

13 February 2026

via Electronic Mail (cp25-31@fca.org.uk)

Ms. Sarah Pritchard – Executive Director, Markets and International
Mr. Sheldon Mills – Executive Director, Consumers and Competition
Mr. Stephen Hanks – Manager, Markets Policy Division

Financial Conduct Authority

12 Endeavour Square, London E20 1JN

Re: Consultation on the framework for a UK equity consolidated tape (CP25/31)¹

Dear Director Pritchard, Director Mills, and Mr. Hanks,

On behalf of Data Boiler Technologies, I am pleased to provide the U.K. Financial Conduct Authority (FCA) with our comments on the CP25/31 Consultation Paper concerning the framework for a UK equity consolidated tape (CT). With all due respect, please allow us to be blunt and excuse our honesty.

The FCA proposal copied the wrong homework from a weak neighbour. The faulted ESMA equity RTS confused the concept between *'single source of truth'* and *'single source of access'* repeating the fatal flaw of the US Consolidated Audit Trail. A wide latency tolerance muddled up data that one cannot roll the data forward and backward to see which trade message came in first, second, third, or a hundred thousandth. In turn, it is not suitable for BestEx, surveillance, or regulatory market monitoring purposes. Worst, it affects the EBBO to be stale with a widespread, broadcasting that there is no opportunity in Europe. Quality without the appropriate benchmarks is NOT quality.

Unlike the Bond Tape where the key issue is about reference data, equity CT is about latency, bandwidth, and capacity to handle peak volume. Neglecting how self-aggregators and ultra / low-latency vendors can consolidate data in justifying their costs is one of the big mistakes in the UK and EU assumptions. US experience has shown low-latency subscribers to SIPs yield 30+% savings from subscribing only to 7 of the 11 top proprietary feeds.

Market data vendors, particularly those who provide ultra or low-latency feeds, as well as transaction cost analysers, smart order routers, outsourced execution service providers profit from market fragmentation. It is more lucrative to serve selected investment firms that paid them a premium than becoming a CTP in risking their relationships with Exchange Groups and Wholesalers. Unless there is a higher incentive to make it worthwhile for these ultra or low-latency market data vendors or infrastructure providers to compensate their opportunity loss, their services would remain a complimentary product or value-added service instead of competing with Exchanges' proprietary products.

[Scenario 4](#) is the BEST option among the four. Investment firms are adjusting to the US Market Data Infrastructure Rules and Transparency of Better Priced Orders requirements. Most system upgrades costs would already be covered and absorbed by their US branch or would be shared globally. *'Round lot'* tiers offer protected, actionable liquidity rather than *'phantom.'* Putting this users' perspective in mind help UK strengthening the equity CT design and development.

Contrasting with an evidence-based approach, there is no good reason for the *'survey'* to include [Scenario 3](#) other than using it as to create a *'Decoy Effect.'* The cost benefit analysis omitted to account for the benefits of non-display low latency subscribers subsidising the subscribers of display feed for equity CT, it confused the UK public and swaying or causing *'cognitive bias'* towards [Scenario 2](#).

Bringing the sources of the problem to administer/ enforce an inequitable scheme. It will exacerbate *initial bias*¹⁶ and gaps between the *'haves'* and *'have-nots.'* The average market data price across the UK and EU would further increase by at

¹ <https://www.fca.org.uk/publication/consultation/cp25-31.pdf>



least 5 to 10%. Market participants would lose faith in the integrity of UK and EU markets. The only interested parties to seek trading opportunities in the UK and EU would be those who can exploit and segment order flow away (i.e. toxics and FAIL to achieve regulatory goals).

Please do NOT forget these acknowledged concerns: *'onerous administrative obligations on data users; ambiguous language in the agreement; frequent unilateral amendments to the agreement; general lack of transparency on terms and conditions; excessive fees; increase of fees through penalties; and overly burdensome audits.'* Without a novel approach from new entrance or getting buy-in from at least one of the existing ultra or low-latency feed providers to shake up the dynamics, we are doubtful that the FCA tender process would yield any fruitful result.

Equity CT must be a product of reasonable compromise, if not a close substitute, to Trading Venues' proprietary products or APAs' value-added services to achieve the regulatory goal of *'affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users.'*

Picking the wrong choice ([Scenarios 1, 2, and 3](#)) means a *'sunk cost'* and time loss for the UK. Not only will it be a *'loss opportunity,'* but prolonging the suffering of unjust situations indeed reinforces *'initial bias'*¹⁶ and rent seeking behaviours, making it harder or impossible to rectify the mistake afterward. The FCA current proposal defeats the goal of *'levelling the playing field.'* It fails to meet UK's regulatory objectives of *'enhancing price discovery and market competitiveness.'* It is worse than the Jukebox era in the 1970s and we do NOT believe any *'governance provisions'* would help. Its mindset and ambition are constrained by a focus subordinate to the EU, preventing the UK from competing on a truly global scale.

How sad, but it can be rectified if there is a will. The UK now could lead the world by mandating proprietary feeds and CT market data to be available SECURELY in SYNCHRONIZED time per our suggested **NEW Scenario 5**. By doing so, it eliminates the problem of where the CT data centre is located (cost saving by locating CT away from the most expensive prime zone and is fair). By improving fairness and market integrity, our approach would significantly increase UK competitiveness, attract investments and deepen natural liquidity to grow the overall pie in benefiting all constituents. It is ten times better than the quantifiable net benefits stated under the FCA's 4 scenarios.

UK is now at a juncture to choose between following EU delusional/ slogan-based diplomacy or taking concrete actions in curbing Exchanges from optimally restricted access to price information. It may be time for the Competition and Markets Authority to invoke Antitrust laws to investigate against alleged monopoly or oligopolies, particularly when firms engage in collusive behaviour, price-fixing, or abuse a joint dominant position. We have been informative and the US is transparent without withholding any secret ingredients – all cited information are publicly available. The UK can freely replicate the US SEC Market Data Infrastructure Rules and Transparency of Better Priced Orders requirements as appropriate or take a leap of faith in considering our novel approach.

Please see [Annex 1](#) for our responses to the individual questions on the following pages. Be encouraged and feel free to contact us with any questions. Please keep us posted where our expertise might be helpful.

Sincerely,

Kelvin To

Founder and President

Data Boiler Technologies, LLC

This letter is also available at: https://www.DataBoiler.com/index_hm_files/DataBoiler%20FCA%2020260213%20CP2531.pdf

Cc: Mr. Stéphane Malrait – Non-Executive Director, FCA
Ms. Lucy Rigby KC MP – Economic Secretary, HM Treasury

ANNEX 1

Question 1: Do you agree we should introduce an equity CT including post-trade data and the attributed pre-trade best bid and offer? Y/N. Please give your reasons.....6

Question 2: Do you agree we should not introduce a real-time post-trade only equity CT, regardless of its likely speed of delivery? Y/N. Please give your reasons.....6

Question 3: Do you agree, on the basis of the evidence currently available, we should not introduce an equity CT with a greater depth of pre-trade data? Y/N. Please give your reasons.....8

Question 4: Do you have any initial views on whether an outage of the equity CT proposed in Question 1 would affect your ability to trade – subject to further evaluation once the equity CT is live?12

Question 5: Subject to further assessment of its feasibility, in principle do you think it would be helpful for the FCA to publish end-of-day consolidated post-trade data before the equity CT goes live? Y/N. Please give your reasons.12

Question 6: Do you agree with our proposal not to require revenue sharing arrangements between the equity CTP and data contributors? Y/N. Please give your reasons.12

Question 7: Do you think there is a case for being able to view, via the equity CT: (a) All quotes that equity SIs are required to make public under Article 15 of UK Markets in Financial Instruments Regulation (MIFIR, Regulation (EU) No 600/2014). (b) The BBO of SI quotes in each liquid equity instrument. (c) The subset of SI quotes made public under Article 15 of MiFIR that are within the BBO for an instrument? Y/N. Please give your reasons.13

Question 8: Is there any information you can provide about the potential costs for SIs of providing their quotes to the equity CTP; or the complexity and costs for the CTP of being required to publish a subset of SI quotes or the BBO from amongst SI quotes?13

Question 9: Do you agree with our proposed latency requirements for data contributors? Y/N. Please give your reasons. 13

Question 10: Do you think there are specific types of trading protocol that should be subject to a higher latency requirement? Y/N. If yes, explain which types of flow and why.....14

Question 11: Do you see any potential challenges in UK data contributors meeting these requirements, including around cancellations and amendments? If so, do you think the alternative options outlined would help reduce these challenges? Please also provide any further suggestions.19

Question 12: Do you agree with our proposal that, once an equity CTP receives details of a relevant order or trade, it must publish this data within 100 milliseconds with a daily confidence interval of 99.99%? Y/N. Please give your reasons.....20

Question 13: Do you think there is a case for having separate latency standards for pre- and post-trade data? Y/N. Please give your reasons.....21

Question 14: Do you agree we should have a single CTP for the first 5-year contract period for the equity CT? Y/N. Please give your reasons.....21

Question 15: Do you agree 5 years is an appropriate period for the length of a contract to operate an equity CT? If not, what length of time do you suggest and why? Y/N. Please give your reasons.22

Question 16: Do you agree the CTP should not have to pay data contributors for accessing their data? Y/N. Please explain your reasons.22



Question 17: Do you agree the licensing structure we adopted for the bond CT would also work for the equity CT, in particular do you think we need additional provisions relating to access for retail clients to real-time data? If you think there should be differences in the licensing scheme for equities, please set out the changes you think are necessary and their rationale.....23

Question 18: Do you agree an equity CTP should not be required to make its data available for free after 15 minutes? Y/N. Please give your reasons.23

Question 19: Do you agree that consumption of the equity CT should not be compulsory? Y/N. Please give your reasons. 23

Question 20: Do you agree an equity CTP should not be subject to rules on pricing on a reasonable commercial basis? Y/N. Please give your reasons.24

Question 21: Do you have any comments on the treatment of ETNs and ETCs for equity and bond CTs?.....25

Question 22: Do you agree that all equity trading venues and all APAs publishing trade reports for equities should be required to provide data to the CTP, and new trading venues and APAs should provide data as soon as possible after they start operating? Y/N. Please give your reasons.....25

Question 23: Do you agree with our proposed pre-trade input table for the information trading venues have to provide to the equity CTP? If not, please set out the amendments you think we should make and the reasons for those amendments.25

Question 24: Do you agree with our proposed pre-trade output tables for the information the equity CTP will need to publish? If not, please set out the amendments you think we should make and the reasons for those amendments.....26

Question 25: Do you agree APAs should not be required to send to the CTP information about the time at which they received details of a trade from a client? Y/N. Please give your reasons.27

Question 26: Do you agree an equity CTP should be required to print the date and time at which it has published a trade? Y/N. Please give your reasons.27

Question 27: Do you agree an equity CTP should not be required to flag trades they or an APA think are potentially incorrect? Y/N. Please give your reasons.28

Question 28: Do you agree data contributors should provide regulatory data on the status of instruments and trading systems to the CTP for publication by the CTP? Y/N. Please give your reasons.28

Question 29: Do you agree we should align our fields for regulatory data with those adopted by the EU? If not, what changes do you think we should make to the fields?29

Question 30: Do you agree an equity CTP should be required to make available a database of historical post-trade data? Y/N. Please give your reasons.29

Question 31: Do you agree we should require an equity CTP to make available a database of the pre-trade data it publishes? Y/N. Please give your reasons, in particular indicating use cases you think that such a database might serve....29

Question 32: If you agree with Question 31, do you think the coverage of the pre-trade database should be restricted and, if so, how?.....29

Question 33: Do you agree SYSC 15A should apply to a single equity CTP? Y/N. Please give your reasons.....29

Question 34: If we were to allow multiple equity CTPs, do you think it would be necessary to apply SYSC 15A to them? Y/N. Please give your reasons.30

Question 35: Do you agree with our proposal to amend MAR 9.2B.2R on conflicts of interest for CTPs? Y/N. Please give your reasons.30

Question 36: Do you agree the equity CTP should send us a report on its operation on a quarterly rather than 6-monthly basis? Y/N. Please give your reasons.....30

Question 37: Do you agree with our proposals to add requirements on automated alerts and a mechanism for data users to raise concerns about potential issues with the data published by the equity CTP? Y/N. Please give your reasons.30

Question 38: Do you agree with our proposals for specific data quality requirements for an equity CTP? Y/N. Please give your reasons.31

Question 39: Do you agree with removing the reference to 15 minutes in MAR 9.2B.33R(2)? Y/N. Please give your reasons.31

Question 40: Do you agree data contributors should be required to send the specified input data to the CTP and the CTP should be able to choose to receive the information in one of the ways that a data contributor currently uses to publish transparency data? Y/N. Please give your reasons.31

Question 41: Do you agree data contributors should not be required to send the specified input data to the CTP using a format adhering to the ISO 20022 methodology? Y/N. Please give your reasons.31

Question 42: Do you agree we should have standards on the transmission of data to the CTP across performance, reliability, security and compatibility and do you have any comments on the standards we have proposed?32

Question 43: Do you agree with having the same requirements on the formats for the dissemination of the equity CT as the bond CT in the UK? Y/N. Please give your reasons.32

Question 44: Do you agree with reducing the notice period a CTP for bonds or equities should give of price changes to 30 days? Y/N. Please give your reasons.33

Question 45: Do you agree with our proposal to amend MAR 9.2B.14R, MAR 9.2B.33R(3) and MAR 9.2B.38R so they apply to the equity CT and/or CTP? Y/N. Please give your reasons.33

Question 46: Do you agree firms should consider whether using CT data can improve their best execution arrangements and monitoring but there is no need to add a provision in the Handbook on this? Y/N. Please give your reasons.34

Question 47: Do you agree we should delete references to a CTP in the UK version of RTS 3? Y/N. Please give your reasons.34

Question 48: Do you agree the equity CTP, and APAs in relation to equity trades, should be subject to the same clock synchronisation requirements as trading venues? Y/N. Please give your reasons.35

CBA Question 1: Do you have any comments on our cost benefit analysis?35

CBA Question 2: Do you agree with the assumptions made in our cost benefit analysis?36

CBA Question 3: Are there any significant costs or benefits to the market that we did not adequately consider in our cost benefit analysis?37

Question 1: Do you agree we should introduce an equity CT including post-trade data and the attributed pre-trade best bid and offer? Y/N. Please give your reasons.

Yes, we agree UK should introduce both pre- and post-trade equity CT. The lack of equity CT would affect competitiveness of the UK markets against the US and, prospectively, the EU. Reference to Canada and Australia where investment firms operate without a consolidated tape, their market data costs attributed to a higher percentage of total costs as compared to the US.

We concur with *'the causal chain'* as shown in figure 5 of the FCA CP25/31. We have reservations with the details of the proposal if adopted as-is. We would like to add emphasis on the following. The need of a post-trade tape is for the transparency regime. Pre-trade equity CT is a right to set price. A tight national best bid and offer (NBBO) serve advertising purpose and will attract investors to the UK markets. A de-facto NBBO served as an anchor reference in supporting price discovery. Combining with appropriate order protection (limitations on trade-throughs), it will infuse trust to the UK national market system and strengthen market integrity. In contrast, abusive use of this right to set price would harm investors and exacerbate mistrust.

To achieve the regulatory goal of *'affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users'*, equity CT must be a product of reasonable compromise, if not a close substitute, to Trading Venues' (TVs) Proprietary Products (PPs) or Approved Publication Arrangements' (APAs) value-added services (VAS).

Question 2: Do you agree we should not introduce a real-time post-trade only equity CT, regardless of its likely speed of delivery? Y/N. Please give your reasons.

Per our response to Q1, both pre- and post-trade equity CT are important while serving different objectives.

Post-trade CT shows where the market *'was,'* it is after-the-fact, i.e., not actionable. One can see the market faster with Pre-trade transparency. Pre-trade CT and/or proprietary products enable market participants to seize opportunities on price stability and/or destabilizing factors/ indicators. Consider CT as a compromised offer alternates to Exchanges' Proprietary Products (PPs) and other Value-Added Services (VAS), it should be affordable and widely available to the Have-nots. If the Have-nots are willing to commit their limited resources in using PP or VAS, price and availability of PP or VAS must be within reach, and the functions should enable a reasonable chance for the Have-nots to compete with the Haves. A healthy balance between the relative distance of CT, PPs, and VAS is critical, or else the Haves will exploit the gap and exacerbate class conflicts and cultural clashes.

Reference to this May 2024 article on the TRADE,² we disagree with LSEG's view³ on UK consolidated tape for equities. Many of the functions of CTP are performed today by constituents, such as the consolidation of proprietary data feeds and calculation of BBOs. LSEG's self-interest to preserve their own turfs including their subsidiaries – MayStreet and Refinitiv, is understandable. However, *'affect competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users'* is one of the stated goals of the FCA. LSEG is slick to argue – *'the cost and complexity of taking direct feeds in the UK is more manageable'* when comparing to the European Economic Area and the US. Is it *'manageable,'* or telling their clients to continue tolerate their rent seeking behaviours?

² <https://www.thetradenews.com/blog/agree-to-disagree-on-lsegs-view-on-uk-consolidated-tape-for-equities/>

³ <https://www.londonstockexchange.com/discover/news-and-insights/uk-consolidated-tape-equities-view-london-stock-exchange>

A better way to manage the ever-rising cost of market data/ PPs is by mixing-and-matching the use of CT with selected PP(s) to optimize between cost and one's trade appetite/ style.⁴ PPs' usage varied depending on whether one being a hunter (performance optimizers, asset gatherers), or is a farmer (asset maximisers, retail) types of firms along the industry value chain. Performance optimizers, latency arbitrageurs, alternative investment/ hedge funds, etc. would want expanded core data like the Market Data Infrastructure Rule in the US, while they are unlikely to switch to CT and their demand for PP is inelastic.

LSEG presumption of sell-side would stay on direct feeds is an overstatement. If given the sell side and buy-side a choice to use Pre-Trade CT, they would selectively drop usage of a certain PPs to save cost. US experience has shown low-latency subscribers to SIPs yield 30+% savings from subscribing only to 7 of the 11 top proprietary feeds.

LSEG's study assuming a delay of 10 milliseconds, it presents a dire picture of *'delay would cause the price to be incorrect by 9-18% of a spread (average 14%) and the volume displayed on the tape to be incorrect by 22-25% (average 37%) ... translates to slippage of 9-19% (average 14%) of a spread in terms of weighted mid-point.'* Looking at these numbers, it reminds us of these two NYSE studies – *'Price improvement, tick harmonization & investor benefit'*⁵ and *'The Impact of Tick Constrained Securities on the U.S. Equity Markets.'*⁶ One similarity can be drawn – both LSEG and NYSE studies are about *'queuing and wait time at the checkout counters'* if putting in layperson terms. Artificially altering the queue (equal waiting line at all checkout counters) may affect the *'apparent,'* NOT the real supply and demand for securities.

CBOE provided their views to measure latency impact.⁷ We think slippage and other phenomena are related to capabilities differences between lit Exchanges, Multilateral Trading Facilities (MTFs), Systematic Internalisers (SIs), Single Dealer Platforms (SDPs), APAs. NOT everyone shops at the centralized marketplace or sells their products there. Buying habits have changed and sellers are modernizing their distribution channels (the shopping mall versus online purchase).

Do not get us wrong, we think *'If everybody is transacting off-market, there is no point in having markets. Markets exist to help price discovery, and price discovery requires accurate and comprehensive trading data.'* One size does not fit all, the noumenon⁸ of *'venue-by-venue competition'* is indeed a brutal Warring States Period.⁹ The waiting line at *'checkout counters'* are indeed not equal due to Lit Exchanges may continue to exploit their dominance in market data, connectivity, and/or in combination with access fee rebates, enhanced market making discount to selectively provide perks to the elites. In racing to gain the edge over each other, other venues introduce a speed bump (e.g. liquidity enhancing access delayed), proliferate order-types (e.g. midpoint-extend-life order), come up with new business models (e.g. market-on-close) and create other privileges (e.g. exclusive access to certain pegging orders).

The UK, US, and the EU are indifferent in terms of people jockeying around trying to make money, and different market centres use different ways to redirect order flow. Among them there could be formal or informal alliances. There will be complaints about rules skewed in favour of certain entities, as well as new way(s) to exploit or circumvent the rule.

⁴ <https://www.sifma.org/wp-content/uploads/2019/01/Expand-and-SIFMA-An-Analysis-of-Market-Data-Fees-08-2018.pdf>; <https://www.sec.gov/comments/4-729/4729-4559257-176198.pdf>; <https://www.oxera.com/wp-content/uploads/2022/07/Oxera-note-whats-the-data-on-market-data-updated-8-July-2022.pdf>; <https://www.greenwich.com/market-structure-technology/market-data-spending-roll>; <https://tpicap.com/burtontaylor/sites/g/files/escbpb181/files/burton-taylor/reports/2023-09/Research%20Analysts%20Data%20Usage.pdf>; <https://www.fca.org.uk/publication/market-studies/ms23-1-5-annex-4.pdf>

⁵ https://www.nyse.com/publicdocs/nyse/NYSE_Price_Improvement_202208.pdf

⁶ https://www.nyse.com/publicdocs/Tick_Constrained_Stocks.pdf

⁷ <https://www.cboe.com/insights/posts/mission-possible/>

⁸ https://www.databoiler.com/index_htm_files/DataBoiler_Noumenon_Equity_Market_Structure.pdf

⁹ <https://www.linkedin.com/pulse/warring-states-period-finding-new-equilibrium-kelvin-to/>

The FCA does not necessarily need the same trade-through requirements as in the US¹⁰ but still provide essential investor protection if policy makers consider the Exchanges, MTFs, SIs, SDPs, APAs as different streaming platforms. A consistent copyright licensing mechanism aligns and addresses the economic viability of a constituent. By putting a value on quotes and trades composition, different streaming platforms would give proper considerations (optimize reach to targeted subscribers/ market participants, while bear corresponding cost in using others' copyrighted materials) to minimize price pick-off and prevent their exploit of economy of scope and scale. It eliminates conflict of interest, ensures efficiency in deployment of resources, and harmonizes different market centres. Market forces will determine the optimal subscription/ access fees by the different venues.

Question 3: Do you agree, on the basis of the evidence currently available, we should not introduce an equity CT with a greater depth of pre-trade data? Y/N. Please give your reasons.

No. With all due respect, please allow us to be blunt about the 'likely' 4 equity CT options as stated in Paragraph 3.3 of CP25/31.

Scenario 1: a post-trade only tape for UK equities from all trading venues and APAs, distributed with a latency of 300 milliseconds or less from publication.

LSEG and large Exchange Groups despise the development of a pre-trade equity CT. So, a post-trade ONLY tape fits their view (see our rebuttal in Question 2). A latency tolerance of 300 milliseconds is slower than proprietary feeds and most if not all of existing market data vendors' current offers and is NOT up to par as compared to the US Securities Information Processors (SIPs).

Leaving this option included in the FCA's consultation paper is like a complete surrender and subservient to the large Exchange Groups (streaming platforms) to protect their bread and butter (rent seeking) in proprietary market data and collocation revenues and forgotten about the regulatory goals and sufferings of broker-dealers (content creators). Further delay or dropping the development of pre-trade equity CT entirely affects the UK competitiveness. Paragraph 3.54 of CP25/31 undermined the negative effects. The biggest problem is it reinforces rent seeking behaviours that is worse than the Jukebox era in the 1970s (see our response to [Question 6](#)).

Scenario 1 can also be viewed as the FCA attempts to set the lowest possible standard to encourage the 2 winners of the UK / EU bond tapes to also consider bidding for the UK post-trade equity CT. Amid some cost savings where bond and equity CTs may serve as contingent site for each other and share certain infrastructure. The definition of 'real time' for equity CT should NOT be the same for bonds. Stages of development (electronification) and current market structure for equity (Trading Venues driven) and non-equity markets (Market Makers driven) are different. CBOE and FactSet are sponsors of Ediphy's fairCT consortium have experience in provision of equity data feeds. Policy makers should be alerted about a 'preferencing' phenomena (see our response to [Question 25](#)).

Scenario 2: a tape with post-trade data and the attributed best pre-trade bid offer (i.e. top of book) from lit UK venues, distributed with a latency of 100-200 milliseconds.

Self-aggregators' experience, existing market data vendors' non-display ultra (sub-micro second) or low-latency feeds performance (Exegy [Novasparks, Enyx, Vela], McKay Brothers [Quincy Data], Hyannis Port Research, Pico [Redline, Corvil], QUODD [Xignite], Xyt, SpiderRock, Anova, BMLL, IRESS, BAHA [Quanthouse]), and infrastructure providers' capabilities

¹⁰ <https://www.linkedin.com/pulse/can-order-protection-replaced-competing-market-forces-kelvin-to-qfgte/>

(COLT [PrizmNet], IPC) should be used as benchmark reference for Scenarios 2 to 4 if UK is serious about evidence based approach than delusional/ slogan-based diplomacy.

However, Scenario 2 had a preamble of allowing a wide latency tolerance of 100-200 milliseconds in the so-called ‘survey’. Survey respondents that prefer to use a ‘top of book’ pre-trade equity CT would involuntarily abide to a significant compromise to accept the 100-200 milliseconds latency. The skewed survey on mostly display-data feeds’ users misinformed the UK market data reform to anoint an equity CTP that is inherently not competitive with e.g. Bloomberg, LSEG-Refinitiv’s value-added services.

Scenario 2 contains at least 10 times less data and substantially less comprehensiveness (UK and EU have no requirement to compute multiple ‘round lot’ tiers for meaningful rather than phantom liquidity)¹¹ than the inclusion of depth-of-book and other data per the US Market Data Infrastructure Rules requirements or Scenarios 3 and 4. At max the pre-trade top-of-book consolidated feed should have no more than 20-40 milliseconds delays. The UK proposed latency tolerance of 100-150 milliseconds is like forever in equity trading (near 70% in electronic order book and ~30% by SIs that provide immediacy in execution for retail). Please see our response to [Question 7](#) that cited empirical research about retail investors benefit from brokers routing their orders across all stocks to multiple wholesalers.

By aligning its latency tolerance and parameters so closely with EuroCTP’s capabilities, the FCA’s proposal seems designed to ensure that this consortium of major exchanges—already the sole bidder and designated provider for the EU—emerges as the unopposed and definitive equity CTP in the UK as well. Amazon Web Services (AWS) would be a strategic partner to them in provision of cloud service using Network-Time-Protocol (see our response to [Question 10](#) for an elaborated discussion on why PTP is preferable over NTP). If UK want to include other data aggregators, such as Etrading Software (winner of UK Bond tape), Ediphy, Propellent, etc. as potential bidders for the equity CT, they together with EuroCTP should demonstrate the ability to provide a low-latency non-display feed at no more than 20-40 milliseconds latency performance or else be disqualified.

Quality is a hollow promise absent appropriate benchmarks; it necessitates precise definition and constant measurement against relevant standards to be effectively verified or improved. **NOTE:** When one is looking at the number of financial messages that has occurred at a tenth of a second in equities, it could be hundreds of thousands of messages. The issue of data synchronization, computer synchronization, for example at 50+/- milliseconds, how can anyone determine which message was reacted to, which message initiated something, which message ended something. If there are hundreds of thousands of messages that one must work and sort through, no one will be able to tell the difference whether a trade message came in first, second, third, or a hundred thousandth. Crappy data (i.e., 100,000 messages at any given point in time that mused everything up) exacerbates gap between proprietary products and CT.

Letting SIPs or CTP be controlled by a single or a consortium of Exchange Groups or their affiliates for self-interest and favouritism to hold off the advancement of CT deems ‘ecosystem degradation.’ The US SEC recognized that and introduced the decentralized competing consolidators model and tightening latency and other requirements. Market data costs in the UK on average would go up by at least 5 to 10% rather than go down if FCA adopted Scenario 2 as-is. Equity CT must be a product of reasonable compromise, if not a close substitute, to the Trading Venues’ proprietary feeds or APAs’ value-added services to achieve the regulatory goal of ‘affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users.’

Scenario 3: a tape with post-trade data and the attributed top three pre-trade bids and offers from lit UK venues, distributed with a latency of 40-100 milliseconds.

¹¹ <https://www.nasdaq.com/articles/real-impact-of-no-round-lots-2021-07-15>

There is no good reason for the ‘survey’ to include [Scenario 3](#) other than using it as to create a ‘Decoy Effect’ (a.k.a. asymmetric dominance effect).¹² This mid-range Scenario 3 is introduced as a decoy option that is significantly more expensive but offer very few additional benefits over the basic top-of-book version ([Scenario 2](#)). Then, by leveraging ‘price anchoring’ where the five-price level version ([Scenario 4](#)) is misrepresented to have a higher than reasonable costs when it is NOT and/or undermine the benefits of non-display low latency subscribers subsidising the subscribers of display feed for equity CT, it confused the UK public and swaying or causing ‘cognitive bias’ towards Scenario 2.

No one asked for ‘3 pre-trade bids and offers,’ or the surveyor is uneducated in the equity space. Those in the industry would know Level 2 data generally provide five price levels on both the bid and ask side. This [Scenario 3](#) decoy option is NOT intended to be chosen. It concealed the fact that low-latency subscribers to the US SIPs yield 30+% savings from subscribing only to 7 of the 11 top proprietary feeds while the US retail also get the lowest market data and transaction costs around the world, which is a ‘win-win’ case that the UK and EU never get to enjoy or even realize of this pareto improvement opportunity.

Delusional/ slogan-based diplomacy exacerbates mistrust of the government and erodes market integrity. It is the opposite of the UK strategy 2025-2030¹³ about deepen trust and rebalance risks to support growth, help consumers, fighting crime. As mentioned earlier, crappy mused up data is poor quality. Scenarios 1 to 3 are NOT suitable for BestEx enforcement (see our response to [Question 46](#)). The two sought outcomes by the FCA – affordable access and comprehensive view of UK equity market liquidity would NEVER be realized or is a ‘hallucination’ if the government act as a manufacturer of ‘artificial’ consensus instead of taking concrete actions to address the unjust situations in the markets.

Scenario 4: *a tape with post-trade data and the attributed top five pre-trade bids and offers from lit venues and SIs, distributed with a latency of 20-40 milliseconds.*

Some consider this Scenario 4 as an option for the UK siding with the US instead of the EU, which is not wrong. US equity market is the deepest, most liquid, and most efficient in the world. Broker-dealers around the world that trade in the US are moving forward in preparing for National Market System (NMS) 2.0 – with expanded core data (depth-of-book, new Round-lot tier and Odd-lots) under Market Data Infrastructure Rules,¹⁴ follow up minimum pricing increments amendment to enhance Transparency of Better Priced Orders (TBPO).¹⁵

Like throttle and brakes, controls ought to be embedded in the design, system and operational adjustments. They should correctly process the expanded contents and cater to latency improvement. Most investment firms are enthusiastic to get ‘five levels of depth’ from the SIPs/ Competing Consolidators (CCs). Yet a thoughtful and precise compilation is easier said than done. Risk limits and other parameters will need to be adjusted.

Many nuances have been reviewed and thoroughly considered by the US SEC to prevent potential exploitation and balancing different stakeholders’ needs (e.g. institutional versus retail, lit versus other trading venues, etc.) in the markets. For example, the TBPO requirement of odd-lot information to include a best odd-lot-orders to buy and sell (BOLO). The costs and benefits analysis of the US MDIR and TBPO are diligently accounted for and substantiated based on evidence from time-weighted average quoted spread, the percentage of daily trading volume and correspondence dollar value for what should be the minimum pricing increment and execution quality statistics, etc. Amid we criticize the US SEC

¹² <https://thedeclarationlab.com/biases/decoy-effect>

¹³ <https://www.fca.org.uk/publication/corporate/our-strategy-2025-30.pdf>

¹⁴ <https://www.garp.org/risk-intelligence/market/financial-market-rules-250606>

¹⁵ <https://www.sec.gov/newsroom/press-releases/2024-137>

for not going far enough with the NMS reforms, the SEC presented evidence is undeniably truthful that the UK should consider adopting where trade behaviours and logic of regulatory policies are similar.

There is no shame in replicating the success from the best of the best. Indeed, copying others' success story is much easier and cheaper than reinventing the wheel. The faulted ESMA equity RTS is untested and provided no evidence that it has anything concrete to compare with the US market data and market structure improvements. Fluffs or linguistic pseudo-art about '*data quality*' is no match to facts we have substantiated here and supported by various publicly available sources of empirical research.

Scenario 4 is the BEST option among the four. Investment firms are adjusting to the US MDIR and TBPO requirements. They do not need to have separate '*settings*' (risk controls, volatility management, surveillance, duties to fulfil best execution and order routing disclosure requirements, and more) to accommodate differences between the US and UK. Most system upgrades costs would already be covered and absorbed by their US branch or would be shared globally. Putting this users' perspective in mind help policy makers strengthening the UK equity CT design and development.

Picking the wrong choice (Scenarios 1, 2, and 3) means a '*sunk cost*' and time loss for the UK. Not only will it be a '*loss opportunity*,' but prolonging the suffering of unjust situations indeed reinforces '*initial bias*'¹⁶ and rent seeking behaviours, making it harder or impossible to rectify the mistake afterward. The overall FCA proposal is worse than the Jukebox era in the 1970s and we do NOT believe any '*governance provisions*' would help (see our response to [Questions 6 and 45](#)).

NEW [Scenario 5](#): our suggestion – Market Data AVAILABLE SECURELY in SYNCHRONIZED time

The ONLY viable alternative better than [Scenario 4](#) is – the FCA mandates the use of Time-Lock Encryption (TLE) for both equity CT and proprietary feeds (in accordance with an Atomic Clock and prohibits the circumvention of security measures). Collocation ≠ Latency Equalisation ≠ Market Data Available SECURELY in SYNCHRONIZED TIME. Reference of our May 2020 comment letter to the US SEC,¹⁷ we highlighted that '*although latency equalisation could be performed by the client or the server, end-system techniques for estimating network conditions are often inaccurate*,'¹⁸ and '*there can be: programmable routing service approach, adaptive equalizers, advance linear equalisation, etc. which different techniques have different pros and cons impacting performance*.'¹⁹

TLE protects time sensitive information from being decrypted prematurely. It eliminates *initial bias* and addresses the problem of where the CT data centre is located. It helps eliminate the '*extra hop*' latency difference between Self Aggregators and other participants. The concept of TLE²⁰ was first invented in 1976. Professor Ron Rivest at MIT, co-inventor of the Rivest Shamir and Adleman (RSA) algorithm, devised a '*time-lock*'²¹ puzzle inspired by his algorithm in 1999, is widely used today.

Combining TLE with travel light (top-of-book) to go fast with better encoding, decoding, and data compression technologies at the CTP, users of the equity CT would have a fighting chance to compete with users of proprietary depth of book feeds and data vendors' value-added services. It will increase serendipity, deepen natural liquidity, and achieve the regulatory goal of '*affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users*.' To address the questions of who owns the data (see our response to [Question 9](#)).

¹⁶ https://www.databoiler.com/index_htm_files/DataBoiler%20FCA%2020260130%20AILab.pdf

¹⁷ <https://www.sec.gov/comments/s7-03-20/s70320-7235196-217113.pdf>

¹⁸ <https://www.datacenterdynamics.com/en/opinions/mifid-ii-changing-the-way-traders-do-colocation/>

¹⁹ <https://www.cs.yale.edu/homes/yu-minlan/writeup/presto08.pdf>

²⁰ https://en.wikipedia.org/wiki/Whitfield_Diffie

²¹ <https://www.csail.mit.edu/time-lock-crypto-puzzle-and-time-capsule-innovations>

It would take a little leap of faith, but TLE is time tested and widely used in other industries, including online gaming. The equity market is behind. The FCA must fight against injustice that profiteering from *initial bias*.¹⁶ *Hallucinate* or follow the wrong path of the EU for delusional/ slogan-based diplomacy is a failure to improve the equity market data and related market structure. It would cause UK equity market to continue to lose ground to digital assets, online gambling, and the US and Asia equity markets.

Question 4: Do you have any initial views on whether an outage of the equity CT proposed in Question 1 would affect your ability to trade – subject to further evaluation once the equity CT is live?

An outage of the equity CT would affect ability to trade. Yet, if the equity CT is designed to have the post-trade Consolidated Trade System (CTS) serve as the contingency backup for the pre-trade Consolidated Quote System (CQS) and vice versa [i.e., like the setup of the US SIPs], this business continuity plan / disaster recovery approach is proven to be very resilient and effective for a seamless trading experience if it is adopted and implement together with other Volatility Interruption Mechanisms.²² Please also see our response to [Questions 33 and 34](#) regarding SYSC 15A.

Question 5: Subject to further assessment of its feasibility, in principle do you think it would be helpful for the FCA to publish end-of-day consolidated post-trade data before the equity CT goes live? Y/N. Please give your reasons.

NO, it is unnecessary. Market data vendors (MDVs) and self-aggregators (SAs) should have in-depth and sufficient experience to deliver the pre- and post-trade equity CT without the need of the FCA to provide an interim solution to publish end-of-day consolidated post-trade data before the equity CT goes live. Whoever is proposing that may merely be making excuse to *'kick the can down the road'* in further postponing the equity CT development.

Question 6: Do you agree with our proposal not to require revenue sharing arrangements between the equity CTP and data contributors? Y/N. Please give your reasons.

Referring the trading venues and APAs as 'data contributors' is inappropriate. We picture the broker-dealers, and their algo developers/ traders as *'record labels/ publishers'*, and *'featured composers/ artists'* in the music industry. *'Streaming platforms'* (trade venues, market centres) are exploiting on trading firms' worry that their trade algorithms or strategies may get exposed. Instead of paying for the use of others' intellectual property (trade strategies, order flows), streamers can rent seek on market data and connectivity. Such phenomenon is like the coin collecting jukebox operators prior to the 1970S. We argue that for-profit exchanges / integrated conglomerates are operating a 'Jukebox model' to extract rent, hurting all, but mostly the smaller players. Policy makers should consider Market Makers, Multilateral Trading Facilities (MTFs), single dealer platforms (SDPs), and Exchanges as different streaming platforms to have the right focus. Access fee rebate, Payment for Order Flow (PFOF), and market data/ market structure issues are all intertwined. The noumenon of rebate incentives serves as royalty payments for the use of others' copyrighted material. The prevailing market problem is WHO OWNS THE DATA.²³

To be fair, trading venues and APAs amid have no to little incremental costs in allowing CTP using their existing proprietary feed for consolidation and redistribution of market data, they do incur cost to test and make sure the connection with CTP would work properly. Those out-of-pocket costs to conduct related CTP connection and testing should be compensated.

²² <https://www.world-exchanges.org/storage/app/media/Circuit%20breakers%20taxonomy%20paper%20March%202021.pdf>

²³ https://www.databoiler.com/index_htm_files/DataBoiler%20Copyright%20Licensing.pdf

However, there should NOT be on-going subscription fees for the CTP in usage of trading venues and APA's proprietary data feeds.

Question 7: Do you think there is a case for being able to view, via the equity CT: (a) All quotes that equity SIs are required to make public under Article 15 of UK Markets in Financial Instruments Regulation (MiFIR, Regulation (EU) No 600/2014). (b) The BBO of SI quotes in each liquid equity instrument. (c) The subset of SI quotes made public under Article 15 of MiFIR that are within the BBO for an instrument? Y/N. Please give your reasons.

Addressable liquidity is a fluid concept in Europe that we recommend the UK to shift away from it, particularly in the context of SIs and post-trade transparency reforms.²⁴ SI-specific reporting requirements are largely abolished for non-equity since PS23/4. For equity instruments, SIs operating in the UK remain subject to mandatory post-trade transparency requirements. We do NOT think there is a case to include Systematic Internaliser (SI) quotes on an equity CT. SI quotes are bilateral and subject to specific conditions, such as the counterparty's creditworthiness or trade size.

SI quotes in a consolidated tape might lead to an 'underestimation' or 'overestimation' of truly accessible liquidity, amid market participants could be confused about what prices are executable for them. Policy makers should refrain from picking winner to skew market structure in favour of lit venues against SIs. The focus should be about delineating between private rights of bilateral commitments versus public access. There is no credible evidence that trades executed through outsourced execution vendors or SI wholesalers receive inferior price, while the opposite has certain merits.²⁵

Given SIs subscribe to proprietary feeds and self-aggregate, if CTP and any subscribers of proprietary feeds are mandated by the FCA to have a secure synchronized start line²⁶ in decrypting pre-trade quote data, it would promote fairness and improve market integrity.

Question 8: Is there any information you can provide about the potential costs for SIs of providing their quotes to the equity CTP; or the complexity and costs for the CTP of being required to publish a subset of SI quotes or the BBO from amongst SI quotes?

See our response to [Question 7](#).

Question 9: Do you agree with our proposed latency requirements for data contributors? Y/N. Please give your reasons.

No, 100-150 milliseconds latency is unacceptable and is slower than the current performance of the US SIPs and Trade Reporting Facilities (TRFs). The EE report failed to capture evidence from the US SIPs, TRFs, and self-aggregators' experience, where low-latency consolidated market data are both practical and applicable for the UK and EU to consider. Tolerance would nurture misbehaviours.

Trading venues and APAs must provide their fastest data feeds to CTP. *'Require data contributors to transmit pre-trade data and post-trade data to the CTP as close to real time as technically possible'* is insufficient. The FCA should at a minimum adopt rule like the US Market Data Infrastructure Rule §242.603(b) *'requires SRO to provide ... to all CCs and SAs in the same manner and using the same methods ... as such SRO makes available any information to any other person.'*

²⁴ <https://www.linkedin.com/pulse/addressable-liquidity-otc-equity-trading-kelvin-to-e76we>

²⁵ <https://www.sciencedirect.com/science/article/pii/S0304405X25000595>

²⁶ <https://www.linkedin.com/pulse/market-data-available-securely-synchronized-time-kelvin-to/>

US SIP compiles all data in 6 milliseconds 15 years ago and improved to 0.015 millisecond about 5 years ago with capacity increased 33-fold during that 10-years. Yet we criticize the US SEC for not going far enough²⁷ to *‘deemphasize speed as a key to trading success.’* The US is light years ahead of the EU in curbing Exchanges from optimally restricted access to price information.²⁸ Equity CT without time-lock encryption to make market data available securely in synchronized time causes *initial bias*¹⁶ that exacerbates the gap between subscribers of proprietary feeds and the public consolidated tape. Please also see our response to [Question 3](#).

UK is now at a juncture to choose. If UK follows the faulted ESMA equities CT RTS, the consequences are: the average market data price across the UK and EU would further increase by at least 5 to 10%, market participants lose faith in the integrity of UK and EU markets, and divest money away or social unrest to protest an unfair system. The only interested parties to seek trading opportunities in the UK and EU would be those who can exploit and segment order flow away (i.e. toxics and FAIL to achieve regulatory goals).

Alternatively, the UK now could lead the world by mandating proprietary feeds and CT market data to be available securely in synchronized time (in accordance with an Atomic Clock and prohibits the circumvention of security measures) and address the questions of who owns the data.²⁹ By doing so, it eliminates the problem of where the CT data centre is located (cost saving by locating CT away from the most expensive prime zone and is fair). UK would truly be protecting consumer, improving fairness and market integrity, significantly increasing the UK’s competitiveness, attracting investments and deepening natural liquidity to grow the overall pie in benefiting all constituents. It is ten times better than the quantifiable net benefits stated under the FCA’s 4 scenarios.

Question 10: Do you think there are specific types of trading protocol that should be subject to a higher latency requirement? Y/N. If yes, explain which types of flow and why.

The following tables focus on the CTP handling of incoming equities data volumes from ‘Market Data Contributors’ (MDCs), meaning trade messages encompassing quotes (pre-trade) and trades (post-trade) happening on Electronic Order Book – Lit Markets, Off-Electronic Order Book – Lit Markets, SIs, Auctions, Dark Pools, and Over the Counter (OTC).

Given the UK is building the equity CT from the ground-up, it is logical to use established international practices as appropriate benchmarks, meaning as a starting point to customize these practices, including systems and processes (rather than reinventing the wheel), into specific requirements for UK and to ensure the UK CTP performance is better or at least on par with these benchmarks.

Table 1

Categories	Electronic Order Book - Lit Markets	Off-Electronic Order Book - Lit Markets	Systematic Internalisers (SIs), Dark Pools, Auctions	Over the Counter
Equity Trade Count ³⁰ as %	~66.5% - 70%	>0.5%	~30%	2%

²⁷ <https://www.linkedin.com/pulse/market-data-myths-versus-truths-kelvin-to/>

²⁸ https://www.bayes.citystgeorges.ac.uk/_data/assets/pdf_file/0011/366599/sale-price-information-cass-knowledge.pdf

²⁹ https://www.databoiler.com/index_htm_files/DataBoiler%20Copyright%20Licensing.pdf

³⁰ https://www.esma.europa.eu/sites/default/files/2024-05/ESMA50-524821-3149_EU_Securities_Markets_2023.pdf ;

<https://www.fese.eu/app/uploads/2024/08/240808-European-Exchange-Report-2023.pdf> ;

https://www.cboe.com/europe/equities/market_share/market/venue/



<p>Characteristics</p>	<p>~60-75% generated through algorithmic trading³¹ i.e., low touch, happening faster than a blink of a human eye, thousands to hundreds of thousands of messages at any given point in time.</p>	<p>Request for quotes (RFQ) and trade arrangements here are manual orders. i.e., high touch, involves significant amount of human interaction that is not as automated or electronified as low touch equity trading.</p>	<p>Predominately low touch. Include odd lots.³² non-lit markets bid/ask quotes are <u>NOT</u> reflected on the CT. Transparency through post-trade reporting. Spike in auctions data + EBBO impact</p>	<p>OTC securities not listed on lit exchange, trade bilaterally, quotes and negotiate prices are conveyed by phone, e-mail and text messages. Customer market ('Dealer-run', bulletin board) vs interdealer market³³</p>
<p>Objectives/ Priorities</p>	<p>A single source of access to provide both pre- and post-trade market data in real time consumed by low touch (non-display) and high touch traders (display) with NBBO indication and essential fields only to minimize latency impact.</p>	<p>Post-trade transparency via Trade Reporting Facility (TRF)/ Approved Publication Arrangement (APA)/ Designated Publishing Entity (DPE). Essential trade data of Auction are included in CT / Securities Information Processor (SIP) to provide comprehensive view of market activity. Multilateral Trading Facilities (MTFs) volume may report through Stock Exchanges' TRFs (e.g. FINRA NYSE TRF / FINRA NASDAQ TRF in context of US) or a general TRF (FINRA TRF), then parse and put together with the CT/ SIP. However, OTC trades are <u>NOT</u> included in CT/ SIP because they are privately negotiated. TRFs do publish post-trade transparency report with topology flags, separately from the CT/ SIP, to cover the OTC volume in the US.</p>		

NOTE: centralized data vault that encompasses both pre-and post-trade equities data is called the Consolidated Audit Trail (**CAT**). CAT is a '**single source of truth**' or '**golden source**' for **market monitoring** purpose, which should NOT be confused or convoluted with the functionalities and purposes of the CT / SIP feed or TRFs transparency regime.

Table 2

from MDCs to CTP	Package Rate, Structure, Schema	Transmission Mechanism	Remarks
<p>Pre-Trade CQS FAST (FIX adopted for Streaming)/ Simple Binary Encoding (SBE) is commonly used in trading environment where minimizing</p>	<p>Encoding and decoding method needs to be consistent and robust for MDCs and CTP. Optimizing richness of information and minimize latency is key to the success of CT/ SIP. The matter is analogized to lossless music (e.g., ALAC), which typically has bigger file size for the richness of contents, while lossy MP3 can be streamed at faster speed. It helps ensure the precision of</p>	<p>There are various methods – wired, wireless, Network Time Protocol (NTP), Precision Time Protocol (PTP) for signal distribution. PTP is more precise than NTP (sub-microsecond</p>	<p>Market data is time sensitive. Value of time sensitive information deteriorates substantially overtime, which is an indisputable fact substantiated by</p>

³¹ <https://www.quantifiedstrategies.com/what-percentage-of-trading-is-algorithmic/>

³² <https://www.bmlitech.com/news/market-insight/inside-the-sip-and-the-microstructure-of-odd-lot-quotes/>

³³ <https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/Financial-Markets>



<p>latency and bandwidth is crucial.</p> <p>Other notable proprietary protocols: Xetra and ETS (Deutsche Börse); UTP (Euronext); SWXess (SIX); OBX (Oslo Børs); Mercato Telematico Azionario (Borsa Italiana); OUCH/ITCH (NASDAQ); Millennium (London Stock Exchange).</p>	<p>quotes and trades sequencing to be within reasonable range. This range must take into consideration of CTP's capacity to manage surge, spike, or other extraordinary market volatility.</p> <p>FAST messages are defined using templates, which specify the structure and types of fields. Presence Maps are used to indicate which fields are present in a message, allowing for efficient encoding of sparse data. SBE has fixed-length fields to minimize the need for complex parsing and reduces latency. SBE messages are defined using XML schemas. Message rates can exceed hundreds of thousands of messages at any given point in time with sub-microsecond latency by combining efficient encoding techniques, optimized algorithms, and low latency infrastructure.</p>	<p>to nanosecond-level vs millisecond-level).³⁴</p> <p>Compresses data by eliminating redundancy and encoding only the changes in essential data. Compression by individual securities vs bundling of thinly traded securities can yield different performance.</p>	<p>empirical studies.³⁵ Also, the matter is analogized to DOBY in music, it is widely accessible because basic DOBY encoder is FREE. However, DOBY encoder is expensive, and enhanced decoders for richer sound quality require payments. There are plenty of FREE open-source encoder/decoder, yet compatibility is a concern.</p>
<p>NOTE: There are various pros and cons for each of these protocols, including standardization for easy integration, complexity to implement and maintain, tuned differently for latency performance for different market locations and flexibility to support different order types and trading strategies, scalability, robust reliability, scope and specific infrastructure limitations, and costs.</p>			
<p>Post-trade CTS</p> <p>Trade Reporting Facility (TRF) / APA collects data through the Automated Confirmation of Transaction (ACT) system that build on INET platform³⁶ and uses MOLD/UDP 64 Protocol³⁷ for data</p>	<p>Each data packet includes a header with sequence numbers and other control information, followed by the payload (actual data). This structure helps in efficient data parsing and error checking.</p> <p>The protocol's structure includes: 1. Header: Each packet starts with a header that contains control information such as sequence numbers, which are crucial for ensuring data integrity and order. 2. Message Block: Following the header, the message block contains the actual data</p>	<p>Large data sets are broken down into smaller packets through 'data segmentation' process. MOLD/UDP 64 Protocol supports multicast transmission. The sender keeps track of the sequence numbers. The receiver reassembles the</p>	<p>Although UDP is inherently unreliable, MOLD/UDP 64 adds mechanisms to ensure data integrity and reliability. Each packet is assigned a unique sequence number to help the receiver track and detect any missing packets. The receiver sends back</p>

³⁴ <https://www.geeksforgeeks.org/difference-between-ntp-and-ptp/>

³⁵ https://www.hbs.edu/ris/Publication%20Files/21-016_d5cc4876-c029-4540-8092-16a23778d86f.pdf ;

https://itlaw.fandom.com/wiki/Time-sensitive_information ; <https://statisticseasily.com/glossario/what-is-time-sensitive-data-explained-in-detail/>

³⁶ http://nasdaqtrader.com/content/ProductsServices/Trading/TradeReporting/trf_fags.pdf

³⁷ <https://www.finra.org/filing-reporting/trace/technical-notice/trace-corporate-agency-re-platform-and-data-feed-protocol-changes>



<p>transmission, which is suitable for environments where large volumes of data need to be transmitted quickly over User Datagram Protocol (UDP).</p>	<p>payload. Multiple messages can be aggregated into a single packet to reduce network traffic. 3. Heartbeats: These are special packets sent periodically to indicate that the connection is still active, even if no data is being transmitted. 4. End of Session: This packet signals the end of a data transmission session. Multiple messages can be combined into a single packet to optimize network usage.</p>	<p>packets in the correct order using the sequence numbers. If a packet is missing or corrupted, the receiver can request a retransmission.</p>	<p>acknowledgments to confirm the receipt of data packets. If a packet is missing or corrupted, the receiver can request a retransmission.</p>
<p>NOTE: There are differences in market quality and preferencing for off-exchange trades reported between the NASDAQ TRF and NYSE TRF in the US. How TRFs handle and preference orders can impact execution quality, so policy makers should be alerted.</p>			
<p>Auctions The significant volume trading at opening and closing auctions stocks has made auction price information highly relevant to market participant. Special tuning, load balancing and other techniques are employed to ensure sufficient bandwidth capacity and prevent service interruption or erroneous information getting on the tape.</p>	<p>During auction events, stock exchanges collect data on the prices and volumes at which securities are traded. Exchanges submit this auction data to the CT / SIPs. This includes the final auction price, which is the price at which the highest volume of shares can be traded, and the volume of shares traded at that price. CT / SIPs integrate auction prices with continuous trading data. This ensures that the auction prices are reflected in the overall market data feed provided to market participants. The volume of trades and quotes can surge dramatically during auction period.</p> <p>To enable CT / SIPs to handle these spikes, High-Speed Data Processing System works seamlessly with low-latency infrastructure. Hardware is tuned and optimized for speed and reliability (CAP theorem / ACID compliance). To manage the influx of data, load balancing techniques are employed to distributes the data processing workload in high performance computing environment across multiple servers, preventing any single server from becoming a bottleneck.</p> <p>Scalability and operational resilience³⁸ are essential to ensure continue operations. Technical issue with volatility interruption mechanisms³⁹ can sends some shares on a wide ride, for example, NYSE Tape A (one of the SIPs) issue in June this year where the Berkshire price was published erroneously down 90+%.⁴⁰ EU currently has <u>NOT</u> implemented a Limit Up Limit Down (LULD) mechanism, hence vulnerability is high.</p>	<p>In auction market, the person who brings it must guarantee. NBBO may move during a periodic auction when continuous market is running in parallel. It is not exogenous that the auction is done, somebody who has control of an order makes a decision about what it uses the auction, and the initiator currently provides the ability to match this price, which in fact may be necessary. Price matching on an ex-ante basis is anti-competitive.</p>	

³⁸ <https://www.whitecase.com/insight-our-thinking/financial-regulatory-observer-2022-operational-resilience-uk-eu-and-us> ; https://www.nasdaqtrader.com/content/newsalerts/2017/eta/SIP_Contingency.pdf

³⁹ <https://www.world-exchanges.org/storage/app/media/Circuit%20breakers%20taxonomy%20paper%20March%202021.pdf>

⁴⁰ <https://www.nytimes.com/2024/06/03/business/nyse-trading-glitch-berkshire-hathaway.html>



	NOTE: The US SEC believes that including more information about <i>'trading interest'</i> in auctions will promote informed and effective participation and potentially encourage market participants to participate in the auctions, enhancing liquidity and price discovery. ⁴¹		
OTC Financial Information eXchange (FIX) protocol / Weblink ACT	Again, <u>NOT</u> included in CT/ SIP but cover under TRF for post-trade transparency. FIX is commonly used, while Weblink ACT system is a web-based interface offered by FINRA in the US to allow firms to manually enter trade details. Trades executed during the hours that the TRFs are open must be reported within 90 seconds of execution. ⁴² If a trade is executed outside of normal market hours (After-Hours Reporting), it must be reported as soon as the facilities reopen (i.e. submission deadline by 8 a.m. Central Europe Time).		
Pre- and Post-trade Audit Trail (CAT)	Secure File Transfer Protocol (SFTP) / Private Line, 3rd Party Extranet, or AWS PrivateLink. These connectivity methods are used to establish secure, machine-to-machine connections for data transmission ⁴³ Information and Cyber Security control is prioritized over speed of transmission.	By providing a manual input option via Weblink ACT, the CAT ensures that all firms can meet their reporting obligations in the US.	CAT has a stricter timestamp tolerance (50+/- milliseconds) compared to TRFs (one second, or finer if the system allows). Yet this tolerance level is indeed CAT's fatal flaw.

NOTE: When one is looking at the number of financial messages that has occurred at a tenth of a second in equities, it could be hundreds of thousands of messages. The issue of data synchronization, computer synchronization, for example at 50+/- milliseconds, how can anyone determine which message was reacted to, which message initiated something, which message ended something. If there are hundreds of thousands of messages that one must work and sort through, no one will be able to tell the difference whether a trade message came in first, second, third, or a hundred thousandth.

The 'equity sub-team' (dominated by the EuroCTP's members and advisors) of the European Commission (EC) - Data Expert Group (DEG) took a stab at my recommendation on Precision Time Protocol (PTP). It was *'a clumsy denial resulting in self-exposure'* when they said *'PTP is widely used but does not guarantee synchronization between data centres.'* What is *'guarantee'* – does that mean tolerate with a lower standard to use Network Time Protocol (NTP), or it is as obvious as the fact that your mother is a woman?! Their statement has NO practical meaning.

One cannot argue against the IEEE1588 international standard for PTP superiority over NTP.⁴⁴ In my submitted comment to the ESMA, *'Amazon Time Sync Service provides time synchronization over NTP that has an observed accuracy of around 400 microseconds. Yet multicast is not readily available in the public cloud. It has security and other complex issues... PTP is recommended to support a timestamp granularity of 0.1 microseconds.'* PTP-enabled network switches and high-precision network interface cards are in the thousand(s) of dollars range each. High precision can be very affordable. Focus should be on the proper configuration, monitor and maintenance of performance to minimize latency and maximize accuracy to meet the regulatory goal of timestamp granularity of 0.1 microseconds.

⁴¹ <https://www.sec.gov/files/rules/final/2020/34-90610.pdf>

⁴² <https://www.sec.gov/files/rules/sro/finra/2009/34-60960.pdf>

⁴³ <https://www.finra.org/rules-guidance/guidance/reports/2022-finras-examination-and-risk-monitoring-program/cat>

⁴⁴ <https://www.nist.gov/el/intelligent-systems-division-73500/introduction-ieee-1588>

Policy makers' consideration should NOT be based solely on cost, nor solely on mass adoption network effect. In general, we are supportive of standardization and harmonization for economy of scale and efficiency purposes, as long as the defined standard, open access, and interoperability would not lead to a monopoly or oligopoly that hinder innovations or exacerbate unfairness in markets.⁴⁵

Question 11: Do you see any potential challenges in UK data contributors meeting these requirements, including around cancellations and amendments? If so, do you think the alternative options outlined would help reduce these challenges? Please also provide any further suggestions.

No. Regarding amendments or cancellations of trades by APAs, the work required to process amendments and cancellations in a way that maintains data quality should be part of APAs' daily operating routine. Failure to do so should disqualify the APA from operating a Trade Reporting Facility. Putting ALL THE BLAMES on investment firms is WRONG because there are actually three main causes of Data Quality problems:

- (a) Man made issues for self-interest and favouritism: e.g., crappy data (i.e., 100,000 messages at any given point in time that mused everything up) and/or hold off the advancement of CT for ecosystem degradation to exacerbate gap between PPs and CT. CT with a wide bid-ask spread and delay refreshing of the National best bid offer (NBBO), i.e., to make the tape unsuitable for Best Execution (BestEx) analysis, in turn, majority of market participants are not aware that they have been receiving inferior prices.
- (b) Poor controls, system glitch, operational resiliency: e.g., technical issues with a trading venue's volatility interruption mechanisms can send shares on a wide ride (e.g. Berkshire price erroneously down 90+% in June 2024);⁴⁶ system glitch such as the Knight Capital \$440 million software error;⁴⁷ and data centre redundancy⁴⁸ (outage),⁴⁹ operational resilience⁵⁰ (some see the price some don't), and cybersecurity issues.⁵¹ Vulnerability is high for the UK and EU given Limit Up Limit Down (LULD) mechanism is NOT thoroughly implemented in Europe. Accountability to adopt certain best practices⁵² to ensure price continuity, and reluctant to conduct data consistency checks with peer APAs attributed to incomplete or potentially erroneous information.
- (c) Inadvertent or honest mistakes during trade reporting, such as duplicated positions and/or misuse of taxonomy flag(s) by investment firms during trade reporting to APAs/ CTP.

NOTE: duplicated positions in trade reporting is NOT the same as HFTs' propensity of cancellation of their multiple positions that they were subjected to risks and obligation to take the exposure if unmatched orders are not cancelled in time as described in *'order duplication and liquidity measurement in EU equity markets.'*⁵³

CTP is supposed to pass along a *'duplicated positions'* flag, or such, to CT subscribers, while awaiting regulator to investigate potentially erroneous information, typically reviewing event lifecycle details in clearing and settlement system.

⁴⁵ <https://www.yalelawjournal.org/article/open-access>

⁴⁶ <https://www.nytimes.com/2024/06/03/business/nyse-trading-glitch-berkshire-hathaway.html>

⁴⁷ <https://www.henricodolfing.com/2019/06/project-failure-case-study-knight-capital.html>

⁴⁸ https://www.nasdaqtrader.com/content/newsalerts/2017/eta/SIP_Contingency.pdf

⁴⁹ https://www.tradersmagazine.com/featured_articles/brokerage-outages-highlight-vulnerabilities-in-the-infrastructure-of-online-trading-platforms/

⁵⁰ <https://www.whitecase.com/insight-our-thinking/financial-regulatory-observer-2022-operational-resilience-uk-eu-and-us>

⁵¹ <https://www.nist.gov/cybersecurity/international-cybersecurity-and-privacy-resources>

⁵² <https://www.xetra.com/xetra-en/trading/protective-mechanisms/protective-mechanisms-in-continuous-trading>

⁵³ https://www.esma.europa.eu/sites/default/files/library/2016-907_economic_report_on_duplicated_orders.pdf

CTP must NOT add, amend, or remove any data, except at the direction and discretion of the regulator. APAs may allow a, e.g. 5%, tolerance level before acting against an investment firm. However, it is doubtful that if a CTP is being run by a consortium of Exchanges it would manage such objectively. Self-interest to allege claims on HFTs and investment firms for RTS 13 Article 10 violations is WRONG.

ESMA *'tweaked'* execution policy standards (BestEx obligations on investment firms would be enforced based on some disputable 'flags' in trade reporting disclosure) and declared that they will NOT rely on CT to enforce consistency is indeed indirectly implying that *'the EU equity CT is not offering a real EBBO.'*

The APAs together with the CTP (if run by a consortium of Exchanges) may impose heavy fines on investment firms under Article 22b(3) of MiFIR regarding *'data quality.'* This is a more lucrative source of income on top of their onerous data license audits to penalize investment firms. Given the CTP will control the de facto sequencing of best bids offers in the tape and set the NBBO within the WIDE latency tolerance allowed by regulator, it would blindside investment firms to prove otherwise.

If the FCA follow the wrong path of ESMA in stating that typical US 605/606 rules for objective metric measurements, such as fill rate, execution speed, effective versus realized spread, order-to-execution ratio, VWAP, slippage, etc. will NOT be counted in the execution policy standards, then even when the best price was at MTF or SI that investment firms diligently route their orders to in the best interest of investors, the CTP and Exchanges controlled APAs can skew the picture to subjectively ask ESMA to prosecute investment firms for mis-routing orders and blame the investment firms for erroneous information under RTS 13 Article 10.

If APAs and Exchanges controlled CTP are creating further data fragmentation rather than being a truly reliable source of trade sequence to best represent the supply and demand, then investment firms would have NO available tool or the FCA will NOT even aware of *initial bias*¹⁶ and other data integrity problems.

Question 12: Do you agree with our proposal that, once an equity CTP receives details of a relevant order or trade, it must publish this data within 100 milliseconds with a daily confidence interval of 99.99%? Y/N. Please give your reasons.

No. a tolerance of 100 milliseconds is way below par. US SIP compiles all data in 6 milliseconds 15 years ago and improved to 0.015 millisecond about 5 years ago with capacity increased 33-fold during that 10-years. At a latency of 50+/- milliseconds, how can anyone determine which message was reacted to, which message initiated something, which message ended something. If there are hundreds of thousands of messages that one must work and sort through, no one will be able to tell the difference whether a trade message came in first, second, third, or a hundred thousandth. This is indeed the fatal flaw of the US Consolidated Audit Trail.⁵⁴ CT is a *'single source of access'* and symbolizes CTP role in consolidating data from many sources. CT and APAs ought to be a bespoke model to satisfy the different subscribers' needs. CT must have non-display low latency subscribers to commingle with display options for outgoing data delivery. The viability of a CTP business model is dependent on its ability to fulfil different sell- and buy-side subscribers' needs. One size does not fit all. Attempts to use a single 'cloud' service to satisfy both is naïve. Healthy markets need both hunters (performance optimizers) and farmers (asset maximisers).

⁵⁴ <https://www.linkedin.com/pulse/cat-outdated-design-since-2012-kelvin-to>

Question 13: Do you think there is a case for having separate latency standards for pre- and post-trade data? Y/N. Please give your reasons.

Yes, the US SIP's CQS and CTS have different latency standards. Also, CQS and CTS have non-display and display subscription options for different prices and latency speeds. UK should follow the US best practices rather than the faulted ESMA equity CT RTS.

Question 14: Do you agree we should have a single CTP for the first 5-year contract period for the equity CT? Y/N. Please give your reasons.

No. The UK equity CT requirements are far from being on par with, or worse than, the US (please see our response to [Questions 3, 9, 11, 23, 24, and 28](#) for an elaborated discussion). In short, quality without the appropriate benchmarks is NOT quality. Learning from the EU tender process, EuroCTP is the sole bidder and affirmed EU equity CTP formed by a consortium of Exchanges. If UK CTP is controlled by a single or a consortium of Exchange Groups or their affiliates, it would be like bringing the sources of the problem to administer/ enforce an inequitable scheme. It will lead to further increase in market data price, as well as exacerbate *initial bias*¹⁶ and gaps between the 'haves' and 'have-nots.' Please do NOT forget these acknowledged concerns: *'onerous administrative obligations on data users; ambiguous language in the agreement; frequent unilateral amendments to the agreement; general lack of transparency on terms and conditions; excessive fees; increase of fees through penalties; and overly burdensome audits.'*

The FCA should decipher why Xyt and BMLL and other low latency market data vendors did not bid to compete against EuroCTP.

Big xyt officially rebranded to xyt on 24th September 2025. The rebrand follows a period of growth for the firm, which included securing €10 million in funding in late 2024 to expand into US and APAC markets.

Nordic Capital acquired BMLL + BMLL to provide data quality calibration to EuroCTP, this is NOT necessarily good news for Europe. One can argue that this represents EU27 are expanding to EEA30 + Switzerland (CH) for consensus. **NOTE:** In my past whitepaper,⁵⁵ I have pointed out the importance of the Swiss – *'SIX Group AG in the Swiss takeover of Spanish rival Bolsas y Mercados Españoles (BME) created an interesting phenomenon. CT is required to consolidate market data from BME, but not from the Swiss Stock Exchanges. Would the Swiss voluntarily contribute their data to CTP? How the Swiss EBBO established by SIX and its partner BMLL that connected to key European markets but not all, may evolve or change? UBS, who has a substantial investment stake in SIX can sway market dynamics in this market data reform.'* SIX finalized its acquisition of the UK-based multilateral trading facility, Aquis, in July 2025.

Market data vendors, particularly those who provide ultra or low-latency feeds (as mentioned in our response to [Question 2 Scenario 2](#)), as well as transaction cost analysers, smart order routers, outsourced execution service providers profit from market fragmentation. It is more lucrative to serve selected investment firms that paid them a premium than becoming a CTP in risking their relationships with Exchange Groups and Wholesalers.

Unless there is a higher incentive to make it worthwhile for these ultra or low-latency market data vendors or infrastructure providers to compensate their opportunity loss, their services would remain a complimentary product or value-added service instead of competing with Exchanges' proprietary products.

⁵⁵ https://www.databoiler.com/index_htm_files/DataBoiler%20Europe%202024.pdf

NYSE's rooftop antenna service is a controversy,⁵⁶ it is used by high frequency trading firms such as Virtu, as well as McKay Brothers and its sister company Quincy Data that advocate for *'level the playing field.'* NASDAQ's equalisation project⁵⁷ in removing its dedicated GPS antenna may ease conflicts among subscribers of collocation service. Yet our response to [Question 3](#) highlighted nuances of collocation where *initial bias*¹⁶ could still occur.

The China Securities Regulatory Commission issued a directive⁵⁸ banning high-frequency trading firms from using client-dedicated servers co-located within exchange data centre. It merely pushes the latency arm race to the nearest neighbourhood. Not until a mandate of market data available securely in synchronized time and the questions of who owns the data being addressed, inequitable situations would remain.

Given switching cost is high for investment firms to change data vendors, an emerging vendor entrances into the market data space may be interested in becoming a CTP if it offers a quicker way to acquire customers in reaching critical mass, plus obtaining regulatory supports in pushing *'data providers'* to abide by requirements, such as forcing them to provide the fastest feed to CTP at no cost other than setup and testing of the feed and mandating the use of TLE for both CT and Proprietary Products.

Without a novel approach from new entrance or getting buy-in from at least one of the existing ultra or low-latency feed providers to shake up the dynamics, we are doubtful that the FCA tender process would yield any fruitful result. The likelihood of picking the wrong choice (Scenarios 1, 2, and 3) and a wrong equity CTP is high. It would be a *'sunk cost'* and time loss for the UK. Not only will it be a *'loss opportunity,'* but prolonging the suffering of unjust situations indeed reinforces *'initial bias'*¹⁶ and rent seeking behaviours, making it harder or impossible to rectify the mistake afterward. The overall FCA proposal is worse than the Jukebox era in the 1970s and we do NOT believe any *'governance provisions'* would help (see our response to [Questions 3, 6, and 45](#)).

Question 15: Do you agree 5 years is an appropriate period for the length of a contract to operate an equity CT? If not, what length of time do you suggest and why? Y/N. Please give your reasons.

5 years term is reasonable to allow CTP depreciation and recoup of essential capital expenditures and setup costs. However, we are doubtful that the FCA tender process would yield any fruitful result. See our response to [Question 14](#).

Question 16: Do you agree the CTP should not have to pay data contributors for accessing their data? Y/N. Please explain your reasons.

The definition of *'data provider'* is problematic. Policy makers should consider Exchanges, APAs, Multilateral Trading Facilities (MTFs), Systematic Internalisers, Single Dealer Platforms as different *'streaming platforms'* to have the right focus for CT. Broker-dealers, and their algo developers/ traders are indeed the *'content creators.'* See our response to [Questions 3 and 6](#).

⁵⁶ <https://www.sec.gov/comments/sr-nasdaq-2024-056/srnasdaq2024056-568975-1631102.pdf>

⁵⁷ https://listingcenter.nasdaq.com/assets/rulebook/nasdaq/filings/SR-NASDAQ-2025-086_Notice_Approval.pdf

⁵⁸ <https://www.reuters.com/world/china/china-curbs-flash-boys-access-exchange-data-sources-say-2026-01-19/>

Question 17: Do you agree the licensing structure we adopted for the bond CT would also work for the equity CT, in particular do you think we need additional provisions relating to access for retail clients to real-time data? If you think there should be differences in the licensing scheme for equities, please set out the changes you think are necessary and their rationale.

Given the stages of development and current market structure differences for equity and non-equity markets, the definition of *'real time'* for equity CT should NOT be the same for bonds. Bond CT focused on post-trade transparency data rather than pre-trade quotes. Reference to our response to [Question 14](#), we agree in general with a single provider model awarded via a competitive tender. We agree with these core licensing model, i.e. simple redistribution license, offer historical data as a separate subscription from the real-time feed, and non-discriminatory access. We agree with providing enterprise-level licensing in general.

That being said, equity CTP should have the flexibility to vary the enterprise-level licensing fee depending on the level of non-display low latency pre-trade data subscriptions in subsidizing the display pre- and post-trade data subscriptions in order to achieve the regulatory goal of *'affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users.'*

Reference to our response to [Question 6](#), we are okay with reasonable cost reimbursement to 'data provider' and no mandatory revenue sharing. However, the concession contract value for equity CT versus bond CT is different, given the operational requirements contain significant differences (especially the technicality of pre-trade equity CT). The five-year term with an optional two-year extension is acceptable. We concur that both the equity CTP and the bond CTP must undergo resilience test and report major incidents under a governance framework. However, the composition and the organization of a consultative committee of market participants may vary, given the market structure differences between bond and equity.

Question 18: Do you agree an equity CTP should not be required to make its data available for free after 15 minutes? Y/N. Please give your reasons.

Trading venues provision of FREE 15 minutes delayed market data is unique to Europe and UK. It was a compromise from the Exchanges, given the industry's pressure and Europe competitiveness concerns against the US. Should this Freebie also be provided by the equity CTP? It depends if the equity CT can truly be a product of reasonable compromise, if not a close substitute, to Trading Venues' proprietary feeds or APAs' value-added services to achieve the regulatory goal of *'affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users.'* If the CTP fails to shake up this market dynamic, or if the CTP is controlled by a single or a consortium of Exchange Groups or their affiliates, then the FCA may want to keep that option open to force the CTP to make its data available for free after 15 minutes.

Question 19: Do you agree that consumption of the equity CT should not be compulsory? Y/N. Please give your reasons.

There used to be mandatory subscription to the US SIPs. The implementation of US Market Data Infrastructure Rule would drive changes, include introducing new multiple competing consolidators and ultimately sunseting the SIPs. Reference to our response to [Question 11](#), where we stated – ESMA *'tweaked'* execution policy standards (BestEx obligations on investment firms would be enforced based on some disputable 'flags' in trade reporting disclosure) and declared that they will NOT rely on CT to enforce consistency is indeed indirectly implying that *'the EU equity CT is not offering a real EBBO.'*

Given the above, if the UK is being genuine in developing a usable equity CT to promote fairness, improve market integrity, attract investments and deepen liquidity, address inequitable situation with Exchanges rent seeking, lower market data costs, and protect consumer by upholding an execution policy standard that is at least in par with the US, then the compulsory subscription should go hand-in-hand with the implementation of order protection rule to ban impermissible trade-throughs and aim for a constant refreshing NBBO with tight spread. If the UK follows the EU's path in doing lip service while not making concrete improvement to *'affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users,'* then the FCA should NOT require mandatory subscription of equity CT.

If a sole bidder is controlled by a single or a consortium of Exchange Groups or their affiliates for equity CT, the Competition and Markets Authority may invoke Antitrust laws to investigate against alleged monopoly or oligopolies, particularly when firms engage in collusive behaviour, price-fixing, or abuse a joint dominant position.

Question 20: Do you agree an equity CTP should not be subject to rules on pricing on a reasonable commercial basis? Y/N. Please give your reasons.

The FCA's Hancock Notice 117⁵⁹ in April 2024 stated that the UK would not require a bond CTP to make payments to data providers. The industry welcomes this departure from the EU's 'Reasonable Commercial Basis' (RCB). Since April 2023 we at Data Boiler had raised the concerns⁶⁰ that licensing frameworks *'based on costs incurred to provide the data' only leads to endless arguments'*, citing different perspectives from the IEX,⁶¹ NASDAQ,⁶² and others.⁶³ We are right on with our prediction, where intense arguments⁶⁴ yield no fruitful result, but large exchange groups dividing the cake through the EU equity CTP's *'revenue sharing scheme'*. Aggravation and mistrust of government policies are on the rise. EU equity CTP's 'cloud' solution persuades the industry to make compromises when it is indeed unfair to latency disadvantaged market participants, reinforcing *initial bias*¹⁶ favouring the Elites.

We reiterate that market reform should be about the divergence between private and social costs.⁶⁵ Inequity cannot be measured by accounting costs. Rate setting should objectively be based on 4-part test,⁶⁶ i.e. (1) willing seller willing buyer standard; (2) same parties' test; (3) 'effective competition' test; and (4) same rights test.

Access fee rebate, Payment for Order Flow, and market data/ market structure issues are all intertwined. Schwab's empirical evidence⁶⁷ proved that *'Order routing revenue and price improvement are NOT zero-sum.'* The noumenon of rebate incentives serves as royalty payments for the use of others' copyrighted material. When one is not required to pay for the use of others' intellectual property, streamers would exploit the content creators with rent seeking behaviours

⁵⁹ <https://www.fca.org.uk/publication/handbook/handbook-notice-117.pdf>

⁶⁰ <https://www.linkedin.com/pulse/how-public-utilities-licensing-framework-can-reasonable-kelvin-to/>

⁶¹ <https://finansdanmark.dk/media/mstbpg23/iex-and-market-data-cost-2019.pdf>

⁶² http://www.nasdaq.com/docs/Market_Data_Policy_Statement_tcm5044-65695.pdf

⁶³ <https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/6/466/1543587169/pricing-of-market-data.pdf>

⁶⁴ <https://marketstructure.co.uk/our-work/theres-no-market-in-market-data/> ;

<https://www.londonstockexchange.com/discover/news-and-insights/theres-no-market-market-data-report-market-structure-partners-published-4-february-2025>

⁶⁵ <https://iea.org.uk/wp-content/uploads/2016/07/THE%20MYTH%20OF%20SOCIAL%20COST.pdf>

⁶⁶ <https://www.govinfo.gov/content/pkg/FR-2016-05-02/pdf/2016-09707.pdf>

⁶⁷ <https://content.schwab.com/web/retail/public/about-schwab/Schwab-2022-order-routing-whitepaper.pdf>

and/or selectively paying rebates and other perks to the elites like George Orwell's *'Animal Farm'*.⁶⁸ It is better to have some level of order protection than the false hope of BestEx or disclosure rules. To address the longstanding issue of who owns the data, what gets paid and who get what,⁶⁹ we recommend a Copyright Licensing Mechanism.⁷⁰

Question 21: Do you have any comments on the treatment of ETNs and ETCs for equity and bond CTs?

ETCs and ETNs are mostly, if not all, illiquid. They should NOT be classified as types of ETFs. The FCA recognizes these instruments are also significantly different from standard bonds, thus they are NOT included in the Bond CT.

ETCs and ETNs that are admitted to trading or Trading on Trading Venues (ToTV) in the UK and EU have some similarities to derivatives in terms of tracking underlying assets, while they are not exactly derivatives given ETCs and ETNs are structured as debt securities. For simplicity's sake in moving away from a periodic assessment of liquidity for ETCs and ETNs is understandable. However, we have reservations about a complete static approach. While ETCs and ETNs themselves are not inherently destabilizing, their use and the behaviour of investors during periods of market stress can contribute to broader market instability. Hence, periodic assessment of related risk to extraordinary market volatility is recommended.

Using the same pre- and post-trade thresholds as ETFs for ETCs and ETNs is debatable. Not all ETPs are created equal. How people use the ETCs / ETNs or other financial instruments for hedge versus speculation is key.

Question 22: Do you agree that all equity trading venues and all APAs publishing trade reports for equities should be required to provide data to the CTP, and new trading venues and APAs should provide data as soon as possible after they start operating? Y/N. Please give your reasons.

In view of, for example, the Long-Term Stock Exchange represents a negligible percentage of total US equity trading volume (currently accounting for 0.01% or less of the daily market share), we respectfully disagree with MAR 9.2B.34AR(1) in the draft rules. Prior to a new trading venue or APA achieving a market share of 0.3% or more consistently for 3 to 6 months, the costs to include their data in equity CT out-weigh the benefits. The *'as soon as possible after they start operating'* requirement should be modified accordingly.

Question 23: Do you agree with our proposed pre-trade input table for the information trading venues have to provide to the equity CTP? If not, please set out the amendments you think we should make and the reasons for those amendments.

No. Currently, the US SIP covers protected quotes level 1 data. It will soon include expanded core data (e.g. level 2 depth-of-book data and more) under the new Market Data Infrastructure Rule (MDIR). *'Round lots'* and *'odd lot'* are importance in determining market depth and price discovery. Failure to include accurate round-lot (e.g. 100 shares for meaningful volume) and odd lot data in the equity CT creates significant market distortions – skewed price discovery, reduced transparency, and inaccurate imbalance measurements. Amid the UK and EU equity odd-lots trading volume of 12% to 20% is less than the US, a double-digit percentage is still very significant. Unfortunately, the EU lacks the sophistication to appreciate that. The UK should depart from the faulted ESMA equity consolidated tape RTS and embrace changes similar

⁶⁸ <https://www.linkedin.com/pulse/animal-farm-market-data-negotiate-more-equal-kelvin-to/>

⁶⁹ <https://www.linkedin.com/pulse/trading-venue-perimeter-related-market-data-issue-kelvin-to/>

⁷⁰ https://www.databoiler.com/index_htm_files/DataBoiler%20BIG%20OPP.pdf

to the US for improved market efficiency. See this article⁷¹ to marvel the comprehensiveness of the US equity CT requirements under the MDIR. Followings are key gaps between US MDIR versus the FCA proposed Input Table:

- **Depth of Book Data:** The US MDIR mandates the inclusion of five levels of depth-of-book (order book levels beyond the best price) in its definition of Core Data. The FCA proposal, based on early consultation, is primarily focused on the best bid and offer (BBO) and does not explicitly mandate full, multi-level depth-of-book in the same manner.
- **Odd-Lot Inclusion:** US rules, following the November 2025/May 2026 rollout, will include odd-lot quotations (smaller than a round lot) that are better priced than the NBBO. While the FCA is yet to consider including *'Round Lot'* and *'Odd Lot'*, the US *'Round Lot tiers'* is getting significantly upgrades, including a best odd-lot-orders to buy and sell (BOLO) in its outputs that will capture more of these smaller, high-frequency trades.
- **Auction Information:** US Core Data includes detailed auction information (opening, re-opening, closing, last sale + regulatory data such as: Auction Collar Messages, LULD Price Bands, Indicators for regulatory halts, quote resumptions, etc. + the following under MDIR expanded core data: Auction Imbalance, Indicative Match Price, Matched Shares, Far/Near Clearing Prices). The FCA proposal for auctions is limited only to the post-trade and indicative price/ volume fields, which is less granular compared to the US. Without knowing if there is more buying or selling pressure, average investors are at significant disadvantage to subscribers of proprietary feed due to information asymmetry.

The FCA current proposal defeats the goal of *'levelling the playing field.'* It fails to meet UK's regulatory objectives of *'enhancing price discovery and market competitiveness.'* Do not underestimate the negative consequences if UK opted to follow the EU's downward spiral path. Participants would lose faith in both the UK and EU abilities to deliver a truly usable equity CT and the integrity of Europe markets. The public is no fool to delusional/ slogan-based diplomacy. The only interested parties to seek trading opportunities in UK and EU would be those who can exploit and segment order flow away. Inadvertently, the negative sentiment or mistrust regarding UK and EU capital markets may spread globally, resulting in a contraction of traditional asset markets and a migration of capital toward crypto, alternative assets, or online gambling.

Question 24: Do you agree with our proposed pre-trade output tables for the information the equity CTP will need to publish? If not, please set out the amendments you think we should make and the reasons for those amendments.

No, the FCA proposed pre-trade *'output'* tables for the information the equity CTP will need to publish are TOTALLY INSUFFICIENT. It exacerbates *'initial bias,'*¹⁶ and makes the pre-trade equity CT USELESS to achieve the stated regulatory goals.

Reference to our response to [Question 23](#), the *'inputs'* are bad or missing many critical data fields.

Reference to our response to [Questions 9, 10, 11, and 12](#), the *'process'* lacks essential controls on how data should be aggregated in a timely and accurate manner:

- **Latency Standards:** The US rules mandate that competing consolidators (CCs) provide data in the same format and speed as exchanges' own proprietary feeds. A UK latency standard of 100-150 milliseconds is much slower than the real-time requirements being implemented in the US.

⁷¹ <https://www.linkedin.com/pulse/us-market-data-reforms-complicated-cumbersome-comprehensive-kelvin-to-lzbse/>

- Data Aggregation Level: The UK and EU neglected to account for ‘round lot’, ‘odd lot’ in computing the NBBO / EBBO. Rather than building an equity CT as a true single source of access, aggregated national price like the US, the FCA proposal wrongly focused on providing attributed data—showing which venue is providing the best price—to highlight a flawed ‘addressable liquidity’.
- Closing auction call phase and extension: the FCA proposal did not specify: how the CTP should handle data streaming during this 5-minute call phase between 16:30–16:35 market pause; which automated trade price or a mid-price be used by equity CTP if no uncrossing occurs at 16:35 plus a random 30-second delay; during the 2-minute market order extension (unlike the US LULD) for protection against extreme price if there are unmatched market orders at the uncrossing price, how to address operational latency risks for ‘trapped orders’ amid the extension ends with a random 30-second window (i.e. imprecision); etc.
- Capacity to handle peak volume: This is beyond the differences between the UK SYSC 15A vs the US SCI resilience requirement. The US MDIR explicitly requires ‘maintain sufficient capacity to handle peak message rates,’ and the SIP periodically conduct capacity testing and recommend a 2.4 Gbps per binary feed. The UK FCA proposal have no coverage of such.

Given the UK is building the CT from the ground-up, it could have made and ensure the UK equity CTP’s performance is better or at least on par with the US (that has the deepest, most liquid, and most efficient in the world). We have been informative and the US is transparent without withholding any secret ingredients – all cited information are publicly available. The UK can freely replicate the US SEC Market Data Infrastructure Rules and Transparency of Better Priced Orders requirements as appropriate or take a leap of faith in considering our novel approach. Unfortunately, the FCA proposal copied the wrong homework from a weak neighbour. Its mindset and ambition are limited or subordinate to a European focus, preventing it from competing with the best. How sad, but it can be rectified if there is a will.

Question 25: Do you agree APAs should not be required to send to the CTP information about the time at which they received details of a trade from a client? Y/N. Please give your reasons.

No. This empirical research⁷² uncovered a ‘preferencing’ phenomena. The finding shows that ‘86% of all reported off-exchange trading volume, trades reported in the NASDAQ TRF experience significantly poorer execution quality.’ Be mindful if trading venues lead contenders / APAs may influence off-exchange fragmentation and reporting across APAs if they become the CTP to benefit from the Revenue Sharing Scheme using daily trading volume to divide the cake. Policy makers should require and monitor the post-trade CT speed of delivery and curb any ‘preferencing’ phenomena. The FCA should require APAs to send that information to CTP, so CTP may perform independent checking against potential or alleged ‘preferencing’ phenomena.

Question 26: Do you agree an equity CTP should be required to print the date and time at which it has published a trade? Y/N. Please give your reasons.

We have no objection on this. Yet one should note that equity CTP can reconstruct the sequence of trades and quotes without a, ‘publication time.’ US SIP compiles all data in 6 milliseconds 15 years ago and improved to 0.015 millisecond about 5 years ago with capacity increased 33-fold during that 10-years. Yet, the UK is proposing a 100-150 millisecond latency tolerance for equity CT, which is significantly slower than the real-time requirements being implemented in the US.

⁷² https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3369025

This print of the date and time is more for the show than anything concretes in improving market data/ market structure. Whatever *'publication time'* the UK end-up with if without addressing the latency issue, would cause unnecessary confusion or misguiding consumer to falsely believe in the quality of equity CT.

The FCA's requires that data be provided *'as soon as reasonably possible,'* making the sequence of execution supposed to be more crucial than the time of publication. This UK standard is worse than the US Market Data Infrastructure Rule §242.603(b) that *'requires SRO to provide ... to all CCs and SAs in the same manner and using the same methods ... as such SRO makes available any information to any other person.'* Collocation ≠ Latency Equalisation ≠ Market Data Available SECURELY in SYNCHRONIZED TIME. Again, NASDAQ's equalisation project in removing its dedicated GPS antenna may ease conflicts among subscribers of collocation service. Yet NYSE's rooftop antenna service remains a controversy. The China Securities Regulatory Commission issued a directive banning high-frequency trading firms from using client-dedicated servers co-located within exchange data centre. It merely pushes the latency arms race to the nearest neighbourhood. Not until a mandate of market data available securely in synchronized time and the questions of who owns the data being addressed, inequitable situations would remain.

Question 27: Do you agree an equity CTP should not be required to flag trades they or an APA think are potentially incorrect? Y/N. Please give your reasons.

No, we disagree with the proposal of NOT forwarding such flag of incorrect trade reports. The US SIP does forward flags from Exchanges and Trade Reporting Facilities (TRFs) regarding trade reporting issues, including modifiers that identify trade corrections, cancellations, or special conditions. The US process is robust without introducing noise, see the NOTE in our response to [Question 11](#). Not forwarding such flag could be a cover-up detriment to the transparency goal of consumer protection.

Question 28: Do you agree data contributors should provide regulatory data on the status of instruments and trading systems to the CTP for publication by the CTP? Y/N. Please give your reasons.

Yes. However, it should not be about enabling consolidated data to be used across the UK and EU. The investment community in the UK deserve a better benchmark as in the US standards (regulatory indicators such as Limit Up-Limit Down bands, trading halts, and market-wide circuit breakers, plus specific flags for odd-lots and round-lot updates under the new Market Data Infrastructure Rules), than following the downward spiral of the EU. Delusional (difference for the sake of being different)/ slogan-based diplomacy does not serve the public any good.

During a FIX EMEA Trading Conference, an Expert from SIX highlighted that ISO-20022⁷³ is NOT suitable for low-latency, high-volume trading environment due to its verbosity and inherent latency. Embedding Market Model Typology (MMT) trade lifecycle information into real-time market data feeds introduces several inefficiencies. IFs reliant on real-time data transmission will experience latency drags when excessive classification metadata is introduced. In fact, investment firms seeking lifecycle information can already access clearing settlement records or subscribe to APA feeds, reducing the need for MMT classifications in live consolidated market data feed.

Off book on exchange OTC trades took about 10 seconds after the actual execution to be published by the APA. Then, there is the 50+/- milliseconds tolerance allowed under the faulted ESMA equities consolidated tape RTS, hundreds-of-thousands trade messages will get muss at any given point in time in the CT. Non-self-aggregating investment firms would

⁷³ <https://www.globaltrading.net/iso20022-not-suitable-for-trading-messages-fix-tech-committee-says/>

not be able to tell which message is the first, or the second, ... and which is the trigger or the end an event. Majority of investment firms will not be aware that they have been receiving inferior prices when crappy data with *'initial bias'*¹⁶ is provided by Exchanges/ APAs to the CT provider.

Question 29: Do you agree we should align our fields for regulatory data with those adopted by the EU? If not, what changes do you think we should make to the fields?

No, see our response to [Question 28](#).

Question 30: Do you agree an equity CTP should be required to make available a database of historical post-trade data? Y/N. Please give your reasons.

Yes. Historical post-trade data is useful to analyse long-term trends and assess asset volatility for risk management. We agree CTP should offer historical post-trade data as a standalone service, while allowing the flexibility to bundle with real-time data in benefiting investment firms for cost savings.

Question 31: Do you agree we should require an equity CTP to make available a database of the pre-trade data it publishes? Y/N. Please give your reasons, in particular indicating use cases you think that such a database might serve.

Yes. Historical pre-trade quote data (Level 1, 2, and 3) is crucial for back-testing algorithmic trading strategies, analysing market liquidity, and calculating transaction cost analysis to evaluate execution quality.

Question 32: If you agree with Question 31, do you think the coverage of the pre-trade database should be restricted and, if so, how?

The UK FCA may consider the following as a reference. The US SIP provide historical, consolidated trade and quote data, including pre-trade, often dating back to 2007 for certain revenue and market data metrics. While specific, high-fidelity tick-by-tick pre-trade data for analysis is typically available from secondary market data vendors rather than the CTP for shorter periods (e.g., 30 days to 6 months), broader historical price and volume data for analysis can span over 10 to 30+ years (e.g. one-minute data from 1991).

Question 33: Do you agree SYSC 15A should apply to a single equity CTP? Y/N. Please give your reasons.

Yes, we have no objection with SYSC 15A. Please see this worth reading article that compares Operational Resilience in the EU, UK and US.⁷⁴ CT as a critical infrastructure for the UK, the builders and policy makers ought to have the long-term vision to plan for the demand in future, not dragging its feet on outdated standards.

⁷⁴ <https://www.whitecase.com/insight-our-thinking/financial-regulatory-observer-2022-operational-resilience-uk-eu-and-us>



Question 34: If we were to allow multiple equity CTPs, do you think it would be necessary to apply SYSC 15A to them? Y/N. Please give your reasons.

Reference to the US Market data infrastructure rules, all Competing Consolidators (CCs) are required to comply with Regulation SCI⁷⁵ (Systems Compliance and Integrity) to ensure the accuracy, reliability, and security of their systems. Because they will replace the exclusive SIP, their systems will be deemed critical to the US national market system. There will be a phased-in approach for implementation. The UK may apply similar approach as in the US to require multiple equity CTPs to adopt SYSC 15A.

Question 35: Do you agree with our proposal to amend MAR 9.2B.2R on conflicts of interest for CTPs? Y/N. Please give your reasons.

Yes, we have no objection with the FCA proposed amendment to MAR9.2B.2R in strengthening conflict of interest rules for CTPs, including group-level conflicts, annual review, record keeping and reporting, etc. Market participants are not *'policies'* to regulate CTP, the FCA is. The public relies on the FCA to assure that they are not scammed in the open market. Please see our response to [Question 3](#) regarding *initial bias*.¹⁶ Civilians should not be left with reading all the *'small print'* on their own.⁷⁶

Question 36: Do you agree the equity CTP should send us a report on its operation on a quarterly rather than 6-monthly basis? Y/N. Please give your reasons.

Yes, this is in line with the US SIP operating committee meetings and provide performance reports regarding their metrics and operations on a quarterly basis.

Question 37: Do you agree with our proposals to add requirements on automated alerts and a mechanism for data users to raise concerns about potential issues with the data published by the equity CTP? Y/N. Please give your reasons.

Yes, we agree with adding requirements for an equity CT to have automated price and volume alerts for potentially erroneous trades. Rather than set by various *'data contributors'*, the FCA should clearly define a unified requirements (similar to the US regulatory indicators, such as: Limit Up-Limit Down bands, trading halts, and market-wide circuit breakers, plus specific flags for odd-lots and round-lot updates under the new Market Data Infrastructure Rules) for the CTP to follow.

Reference to our response to [Question 11](#), CTP is supposed to pass along a *'duplicated positions'* flag, or such, to CT subscribers, while awaiting regulator to investigate potentially erroneous information, typically reviewing event lifecycle details in clearing and settlement system. CTP must NOT add, amend, or remove any data, except at the direction and discretion of the regulator.

Regarding a mechanism to allow equity CT users to flag to it any concerns about the data it publishes, we assume it would be similar to the mechanism used by the US SIP, where a participant (subscriber) believes the data is inaccurate (e.g., a *'stale'* price or faulty quote), they can report it to the respective Plan Administrator (CTA or UTP) for investigation. If yes, then we are okay with it. If no, the FCA should make clear the expectation and make sure that such mechanism would not

⁷⁵ <https://www.ecfr.gov/current/title-17/chapter-II/part-242/subpart-ECFRe106e84e67e2bc9>

⁷⁶ <https://www.linkedin.com/pulse/trading-venue-perimeter-whose-interest-being-protected-kelvin-to/>

be abused to waste unnecessary resources of CTP on queries that attributed to the wide latency tolerance resulting in muddled up crappy data that we already provide warning to policy makers (see our response to [Question 11](#)).

Question 38: Do you agree with our proposals for specific data quality requirements for an equity CTP? Y/N. Please give your reasons.

Please see our response to [Question 37](#) that we agree on the various requirements here. Further clarity would be appreciated on the FCA's expectation about *'a mechanism to allow equity CT users to flag to it any concerns about the data it publishes.'* The nature of these requirements in this section is deemed administrative rather than upholding a high *'data quality'* standard (please see our response to [Questions 3, 9, 11, 14, 23, 24, and 28](#) for an elaborated discussion). In short, quality without the appropriate benchmarks is NOT quality. We have been informative and the US is transparent without withholding any secret ingredients – all cited information are publicly available. The UK can freely replicate the US SEC Market Data Infrastructure Rules and Transparency of Better Priced Orders requirements as appropriate or take a leap of faith in considering our novel approach. Unfortunately, the FCA proposal copied the wrong homework from a weak neighbour. Its mindset and ambition are limited or subordinate to a European focus, preventing it from competing with the best. How sad, but it can be rectified if there is a will.

Question 39: Do you agree with removing the reference to 15 minutes in MAR 9.2B.33R(2)? Y/N. Please give your reasons.

See our response to [Question 18](#).

Question 40: Do you agree data contributors should be required to send the specified input data to the CTP and the CTP should be able to choose to receive the information in one of the ways that a data contributor currently uses to publish transparency data? Y/N. Please give your reasons.

Reference to our response to [Question 10 – Table 2](#), FIX FAST or Simple Binary Encoding is the preferred format or protocol for 'data contributors' to send data to the CTP. By ensuring all data is received in the same format, the CTP saves significant time, effort, and cost in converting it into a unified data structure for processing. Regarding the delivery via microwave, collocation, or other approaches, CTP should receive whatever the fastest feeds from 'data contributors.' The FCA should prohibit 'data contributors' from offering proprietary products that contain these 'core data' (or be it a subset of proprietary depth-of-book feeds) for pre-trade CQS or 'transparency data' for post-trade CTS, to any subscribers, self-aggregators, or their strategic partners any sooner than the CTP. Ideally, the FCA should mandate the use of TLE to make market data available SECURELY in SYNCHRONIZED time in accordance with an Atomic Clock and prohibit premature decryption of the data.

Question 41: Do you agree data contributors should not be required to send the specified input data to the CTP using a format adhering to the ISO 20022 methodology? Y/N. Please give your reasons.

Stages of development (electronification) and current market structure for equity (Trading Venues driven) and bond market (Market Makers driven) are different. ISO-20022 is NOT suitable for low-latency, high-volume equity trading environment due to its verbosity and inherent latency. Please see our response to [Question 28](#) for an elaborated discussion.

Question 42: Do you agree we should have standards on the transmission of data to the CTP across performance, reliability, security and compatibility and do you have any comments on the standards we have proposed?

Yes. The UK, US, and the EU are indifferent in terms of people jockeying around trying to make money, and different market centres use different ways to redirect order flow. The UK should depart from the faulted ESMA equity consolidated tape RTS and embrace changes similar to the US for improved market efficiency. There is no shame in replicating the success of the US Market Data Infrastructure Rules and Transparency of Better Price Orders' requirements to beef up and rectify the FCA proposals. Alternatively, the FCA may modify relevant requirements to consider our suggestion of a **NEW 'Scenario 5'** approach to *'travel light and go fast.'* The FCA has full authority to mandate proper SECURITY protection over both CT and the trading venues' PPs. Requiring SYNCHRONIZATION of both CT and PP in accordance with an Atomic Clock and prohibits the circumvention of SECURITY measures.

This is by no means asking a regulator to prescribe a certain time-lock technology. Aggregation distance/ location differential issues can be solved by TLE. TLE is NOT a speedbump. It is a method to encrypt data such that it can only be decrypted after a certain deadline has passed. The goal is to protect data from being decrypted prematurely. It would address *initial bias*¹⁶ and promote fairness. Please see our response to [Questions 3, 9, 11, 14, 23, 24, and 28](#) for an elaborated discussion.

Regarding reliability for post-trade data, reference to our response to [Question 10 – Table 2](#), MOLD/UDP 64 Protocol supports multicast transmission. The sender keeps track of the sequence numbers. The receiver reassembles the packets in the correct order using the sequence numbers. If a packet is missing or corrupted, the receiver can request a retransmission. Although UDP is inherently unreliable, MOLD/UDP 64 adds mechanisms to ensure data integrity and reliability. Each packet is assigned a unique sequence number to help the receiver track and detect any missing packets. The receiver sends back acknowledgments to confirm the receipt of data packets. If a packet is missing or corrupted, the receiver can request a retransmission. **NOTE:** How APA handles and preferences orders can impact execution quality. The FCA policy makers should monitor any potential *'preferencing'* phenomena.

In terms of compatibility, again reference to our response to [Question 10 – Table 2](#), the matter is analogized to DOBY in music, it is widely accessible because basic DOBY encoder is FREE. However, DOBY encoder is expensive, and enhanced decoders for richer sound quality require payments. There are plenty of FREE opensource encoder/ decoder, yet compatibility is a concern.

Question 43: Do you agree with having the same requirements on the formats for the dissemination of the equity CT as the bond CT in the UK? Y/N. Please give your reasons.

No, absolutely NOT. Please see our response to [Questions 3, 13, and 28](#) for an elaborated discussion. In short:

Amid some cost savings where bond and equity CTs may serve as a contingent site for each other and share certain infrastructure. Yet, if equity CQS and CTS can be the contingent site for each other, there is no need to leverage the bond tape infrastructure (see our response to [Question 4](#)). The definition of *'real time'* for equity CT should NOT be the same for bonds. Stages of development (electronification) and current market structure for equity (Trading Venues driven) and bond market (Market Makers driven) are different. ISO-20022 is NOT suitable for low-latency, high-volume equity trading environment due to its verbosity and inherent latency.

The UK proposed latency tolerance of 100-150 milliseconds is like forever for equity trading. Pre-trade equity CQS and post-trade CTS should have different latency standards. Self-aggregators' experience, existing market data vendors' non-display ultra (sub-micro second) or low-latency feeds performance (Exegy [Novasparks, Enyx, Vela], McKay Brothers

[Quincy Data], Hyannis Port Research, Pico [Redline, Corvil], QUODD [Xignite], Xyt, SpiderRock, Anova, BMLL, IRESS, BAHA [Quanthouse]), and infrastructure providers' capabilities (COLT [PrizmNet], IPC) should be used as benchmark reference. Quality without the appropriate benchmarks is NOT quality.

If UK want to include other data aggregators, such as Etrading Software (winner of UK Bond tape), Ediphy, Propellent, etc. as potential bidders for the equity CT, they together with EuroCTP should demonstrate the ability to provide a low-latency non-display feed at no more than 20-40 milliseconds latency performance or else be disqualified.

Question 44: Do you agree with reducing the notice period a CTP for bonds or equities should give of price changes to 30 days? Y/N. Please give your reasons.

Yes, to a degree it is effective in achieving the regulatory goal of *'affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users.'* Reference to our response to [Question 17](#), equity CTP should have the flexibility to vary the enterprise-level licensing fee depending on the level of non-display low latency pre-trade data subscriptions in subsidizing the display pre- and post-trade data subscriptions.

No, if the UK equity CTP is controlled by a single or a consortium of Exchange Groups or their affiliates. To curb exploitations and minimize further increase in market data and connectivity costs, a price drop should be permitted with a 30-day notice period, a price increase should require at least a 90-day notice period and subjected to the FCA approval.

Question 45: Do you agree with our proposal to amend MAR 9.2B.14R, MAR 9.2B.33R(3) and MAR 9.2B.38R so they apply to the equity CT and/or CTP? Y/N. Please give your reasons.

MAR 9.2B.14R: Business Continuity and IT Systems – Yes.

MAR 9.2B.33R(3): Governance and Management Body Duties – It depends, see our response to [Question 17](#). In particular, the composition and the organization of a consultative committee of market participants may vary, given the market structure differences between bond and equity. We criticize the US SEC's initial proposal (2/3 SROs and 1/3 non-SROs is worse than the 50/50 split in the 1970s Jukebox era for the music industry)⁷⁷ and the current CT Plan. In this July 2022 article,⁷⁸ we explained why CT-Plan *'governance oversight'* were struck down in US Court of Appeal⁷⁹ and the CT Plan revised version would not yield the desire result in lowering market data costs. Unfortunately, our prediction matches the current reality of US SIP proposing price increase. What the market needs is a solution provider whom understand time-lock encryption; a good data modeler who knows about consistency, performance degradation, B trees/ LSM/ Fractal tress, careful of what being parsed in-memory, read/write, partitioning and whatnot to tune a lossless or lossy feed faster than *'FIX Fast'* format, assuming all Field Programmable Gate Arrays (FPGAs) hardware acceleration being equal; as well as someone who has the business sense to contrive a new mechanism to replace the skewed rebates, payment for order flow and other distorted incentives that weed out conflicts of interest and promote FRAND. We, at [Data Boiler](#) know enough of the above to discern what works and what does not.

MAR 9.2B.38R: Market Data Costs – Cost-based pricing and reasonable margin is fine. Yet joint-costs are the puzzling piece where there could be endless arguments as we highlighted in our response to [Question 20](#). The US CT Plan operating committee selected an *'Administrator'* but refused or were unable to address the line-drawing issues about *'derived data.'*

⁷⁷ <https://www.linkedin.com/pulse/new-administration-showcases-what-governance-means-kelvin-to/>

⁷⁸ <https://www.linkedin.com/pulse/market-data-reform-without-ct-plan-kelvin-to/>

⁷⁹ [https://www.cadc.uscourts.gov/internet/opinions.nsf/265FAD4E1FDE293F85258876004F2CF9/\\$file/21-1167-1953361.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/265FAD4E1FDE293F85258876004F2CF9/$file/21-1167-1953361.pdf)



Sources of the problem are being invited to administer/ enforce an inequitable scheme. Hope the UK FCA would not forget these acknowledged concerns: *'onerous administrative obligations on data users; ambiguous language in the agreement; frequent unilateral amendments to the agreement; general lack of transparency on terms and conditions; excessive fees; increase of fees through penalties; and overly burdensome audits.'* We reiterate that a copyright licensing mechanism following a four-part test standard – (1) willing seller, willing buyer; (2) same parties' test; (3) 'effective competition' test; and (4) same rights test – is the ONLY effective way to settle the disputes about who owns the data, what gets paid and who get what.

Question 46: Do you agree firms should consider whether using CT data can improve their best execution arrangements and monitoring but there is no need to add a provision in the Handbook on this? Y/N. Please give your reasons.

If not adding specific provisions to the FCA Handbook on best execution and the CT, it indirectly or implicitly infers or in effect similar to the EU ESMA *'tweaked'* execution policy standards (BestEx obligations on investment firms would be enforced based on some disputable 'flags' in trade reporting disclosure) and declared that they will NOT rely on CT to enforce consistency.

The UK does want the equity CT to offer a real NBBO as reflected by the requirement that *'data is provided as soon as reasonably possible, making the sequence of execution supposed to be more crucial than the time of publication,'* amid this UK standard is behind the US Market Data Infrastructure Rule §242.603(b) that *'requires SRO to provide ... to all CCs and SAs in the same manner and using the same methods ... as such SRO makes available any information to any other person.'*

Given Brexit, the UK has complete autonomy to develop its own BestEx rules, determines the right level of order protection or prohibition of trade-through,⁸⁰ deals with the controversy of access fee rebates,⁸¹ payment for order flow, and other market structure matters (e.g. mandate the SECURE availability of market data in SYNCHRONIZED time) without the need to consult with the EU or other jurisdictions. So, please adopt a tighter latency requirement, latency tolerance of 100-150 milliseconds is way below par. At max it should be no more than 20-40 milliseconds, if not attaining to the US SIP performance 5 years ago of 0.015 millisecond and is still improving. Delusional (difference for the sake of being different)/ slogan-based diplomacy does not serve the public any good.

Please make it obvious that the equity CT and UK NBBO is the anchor reference, NOT just *'a potential source'* of relevant data for well-run best execution arrangements and monitoring. The public does look up to the FCA in revitalizing trust in capital markets via the development of CT, rather than leave it to the intermediaries to consider whether the equity CT can help them meet their best execution obligations or not. ESMA already set a bad precedent. We have faith that the UK would do better job than the EU in development of both bond and equity CT development.

Question 47: Do you agree we should delete references to a CTP in the UK version of RTS 3? Y/N. Please give your reasons.

We have no comment for this question 47 about deleting references to a CTP in the UK version of RTS 3.

⁸⁰ https://www.databoiler.com/index_htm_files/DataBoiler%20Order%20Protection%20202509.pdf

⁸¹ https://www.databoiler.com/index_htm_files/DataBoiler%20SEC%2020240105%20Volume-Based%20Pricing.pdf

Question 48: Do you agree the equity CTP, and APAs in relation to equity trades, should be subject to the same clock synchronisation requirements as trading venues? Y/N. Please give your reasons.

Yes, it is a must for both pre- and post-trade equity CT. Particularly for a CTP pre-trade consolidated quote system, we recommend the use of Precision Time Protocol (PTP) to synchronize networked clocks to sub-microsecond or nanosecond accuracy. Recap to our response to [Question 10](#), one cannot argue against the IEEE1588 international standard for PTP superiority over Network Time Protocol (NTP). PTP-enabled network switches and high-precision network interface cards are in the thousand(s) of dollar range each. High precision can be very affordable. Focus should be on the proper configuration, monitor and maintenance of performance to minimize latency and maximize accuracy to meet the regulatory goal of timestamp granularity of 0.1 microseconds. Tolerance would exacerbate *'initial bias,'*¹⁶ damaging market integrity and undermining consumer protection.

Cost Benefit Analysis (CBA) Questions

CBA Question 1: Do you have any comments on our cost benefit analysis?

Yes. Unlike the Bond Tape where the key issue is about reference data, equity CT is predominately about latency, bandwidth, and capacity to handle peak volume working in line with volatility interruption mechanism. Equity CT's CQS and CTS should have different latency standards. Also, CQS and CTS have non-display and display subscription options for different prices and latency speeds.

There is no good reason for the *'survey'* to include [Scenario 3](#) other than using it as to create a *'Decoy Effect'* (a.k.a. asymmetric dominance effect). This mid-range Scenario 3 was introduced as a decoy option that is significantly more expensive but offer very few additional benefits over the basic top-of-book version ([Scenario 2](#)). Then, by leveraging *'price anchoring'* where the 5-price level version ([Scenario 4](#)) is misrepresented to have a higher than reasonable costs when it is NOT and/or undermine the benefits of non-display low latency subscribers subsidising the subscribers of display feed for equity CT, it confused the UK public and swaying or causing *'cognitive bias'* towards Scenario 2.

[Scenario 2](#) contains less data and is less comprehensive (UK and EU have no requirement to compute multiple *'round lot'* tiers for meaningful rather than phantom liquidity) than the US SIPs. Given the FCA proposal does not require revenue sharing arrangements between the equity CTP and *'data contributors,'* other than any out-of-pocket cost for testing the connection, etc, the annual running cost should be comparably lower than the *'Tech / Running cost'* of US SIP (i.e. should be below US\$27 million or £20 million).⁸²

Equity CT must be a product of reasonable compromise, if not a close substitute, to Trading Venues' proprietary feeds or APAs' value-added services to achieve the regulatory goal of *'affect competitive pressures for existing seller of market data, resulting in cheaper, higher quality and more accessible data for its users.'* PTP-enabled network switches and high-precision network interface cards are in the thousand(s) of dollar range each. High precision can be very affordable. A self-aggregator or ultra / low latency vendor can simply replicate their current UK/ EU practices or upgrading their systems that support the US MDIR and TBPO requirements to customize for adoption in the UK. Indeed, copying others' success story is much easier and cheaper than reinventing the wheel.

The faulted ESMA equity RTS is untested and things would be required to be built from scratch, a substantial portion of EuroCTP's cost would be spending on AWS cloud services. Crappy data (i.e., 100,000 messages at any given point in time

⁸² <https://www.nasdaq.com/articles/sip-accounting-101-2021-03-25>



that mused everything up given the 100-150 milliseconds latency tolerance) exacerbates gap between proprietary products and CT.

The cost benefit analysis underestimated the negative consequences if UK opted to follow the EU's downward spiral path. Market data cost in UK in average would go up by at least 5 to 10% rather than go down if FCA adopted [Scenario 2](#) as-is. Participants would lose faith in both the UK and EU abilities to deliver a truly usable equity CT and the integrity of Europe markets. Delusional/ slogan-based diplomacy exacerbates mistrust of the government and erode market integrity. It is the opposite of the UK strategy 2025-2030 about deepen trust and rebalance risks to support growth, help consumers, fighting crime. The FCA current proposal defeats the goal of *'levelling the playing field.'* It fails to meet UK's regulatory objectives of *'enhancing price discovery and market competitiveness.'* The only interested parties to seek trading opportunities in UK and EU would be those who can exploit and segment order flow away. Inadvertently, the negative sentiment or mistrust regarding UK and EU capital markets may spread globally, resulting in a contraction of traditional asset markets and a migration of capital toward crypto, alternative assets, or online gambling.

Our counter suggestion of a **NEW [Scenario 5](#)** suggests mandating proprietary feeds and CT market data to be available securely in synchronized time (in accordance with an Atomic Clock and prohibits the circumvention of security measures) and address the questions of who owns the data. This is an opportunity for the UK to lead the world and have friendly competition with the US. By doing so, it eliminates the problem of where the CT data centre is located (cost saving by locating CT away from the most expensive prime zone and is fair). UK would truly be protecting consumer, improving fairness and market integrity, significantly increasing the UK's competitiveness, attracting investments, and deepening natural liquidity to grow the overall pie in benefiting all constituents. It is ten times better than the quantifiable net benefits stated under the FCA's 4 scenarios.

Please also see our response to [Questions 3, 9, 10, 11, 14, 23, 24, and 28](#).

CBA Question 2: Do you agree with the assumptions made in our cost benefit analysis?

No. Other than the Oliver Wyman estimates, we have reservations with Adamantia, Market Structure Partners, and Europe Economics (2024) reports. Neglecting how self-aggregators and ultra / low-latency vendors can consolidate data in justifying their costs is a big mistake in the assumptions. If one firm can justify all these infrastructure telecom costs by itself, it should be able to share the same setup and make a profit in becoming a CTP. However, becoming a CTP goes against their self-interests.

Reference to our response to [Question 14](#), market data vendors, particularly those who provide ultra or low-latency feeds, as well as transaction cost analysers, smart order routers, outsourced execution service providers profit from market fragmentation. It is more lucrative to serve selected investment firms that paid them a premium than becoming a CTP in risking their relationships with Exchange Groups and Wholesalers.

Unless there is a higher incentive to make it worthwhile for these ultra or low-latency market data vendors or infrastructure providers to compensate their opportunity loss, their services would remain a complimentary product or value-added service instead of competing with Exchanges' proprietary products.

Over half a century has passed since Electronic Communication Networks disrupted the traditional floor-based model of stock exchanges. Venue-by-venue competition and fair price formation across securities markets turned into a latency arms race. A decade ago, former US SEC Chair Mary Jo White famously said, *'deemphasize speed as a key to trading*

success.⁸³ Only until recently the US implemented Market Data Infrastructure Rules that we criticized that it does not go far enough on the latency requirements.

With stock exchanges optimally restricting access to price information by exploiting the inelasticity in demand of proprietary products, in turn, many choose to collaborate with the Haves for outsourced execution rather than compete.⁸⁴ Today's market centres are analogous to Private Clubs. Some ultra / low latency data vendors and infrastructure providers are sponsored / funded by or affiliated with for example: BlackRock, Fidelity, Goldman Sachs, JPMorgan, Wells Fargo, UBS, Nomura, DRW, CTC, CMT Capital, Simplex Invest, Apex, LSEG, Susquehanna, XR Trading, Jane Street, etc.

In the quest to gain an edge over competitors, trading venues offer different rebates (e.g. enhanced market-making discount), introduce a speed bump (e.g. liquidity enhancing access delayed), proliferate order-types (e.g. midpoint-extend-life order), come up with new business models (e.g. market-on-close) and create other privileges (e.g. exclusive access to certain pegging orders). One size does not fit all.⁸⁵ The equity market is converging from latency to Artificial Intelligence (A.I.) algo driven.

The typical AI use cases include: (a) usage of GenAI and natural language processing tools to extract and summarize information from multiple sources for investment research; (b) Robo-advisory; (c) automating the regulatory research and compliance process; (d) big data credit models; (e) automating repetitive back-office tasks for operational efficiency; (f) chatbots for client services, etc. We are aware that some are experimenting with how machine learning can improve their portfolio management model in further optimizing asset allocation and rebalancing processes. Elites market makers, high-frequency trading firms, quant funds, multilateral trading facilities are using advanced AI/ machine learning for algorithmic trading, identifying toxic versus natural liquidity, adverse selection detection, etc.

Policy makers should incentivize innovations to overcome the high switching and connectivity costs, as well as learning about nuances like trade-out, allocation, anti-gaming, adverse selection, pool vetting, etc. For example, Model Context Protocol (MCP) works like a USB-C connector to ease some of the API costs. MCP accommodates latency draft and can be used for cross-venue price discovery. AI agents reconcile fragmented quotes in conjunction with MCP's context-rich orchestration that respect execution preference, data providers' paywall integration, and how HFTs may monetize microstructure inefficiencies in real time with MCP are to be wait-and-see.

Latency equalization attempts merely pushes the latency arms race to the nearest neighbourhood. Not until a mandate of market data available securely in synchronized time and the questions of who owns the data is addressed, inequitable situations will remain.

CBA Question 3: Are there any significant costs or benefits to the market that we did not adequately consider in our cost benefit analysis?

Yes. The cost benefit analysis omitted to account for the benefits of non-display low latency subscribers subsidising the subscribers of display feed for equity CT, the 'survey' confused the UK public and swaying or causing 'cognitive bias' towards [Scenario 2](#).

Learning from the EU tender process, the FCA should decipher why Xyt and BMLL and other low latency market data vendors did not bid to compete against EuroCTP. Bringing the sources of the problem to administer/ enforce an

⁸³ <https://www.sec.gov/newsroom/speeches-statements/2014-spch060514mjw>

⁸⁴ <https://www.linkedin.com/pulse/rebate-tiering-competitive-pricing-different-market-centers-kelvin-to-u6l2e/>

⁸⁵ <https://www.linkedin.com/pulse/from-latency-ai-algo-driven-capital-markets-kelvin-to-xu5te/>



inequitable scheme. It will lead to further increase in market data price, as well as exacerbate *initial bias*¹⁶ and gaps between the ‘haves’ and ‘have-nots.’ Please do NOT forget these acknowledged concerns: *‘onerous administrative obligations on data users; ambiguous language in the agreement; frequent unilateral amendments to the agreement; general lack of transparency on terms and conditions; excessive fees; increase of fees through penalties; and overly burdensome audits.’*

Delusional/ slogan-based diplomacy exacerbates mistrust of the government and erode market integrity. It is the opposite of the UK strategy 2025-2030 about deepen trust and rebalance risks to support growth, help consumers, fighting crime. As mentioned earlier, crappy muddled up data is poor quality. Scenarios 1 to 3 are NOT suitable for BestEx enforcement (see our response to [Question 46](#)). The two sought outcomes by the FCA – affordable access and comprehensive view of UK equity market liquidity would NEVER be realized or is a ‘*hallucination*’ if the government acts as a manufacturer of ‘*artificial*’ consensus instead of taking concrete actions to address the unjust situations in the markets.

We have been informative and the US is transparent without withholding any secret ingredients – all cited information are publicly available. The UK can freely replicate the US SEC Market Data Infrastructure Rules and Transparency of Better Priced Orders requirements as appropriate or take a leap of faith in considering our novel approach. Unfortunately, the FCA proposal copied the wrong homework from a weak neighbour. Its mindset and ambition are constrained by a focus subordinate to the EU, preventing the UK from competing on a truly global scale. How sad, but it can be rectified if there is a will.

Our counter suggestion of a **NEW [Scenario 5](#)** suggests mandating proprietary feeds and CT market data to be available securely in synchronized time and address the questions of who owns the data. This is an opportunity for the UK to lead the world and have friendly competition with the US. It is ten times better than the quantifiable net benefits stated under the FCA’s 4 scenarios.

Please also see our response to [Questions 3, 9, 10, 11, 14, 23, 24, and 28](#).