	SalesDemo	Owner	Request	New	POK limit buy EUR 1000000 EUR/GBP @ 0.73156	108740000000410005	108280000000340002
12:43:15.008511000	GS.GS	Maker	Request	Fill	1000000 @ 0.73156	UNKNOWN	108740000000410005
12:43:15.009884000	GS.GS	Maker	Request	Fill	1000000 @ 0.73156	UNKNOWN	108740000000410005
12:43:15.011790000	SalesDemo	Owner	Request	Fill	1000000 @ 0.73156	108740000000410006	108280000000340002

Maker Response Details		Owner Buy/Sell	Buy EUR	Request Amount	Limit Price	Pool Min Ptl
Flow ID	108740000000410005	Owner Buy/Sell	Buy EUR	Request Amount	1,000,000.00	0
Execution ID	UNKNOWN	Order Type	POK Limit	Filled Amount	1,000,000.00	0
Counterparty	GS.GS	Order Routing	STP	Counter Amount	731,560.00	0
Trade Date	19.10.2015	Market Order Add On	NotAvailable	Price Improvement	For the client	0
Value Date	21.10.2015					0

Received Time	Source	Size	bid	Offer	Size	Source	Received Time	Exclusion Reason
12:43:15.006932000	HSBC.HSBC1	1,000,000	0.73152	0.73156	1,000,000	GS.GS	12:43:15.006932000	
12:43:15.006932000	HSBC.HSBC1	1,000,000	0.73150	0.73157	3,000,000	GS.GS	12:43:15.006932000	
12:43:15.006932000	CSFB.CSFB5	500,000	0.73150	0.73158	1,500,000	HSBC.HSBC1	12:43:15.006932000	
12:43:15.006932000	CSFB.CSFB5	500,000	0.73150	0.73158	1,000,000	BARX.BARX2	12:43:15.006932000	
12:43:15.006932000	HSBC.HSBC1	1,000,000	0.73149	0.73159	5,000,000	GS.GS	12:43:15.006932000	
12:43:15.006932000	GS.GS	1,000,000	0.73148	0.73159	5,000,000	BARX.BARX2	12:43:15.006932000	
12:43:15.006932000	BARX.BARX2	1,000,000	0.73148	0.73159	3,000,000	BARX.BARX2	12:43:15.006932000	
12:43:15.006932000	BNPP.BNPF5	750,000	0.73148	0.73159	1,000,000	UBS.UBS	12:43:15.006932000	
12:43:15.006932000	BARX.BARX2	5,000,000	0.73147	0.73159	500,000	CITI.CIT16	12:43:15.006932000	
12:43:15.006932000	GS.GS	3,000,000	0.73147	0.73159	500,000	CSFB.CSFB5	12:43:15.006932000	
12:43:15.006932000	BARX.BARX2	3,000,000	0.73147	0.73160	3,000,000	HSBC.HSBC1	12:43:15.006932000	
12:43:15.006932000	UBS.UBS	1,000,000	0.73147	0.73160	1,000,000	JPM.JPM	12:43:15.006932000	
12:43:15.006932000	CITI.CIT16	500,000	0.73147	0.73160	1,000,000	CITI.CIT16	12:43:15.006932000	
12:43:15.006932000	HSBC.HSBC1	2,000,000	0.73146	0.73161	2,000,000	UBS.UBS	12:43:15.006932000	
12:43:15.006932000	CSFB.CSFB5	2,000,000	0.73146	0.73161	2,000,000	CITI.CIT16	12:43:15.006932000	

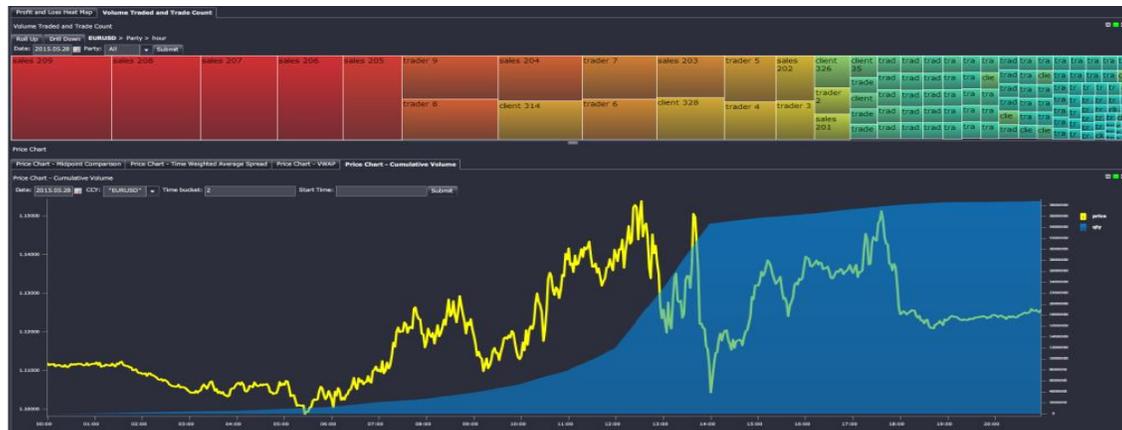
Example of trade snapshot 'Order Audit' showing full book of available liquidity available at time of trade

Best Execution Monitoring – RFQ: Post Trade Analysis



Example of volume / rejections per Liquidity Provider

- Fill % analysis based on trade size, ccy pair, time
- Fill % per taker, by LP (& vice versa)
- Fill % Time Series
- Fill % Ranking
- Rejection Categorization
- Volume analysis and comparison
- Volume per taker, by LP (& vice versa)
- Volume Ranking
- Volume Time Series
- Time Series of taker orders (identifying toxic flow)
- Rejections per client and ccy
- Client slippage
- Heatmaps of client activity
- Market pricing and trading activity by time/size



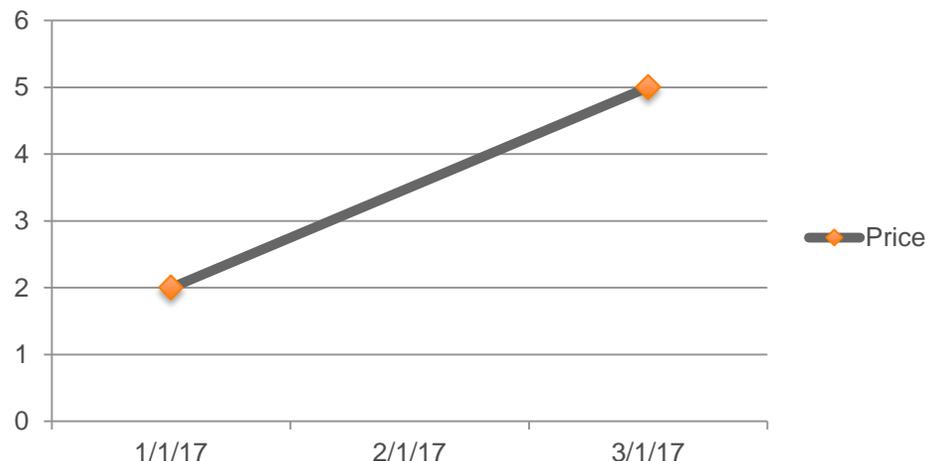
Client volume traded heatmap, total traded in lower half



Distribution of trades across ccy pairs with single LP

Best Execution Monitoring – OTC Derivatives & Illiquid Instruments

Unobservable Market Prices



Level 1 Asset - E.G Listed stocks, bonds, funds, or any asset that have regular “mark to market” mechanisms for pricing

Level 2 Assets - E.G Interest Rate Swaps, where the asset value can be determined Based on the observed values for underlying interest rates and market-determined risk

Level 3 Assets - E.G Asset backed securities and mortgage back securities

* Financial Accounting Standards Board – Asset Classifications

1 'Mark To Model'

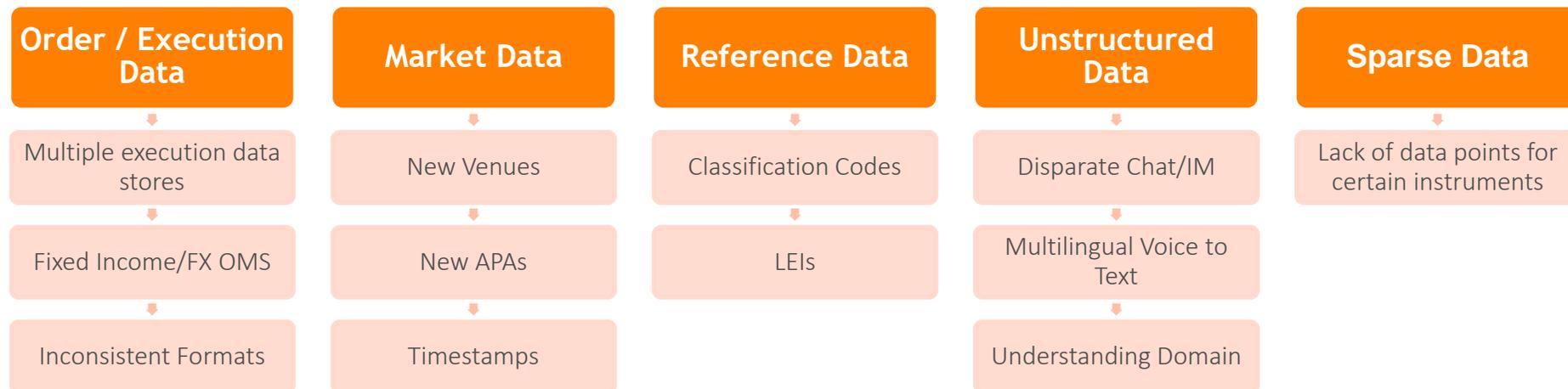
The pricing of a specific investment position or portfolio based on internal assumptions or financial models. This contrasts with traditional **mark-to-market** valuations, in which market prices are used to calculate values as well as the losses or gains on positions.

2 Proxy Instruments

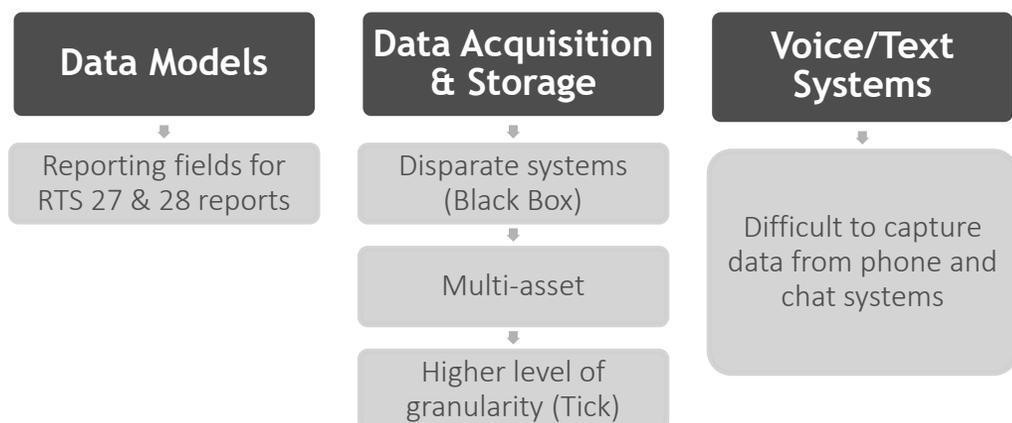
In light of having no observable prices for a particular instrument then another method to benchmark trades is to look for instruments that act as a proxy. E,g Spot Gold and Exchange Traded Gold Futures

MIFID II is creating a greater data and technology pressures on firms

Data Challenges

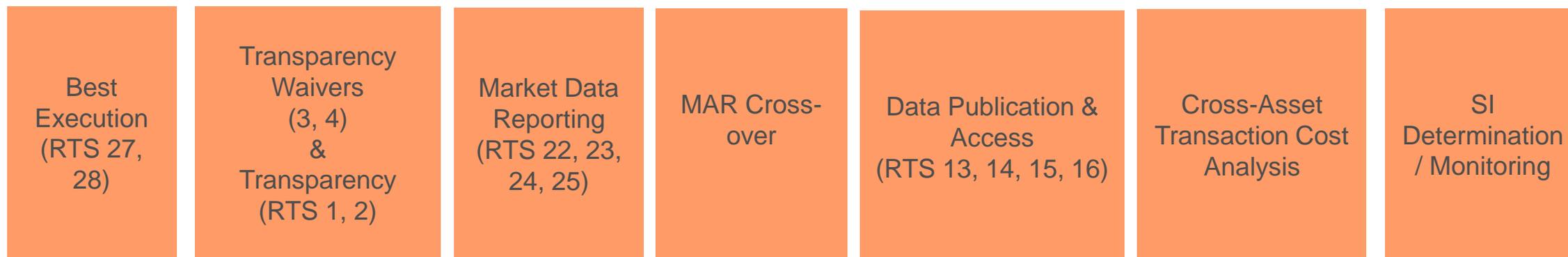


Technical Challenges

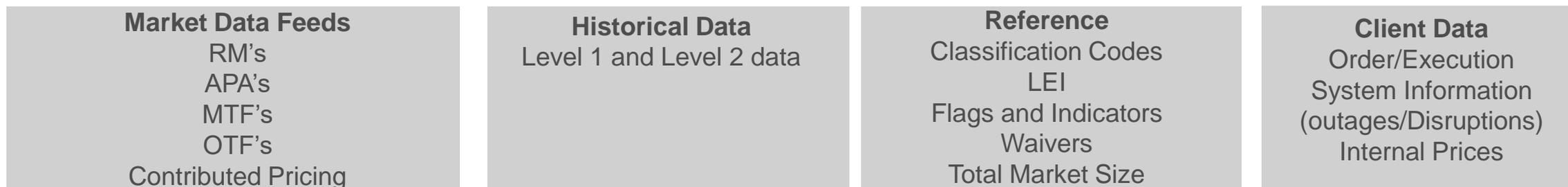


Target Operating Model

MIFID II COMPLIANCE



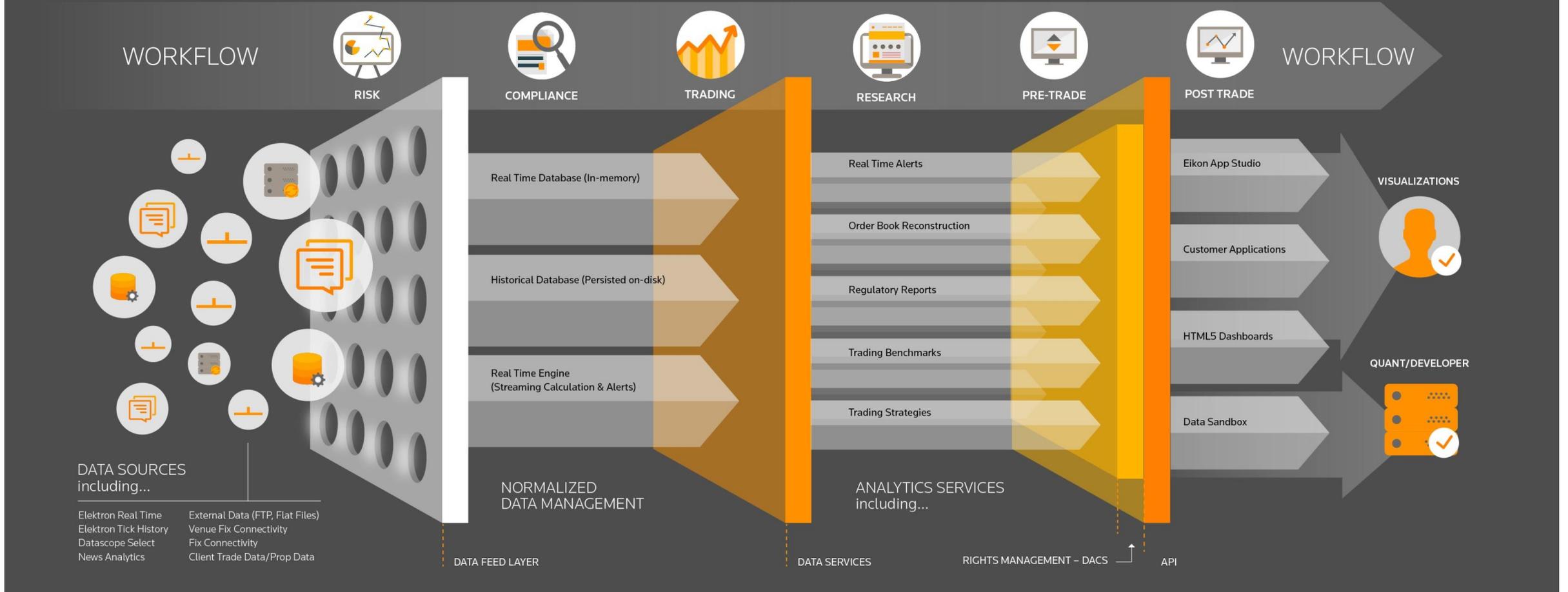
DATA FOUNDATIONS



Thomson Reuters Velocity Analytics platform will integrate the requisite data needed to address the complex MIFID Challenges

MiFID II & Beyond: Velocity Analytics

THOMSON REUTERS VELOCITY ANALYTICS High-Performance Analytics Platform



Questions?