23 May 2024
ESMA74-2134169708-7252

Reply form: MiFIR Review

Technical Standards related to Consolidated Tape Providers and DRSPs, and assessment criteria for the CTP selection procedure

Responding to this paper

ESMA invites comments on all matters in the Consultation Paper and in particular on the specific questions in this reply form. Comments are most helpful if they:

- respond to the question stated;
- indicate the specific question to which the comment relates;
- contain a clear rationale; and
- describe any alternatives ESMA should consider.

ESMA will consider all comments received by **28 August 2024.**

Instructions

In order to facilitate analysis of responses to the Consultation Paper, respondents are requested to follow the below steps when preparing and submitting their response:

- Insert your responses to the questions in the Consultation Paper in this reply form.
- Please do not remove tags of the type <ESMA_QUESTION_CP2_1>. Your response to each question has to be framed by the two tags corresponding to the question.
- If you do not wish to respond to a given question, please do not delete it but simply leave the text “TYPE YOUR TEXT HERE” between the tags.
- When you have drafted your responses, save the reply form according to the following convention: ESMA_CP2_nameofrespondent.

  For example, for a respondent named ABCD, the reply form would be saved with the following name: ESMA_CP2_ABCD.
- Upload the Word reply form containing your responses to ESMA’s website (**pdf documents will not be considered except for annexes**). All contributions should be submitted online at www.esma.europa.eu under the heading ‘Your input - Consultations’.

Publication of responses

All contributions received will be published following the close of the consultation, unless you request otherwise. Please clearly and prominently indicate in your submission any part you do not wish to be publicly disclosed. A standard confidentiality statement in an email message will not be treated as a request for non-disclosure. A confidential response may be requested from us in accordance with ESMA's rules on access to documents. We may consult you if we receive such a request. Any decision we make not to disclose the response is reviewable by ESMA's Board of Appeal and the European Ombudsman.

Data protection

Information on data protection can be found at www.esma.europa.eu under the headings 'Legal notice' and heading 'Data protection'.

1. General information about respondent

Name of the company / organisation	Data Boiler Technologies, LLC
Activity	Other Financial service providers
Are you representing an association?	☐
Country/Region	North-America

2. Questions

Section 3 – RTS on input and output data of CTPs:

Q1: Do you agree with grounding the assessment framework of the quality of transmission protocols on the identified categories of technical criteria?

<ESMA_QUESTION_CP2_1>
Technical criteria per the ESMA/ Accenture 2023 study is generic (i.e. performance, reliability, security, and compatibility), whilst it seems missing couple of important aspects – for example, when one feed is down, should the other data feeds also be down in SYNCH to be FAIR? Amid Fair Reasonable and Non-Discriminatory (FRAND), cost and affordability of CT may consider as non-technical criteria, SECURITY and SYNCHRONIZATION are two separate but related Technical criteria that ESMA should consider. Also, should CT be a reasonable compromise if not a close-substitute to Trading Venues' proproprietary products (PPs) and APAs' value-added services (VAS) is both a technical and economic matter. The relative availability of PPs and VAS versus CT is a technical matter, for example, it may not be feasible for 80% of all market participants to connect via collocation concurrently. CT ought to meet the majority of market participants' needs, while PPs and VAS are supposed to have FAIR ACCESS if one is willing to pay a premium.
<ESMA_QUESTION_CP2_1>

Q2: Do you believe that additional categories of technical criteria should be considered for the definition of minimum requirements of the quality of transmission protocols?

<ESMA_QUESTION_CP2_2>
Yes, we recommend adding SYNCHRONIZATION and FAIR ACCESS to the list of technical criteria (see our response to Q1). We have concerns with the "minimum requirements" approach. According to this empirical study, minimum requirements for the technical criteria are barriers to innovation. Potential bidders to become CT Providers (CTPs) in the EU would prioritize

compliance over creativity. Its focus is on meeting regulatory requirements rather than exploring better ways to address problems (e.g. RTS-13 Article 10 incomplete or potentially erroneous information a.k.a. data quality issues + security and synchronization challenge amid aggregation distance/ location differential issues).

Amazon Time Sync Service provides time synchronization over Network Time Protocols. It 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. Why not learn from the current practices of High Frequency Trading firms/ self-aggregators when pursuing sub-microsecond precision?

Ecosystem degradation happens when damage is inflicted on others. Such damage can be in form of delayed access to information by subscribers of the public CTPs, while trading venues' (TVs) proprietary products (PPs) are unreasonably priced that optimally allow access to only by few elite players. It can also take the form of under developing the public SIP / CT feeds in favor of self-interest to promote PPs. Ecosystem degradation can also result in high barriers of entry, in which one must rely on certain tools (e.g., smart order routers, transaction cost analyzers, liquidity sourcing, outsourced execution services) to have a reasonable chance to survive in the market.
<ESMA_QUESTION_CP2_2>

Q3: Do you agree with the proposal of introducing a single set of requirements across the three asset classes (equity, bonds, derivatives), or do you believe that different requirements should be tailored for each asset class?

<ESMA_QUESTION_CP2_3>
We think there will need to be a "give and take" in the short term to get the CT up-and-running the soonest. It will need to remain flexible for right-course policy actions in the long term for market structure improvements. For practicality's sake and the current differences in market structure and stages of development for different asset classes, and given ESMA will appoint a single CT Provider (CTP) per asset class through a tender process, we suggest having separate requirement across the three asset classes in the short term. That being said, the increase in trading across asset classes, it may be ideal to have a CT that crosses different asset classes in the long term.
<ESMA_QUESTION_CP2_3>

Q4: Do you consider that the proposed minimum requirements for the technical criteria related to performance are technically feasible, coherent with the objective of high-quality data transmission to the CTP and in line with international standards? Please elaborate your response.

<ESMA_QUESTION_CP2_4>

We have concerns with the “minimum requirements” approach (see our response to Q2). It is worth noting that the Equity data quality issues, such as the Bershire event in June 2024, the $440 Million Software Error - Knight Capital, flash crashes, the MEME stock phenomenon, and other vulnerabilities are all related to surge in activities, spikes, outages, volatility interruption mechanisms, i.e., operational resilience (OR). It is a critical factor to the success of CT and market integrity (many still remember the LME and other cases, where some see the price and some don’t). Without appropriate load balancing, accessing the packet rate over a millisecond or sub-microsecond window, latency, capacity planning, BCP/DR, and addressing system glitch concerns, the Equity CT won’t be able to properly function.

Shying away from, or dimissing necessary discussions “operational resilience” is slowing the constructive development of Equity CT. The Berkshire case is related to NYSE volatility interruption mechanisms. If “systemic issues of data quality (‘rubbish in, rubbish out’) is within scope”, then there ought to be focus about data quality issues from the stock exchanges, not just trade reporting for OTC from investment firms. Unlike Bond and Derivatives, Equity is predominately low-touch, a few high-touch, and rarely OTC. When Trading Venues and APAs as streaming platforms themselves are not paying their royalty dues in using the creative works (order flows, not a single quote/ trade) of content creators (i.e. the broker-dealers), the situation is like a pirated copy of MP3 songs being broadcast freely at no cost to the “streamers”/ Jukebox operators. Enforcing licensing rights should cover both sides of the equation, not skewed to one side, the flawed existing TV’s licensing framework. Our point is – policy makers around the world should beaware of any digression or other tactics that prevent the proper functioning of Equity CT to achieve the policy goals.

Please be remineded, the goals of market data reforms, include, but are not limited to: ‘affect competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users’, as well as addressing concerns over market data agreements such as ”(i) onerous administrative obligations on data users, for example through frequent and detailed requests on the use of data; (ii) ambiguous language in the agreement; (iii) frequent unilateral amendments to the agreement; (iv) general lack of transparency on terms and conditions; (iv) excessive fees; (v) increase of fees through penalties; and (iv) overly burdensome audits.”
<ESMA_QUESTION_CP2_4>

Q5: Do you consider that the proposed minimum requirements for the technical criteria related to reliability are technically feasible, coherent with the objective of high-quality data transmission to the CTP and in line with international standards? Please elaborate your response.

<ESMA_QUESTION_CP2_5>
See our responses to Q2, Q4, and Q15.

<ESMA_QUESTION_CP2_5>

Q6: Do you consider that the proposed minimum requirements for the technical criteria related to security are technically feasible, coherent with the objective of high-quality data transmission to the CTP, and in line with international standards and other EU regulatory frameworks on information security (e.g. DORA)? Please elaborate your response.

<ESMA_QUESTION_CP2_6>
The proposed minimum requirements for the technical criteria related to security is insufficient.

Please see this worth reading article that compares Operational Resilience in the EU, UK and US: https://www.whitecase.com/insight-our-thinking/financial-regulatory-observer-2022-operational-resilience-uk-eu-and-us. Also, the ESMA may want to consider the US SEC latest proposed expansion to Regulation System Compliance and Integrity (SCI); related industry's feedbacks are available at: https://www.sec.gov/comments/s7-07-23/s70723.htm

CT as a critical infrastructure for the EU, the builders and policy makers ought to have the long-term vision to plan for the demand in future, not dragging its feets on outdated standards. "Obligating market data contributors to provide the CT Provider with all the market data under the new Article 22b(2) in MiFIR, in a harmonized format, through a high-quality transmission protocol, and as close to real-time as is technically possible" is problematic. "Same manner and methods" provision under the US Market Data Infrastructure Rule requirements it is merely a standard price list. Neither is it equivalent to Latency Equalization, nor can it achieve the same results as using Time-Lock Encryption (TLE) to make market data available SECURELY in synchronized time.

The former SEC Chair Mary Jo White has stated the need to "deemphasize speed as a key to trading success." TLE protects time sensitive information from being decrypted prematurely. It eliminates the problem of where the CT data center is located (Frankfurt, Zurich, Stockholm, Madrid, Bergamo). The online gaming industry is using TLE to promote fairness. This is by no means asking regulators to prescribe a certain technology. Yet, the ESMA should have authority to mandate proper SECURITY protection over both CT and the Trading Venues' Proprietary Products (PPs) and APAs' value added services (VAS), requires SYCHRONIZATION of both CT and PP and VAS in accordance with an Atomic Clock and prohibits the circumvention of SECURITY measures.

SECURITY and SYNCHRONIZATION are two separate but related technical criteria that the ESMA should consider. CT ought to meet majority of market participants' needs, while trading venues' Proprietary Products and APAs' value-added services are supposed to have FAIR ACCESS if one is willing to pay a premium..
<ESMA_QUESTION_CP2_6>

Q7: Do you consider that the proposed minimum requirements for the technical criteria related to compatibility are technically feasible, coherent with the objective of high-quality data transmission to the CTP and in line with international standards? Please elaborate your response.

<ESMA_QUESTION_CP2_7>
Compatibility, open access, and interoperability are interesting topics. 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 (see this: https://www.yalelawjournal.org/article/open-access).

It takes forever to achieve "goldensource" in harmonizing different standards around the world. Interoperability can be costly. Enterprise service "bus" (ESB) is more like a "limousine", i.e, very expensive. Mandating harmonization and normalization of data from data contributors may ease a bit on the CT Provider's ESB connectivity cost, however, it introduces latency.

Per the US SEC Commissioner Hester Peirce on her speech about Financial Data Transparency Act Joint Data Standards Proposal, she stated "Hardwiring a technology into a rule runs the risk of preserving that requirement far after that technology's expiration date… could inhibit data standards from evolving over time or force firms to maintain parallel data systems… affords some flexibility in data transmission and schema and taxonomy format standards, while specifying other data standards… Would the balance the proposal strikes allow data standards to be updated in a timely manner? If not, what would work better? How often should regulators revisit the mandated standards to ensure that they remain current? Should we build a requirement to revisit the standards into the final rule? How, if at all, will artificial intelligence or other technologies influence the need for structured data? How should we take these potential future developments into account..."

Let's consider the best design if re-building the European capital markets from the ground-up. It is not that the EU should, or should not, be a close follower to the US standard, but from a macro prospective, traditional financial industry is facing competition with decentralized finance (DeFi). If we stop innovation or carrying too many unnecessary legacies, we will lose the next generations of market partipants.
<ESMA_QUESTION_CP2_7>

Q8: Do you agree with the proposed definition of "transmission of data as close to real time as technically possible"? If not, please explain.

<ESMA_QUESTION_CP2_8>

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. Doing so could be a detriment to the fixed income markets' liquidity.

We think it is unacceptable for the ESMA to propose:
* For post-trade data, regardless of asset class, data contributors should transmit data to the CTP no later than 100 milliseconds from the execution timestamp (field 1 of Table 3 of Annex I of RTS 1 and field 1 of Table 2 of Annex II of RTS 2) for transactions executed on a trading venue and, 200 milliseconds from the execution timestamp for transactions executed OTC;
* For pre-trade equity data, considering the abovementioned high time-sensitiveness of EBBO, data contributors should transmit data to the CTP no later than 50 milliseconds from the timestamp of the submission of the order.

For fixed income market in the EU, the concept of "as close to real-time as technically possible" currently allows for a maximum delay of 5 minutes, after a less strict requirement of 15 minutes during the first three years of application of MiFIR. The UK FCA on page 19 of CP23/32 paragraph 3.34 states "the information to be disclosed include the execution time of a trade, details of the instrument being traded, price and size. They must be made available as close to real time as possible and in any case within 5 minutes of execution."

The US FINRA proposed to reduce TRACE reporting time frame to 1 minute for all TRACE-Eligible Securities, including U.S. Treasury Securities, with exceptions for member firms with de-minimis reporting activity and for manual trades, in the US. A trade association – SIFMA have stated that "the proposed 1 minute reporting rule (if) adopted (would) expose the broker-dealer community to significant liability and creating risk to the function of some fixed income markets… FINRA … should … examine impacts to liquidity, depth, concentration, and transparency …" The ESMA should observe if this FINRA proposal may or may not be approved in determining appropriate harmonization of regime or not with other jurisdictions.

For equity, when one is looking at the amount 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 thousand. The CT needs to have an effective audit trail that helps market participants better understand how the markets are operating at any given point in time. We do not want to see the EU's CT development to follow the footsteps of the US consolidated audit trail projects that wasted substantial amounts of money and has not achieved its originally stated goals. A timestamp granularity of 0.1 microseconds would improve sequencing accuracy to around a hundred of messages that happening at given point in time suitable for trade analytics in equity markets (see our response to Q38).

There are several ways to build the equity CT:
• (Post-trade) US Consolidated Audit Trail (CAT) requires Investment Firms (IF) and Self-Regulatory Organizations (SROs) to “SEND” quotes and trades information to the CAT. The system uses a Gigantic Centralized Vault approach and is the most expensive option. Yet it is ineffective (time sync is its fatal flaw) as to identify where and how trade events occurred.
• To ease the industry burden, an alternate design is to “OBTAIN” data directly at its source rather than “SEND”. This federated approach is a bespoke model. It has the benefits of consistency (economy of scale to address data quality issue) and prevents a single point of failure.
• (Pre-Trade) A third design is to learn from the High Frequency Trading (HFT) firms / self-aggregators and get down to sub-microsecond precision and fabricate with the futures / derivative markets. This could be the most powerful in terms of detecting market manipulations even ahead of the stock exchanges.
• Last but not least, build something like the US Securities Information Processors (SIPs). Hopefully the EU equity CT will have better performance than today’s SIPs. NOTE: there was a NYSE Tape A (one of the SIPs) issue in June this year where the Berkshire price was published erroneously down 90+%.

The above 4 options have various pros and cons, and the corresponding costs vary significantly. Also, whether top-of-book is enough or number of price levels (depth-of-book) is required by who (e.g., hedge funds / performance optimizers would want the full depth for FREE while their demand of exchanges’ proprietary feeds is inelastic). There is latency implication with expanded core data (5 price levels and odd lot) as in the US Market Data Infrastructure Rule. Requirements such as latency, time sync, security and resilience affect the build out and maintenance costs of the pre- and post-trade CT.
<ESMA_QUESTION_CP2_8>

Q9: Should ESMA consider specific rules for real-time transmission of transactions subject to deferred publication?

<ESMA_QUESTION_CP2_9>
See our response to Q8.
<ESMA_QUESTION_CP2_9>

Q10: Do you agree with the baseline proposal of adopting JSON as standards and format of data to be transmitted to the CTPs, or do you prefer alternative proposals? Please justify your answer and, if needed, provide additional advantages and disadvantages related to each proposal.

<ESMA_QUESTION_CP2_10>

Transmission and Availability are two different things. It is worth rethinking whether data should be required to be sent to the CTP and the whole concept of “Trade Reporting”. Instead of “SEND”, “OBTAIN” or read-only permission to “wiretap” data legally at its source is a better approach. Wiretapping is the fastest approach and would eliminate the intermediaries. In addition, it has the following advantages:

• Benefits of Consistency – the economy of scale for centralized data management, minimize data-in-motion for cybersecurity and privacy protection, data quality is no longer a problem because what being shared is fair to everyone, avoid conflicts/ arbitrations between multiple versions of truths.

• Prevents a single point of failure – when one intermediary is down, X # of Investment Firms (IFs)’ data would be missing. While one IF’s connection with CTP is down, the implication is far less. When the CTP is down, the experience will be consistent for everyone, rather than some having the information, and some do not.

• Values of Bespoke Model connecting to everyone – enable the direct administration and enforcement of rights and obligations, mass customization through the powerful infrastructure, no melding nor favoritism by intermediaries to distort or subjectively allocate incentives.

The "same manner same method" provision under the US SEC's Market Data Infrastructure Rule (MDIR) ≠Collocation ≠ Latency Equalization ≠ Market Data Available SECURELY in SYNCHRONIZED TIME. Please see our response to Q8.

“Wiretap” data legally from original source is the fastest. If we were to choose between FAST/SBE, we’ll pick FAST/SBE for pre-trade. If we were to ask to choose between XML versus JSON, XML is preferred over JSON in harmonizing with the US regulatory standard for post-trade.
<ESMA_QUESTION_CP2_10>

Q11: Do you believe that the proposed standards and formats (baseline and any alternatives) are coherent with other CTP requirements (transmission protocols, real-time transmission and presentation of output data)? Please justify your answer.

<ESMA_QUESTION_CP2_11>
No, see our responses to Q8, Q10, and Q15.
<ESMA_QUESTION_CP2_11>

Q12: Do you find more suitable to prescribe one single format across the 3 CTPs (equity, derivatives, bonds) or to prescribe distinct formats according for different asset classes?

<ESMA_QUESTION_CP2_12>
Absolutely NOT. For practicality’s sake and the current differences in market structure and stages of development for different asset classes, and given ESMA will appoint a single CT Provider

(CTP) per asset class through a tender process, we suggest having separate requirements across the three asset classes. See our responses to Q8 and Q15.
<ESMA_QUESTION_CP2_12>

Q13: Do you support the proposals on core and regulatory data? In particular, are there other relevant fields to be added to the regulatory data? Furthermore, would you propose the inclusion of supplementary fields for input core market data beyond those intended for dissemination by the CTP?

<ESMA_QUESTION_CP2_13>
What is, or is not, core data for equity is a big question mark. For example, whether top-of-book is enough or number of price levels (depth-of-book) is required by who (e.g., hedge funds would want the full depth for FREE while their demand of exchanges' proprietary feeds is inelastic). There is latency implication with expanded core data (5 price levels and odd lot) as in the US Market Data Infrastructure Rule. Without specifying the details (e.g., level 1, level 2, or level 3 data) of what is "the depth of trading interest at those prices", in RTS adopted pursuant to Article 4(6)(a) for Equity, this indeed illustrates the need to have separate requirements for different asset classes, rather than prescribe one single format across the 3 CTPs. Also, is CTP allowed to provide value added services (VAS), such as disseminating a subset of securities' data, in additional to their obligation to disseminate all instruments' data that are within scope of the same CT asset class? We cannot support the proposals on core and regulatory data because it is incomplete and missing relevant contents to cover equity markets activities.
<ESMA_QUESTION_CP2_13>

Q14: Do you support the proposal of machine-readable and human-readable formats outlined in this section?

<ESMA_QUESTION_CP2_14>
Machine readable and CSV format are okay.
<ESMA_QUESTION_CP2_14>

Q15: Do you agree with the proposal of data quality measures and enforcement standards for input data?

<ESMA_QUESTION_CP2_15>
There is a famous saying in the Quality / Six Sigma Black Belt Quality Champion arena, quoted "Quality without appropriate benchmark is NOT quality." Jargons and phrases, such as "comprehensive", "accurate", "consistent", and "timely record of liquidity available across the

market" does not help define "sufficient data quality" if it lacks appropriate substance for the equity CT to properly function resiliently.

CT needs to have an effective audit trail that help market participants better understand how the markets are operating at any given point in time, determine which message was reacted to, which message initiated something, which message ended something. If this "tape of record" cannot achieve that, it is USELESS for both market participants and regulators in terms of locating available liquidity and understand market events in the correct sequence of messages and trade surveillance/ market monitoring purposes.

"Identify accessible liquidity" in equity markets is easier said than done; liquidity sourcing, smart order router, outsource execution services all require connections with most if for all trading venues using low latency feeds and sophisticated algorithms (analogous to automated sweep like shopping for hotel/ air ticket at various travel sites to fulfill the BestEx responsibility). Not sure if "holding agents/ brokers accountable for performance in terms of accessing liquidity" means regulatory burdens on market participants for requirements similar to the US FINRA Best Execution rule 5310 or the US SEC proposed Regulation Best Execution, but this matter is clearly outside scope of the Equity CT. I cannot comprehend how anyone would mix-up the commonly understand process of "managing liquidity risk" (funding, duration gapping) by banks, broker-dealers with their using the post-trade Equity CT as a mean for trading desk controls, risk management (market risk, credit risk) and compliance purposes. Pre-trade Equity CT for trade purpose should still be within scope to achieve policy goals.

Please do not get us wrong, we are trying to manage the expectations of what the Equity CT can or cannot, should or should not do. Regarding duplicate trades, "POSS DUP" is important to those reporting the data and those processing the data in the US. If one has an issue when reporting and are unsure if they sent the trade in already its marked "poss dup", notifying the Securities Information Processor (SIP) and regulator that the trade may have been reported already. The US SIP may forward the "poss dup" along to recipients as they may be unable or unaware if the trade was actually reported. Recipients then process the information as potentially questionable. In the US, if there is an issue often the secuirty is paused (trading halt), data is examined and erroneous trades are taken down (canceled) all done at the direction of the regulators.

A CTP can have cybersecurity defense mechanism to defense against hackers pretending to be a stock exchange to flood an incoming feed to CTP with spams. Yet, to have real-time mechanism to detect "duplicate trades", there may be many false positives/ false negatives due to clock synchronization issue. Also, it would cause latency issue hurting CTP subcribers. If the "duplicate trades issue" is referring to APAs flagging problem, then regulators have existing authority to order the APAs to improve, thus this matter may be out of scope.

Inability to handle massive messages volume resiliently is a fatal flaw to cause incomplete or potentially erroneous information enter into and/or publish on the tape (RTS 13 Aricle 10). Unlike

Bond and Derivatives, Equity is predominately low-touch, a few high-touch, and rarely OTC. Operational resilience is a critical factor to the success of Equity CT and market integrity (many still remember the LME and other cases, where some see the price and some don't). Without appropriate load balancing, accessing the packet rate over a millisecond or sub-microsecond window, latency, capacity planning, Business Continuity Planning (BCP) / Disaster Recovery (DR), and addressing system glitch concerns, the Equity CT will NOT be able to properly function.

When is the EU standard become so low that "rubbish in, rubbish out" may even be acceptable?! It seems all one sided to blame investment firms for data quality issues in OTC equity trade reporting, when erroneous situations are mostly related to stock exchanges and other system issues. In June this year, the US consolidated tape A has the Berkshire price published erroneously down 90+%, which is related to NYSE's limit-up limit down volatility interruption mechanisms. Also, there are the $440 Million Software Error - Knight Capital, flash crashes, the MEME stock phenomenon, and other vulnerabilities. They are all related to surge in activities, spikes, outages, volatility interruption mechanisms, i.e., operational resilience.

When one is looking at the amount 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 thousand. The CT needs to have an effective audit trail that helps market participants better understand how the markets are operating at any given point in time. We do not want to see the EU's CT development to follow the footsteps of the US consolidated audit trail projects that wasted substantial amounts of money and has not achieved its originally stated goals. A timestamp granularity of 0.1 microseconds would improve sequencing accuracy to around a hundred of messages that happening at given point in time suitable for trade analytics in equity markets (see our response to Q38).

I cannot comprehend why the ESMA would state in paragraph on page 34, quoted "Just as APAs ensure the accuracy and integrity of trade reports received from investment firms, CTPs are tasked with maintaining the quality of trade data received from trading venues and APAs." If APAs can effectively achieve the market data reform goals, such as 'affecting competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users', as well as addressing concerns over market data agreements such as: "(i) onerous administrative obligations on data users, for example through frequent and detailed requests on the use of data; (ii) ambiguous language in the agreement; (iii) frequent unilateral amendments to the agreement; (iv) general lack of transparency on terms and conditions; (iv) excessive fees; (v) increase of fees through penalties; and (iv) overly burdensome audits", then there is no need to build CT. Many of these cited problems indeed rooted from trading venues and their affiliated vendors.

It makes more sense if the EU's quality benchmark is to be at par or better than the performance of US Securities Information Processors (SIP). It would also be good if the EU's quality benchmark is against the High Frequency Trading (HFT) firms / self-aggregators for sub-microsecond precision, because the CT would become so powerful that it may detect market manipulations even ahead of the stock exchanges. The RTS with respect 'Data quality measures and enforcement standards' for equity CT need an appropriate benchmark and overhaul.
<ESMA_QUESTION_CP2_15>

Q16: Do you agree with the proposal of data quality measures for output data?

<ESMA_QUESTION_CP2_16>
If the CT is a "tape of record", it should have an effective audit trail that help market participants better understand how the markets are operating at any given point in time, determine which message was reacted to, which message initiated something, which message ended something. We do NOT see substance in the EU equity CT plan that matches to the word "Quality", except in Q38. So, we disagree with the proposal of data quality measures for output data for Equity CT.

Reasonable Commercial Basis (RCB) would NOT help the industry. Inequity cannot be measured by accounting costs. It only benefits the big law and consulting firms and enforcers of existing flawed licensing framework. They may even use this compliance requirement or added cost to implement and comply with the RTS, further raising prices on market data and related services. If the 'rubbish in, rubbish out' mentality dictated the output quality for the EU equity CT, VERY SAD! See our response to Q15.
<ESMA_QUESTION_CP2_16>

Section 4 – RTS on the revenue distribution scheme of CTPs:

Q17: On the basis of the issue presented in the above paragraph, what do you think is the right approach to identify a trading venue and group? How could a trading venue and a group be identified? How should the links with investment firms be determined?

<ESMA_QUESTION_CP2_17>
Root of the market data problem is 'Who owns the data' and who gets what. When one is not required to pay for the use of others' intellectual property, streamers would exploit the content creators with rent seeking behaviors and/or selectively paying rebates and other perks to the elites like George Orwell's 'Animal Farm'. For-profit exchanges or integrated conglomerates are operating a "Jukebox model" to extract rent, hurting all, but mostly the smaller market participants. If EU wants to bypass the exchanges then the CTP needs to identify each market participant, otherwise Market Identifier Codes (MICs) in the EU and UK and MarketID field in the US can be

used to identify a trading venue and group. “What do you think is the right approach to identify a trading venue and group? How could a trading venue and a group be identified?” are not the right questions to ask with respect to the Equity CT’s revenue sharing scheme. See our responses to Q18 and Q19 for an elaborated discussion.
<ESMA_QUESTION_CP2_17>

Q18: Do you agree with the above assessment? If not, please explain.

<ESMA_QUESTION_CP2_18>
We are appreciative of the assessment, but NOT convinced that the proposed RTS on the revenue distribution scheme is equitable. We like the aspects where small trading venue and young instruments are being considered with weight factors. The ESMA proposal also include an incremental reward on top of trading volume for pre-trade transparency. The US Securities Information Processors (SIPs) revenue calculation does not provide that, while it is an obligation on the Self-Regulatory Organizations (SROs) to provide pre-trade data.

Still the EU revenue redistribution scheme largely replicates the flawed revenue sharing model of the US SIPs. Contracts established on an unjust foundation is indeed no good no matter how a regulator may want to tweak specific terms and conditions, it only reinforces the wrong ownership of data without appropriate delineation of rights and obligations. Market data, BestEx disclosure, access fee rebate, payment for order flow (PFOF), and other market structure issues are all intertwined. Schwab’s empirical evidence proves 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. The problem with both the US SIP revenue sharing scheme and the EU revenue redistribution scheme is that the true “market data contributors” is not well-defined. CTPs may reward and penalize the wrong parties. Policy makers must first address the question of ‘who owns the data’.

For example, would fund companies need to assert their physical ownership of self-generated fund and trade data by restricting the data vendor from reselling their own data before they send the data? “Case at point would be fund data given today for free to Morningstar, except in Denmark where Morningstar is paying today the local industry owned Fund Connect platform for getting the DK fund data.” The current licensing framework for market data is flawed.

Who owns the data? Should market participants be compensated, and how, when aggregators sell market data? While every market participant negotiates to be more equal for lower fees, higher rebates, more incentives, and other privileges, who dictates the outcome, how conflicts will be addressed, and what constitutes as unreasonable, unfair and/or discriminatory? When accessing the Values of Composing Trades to determine who gets what, has anyone forgotten that the traders and algorithm developers are indeed the composers deserving the most credit?

The Music Industry's licensing framework has been proven successful. It has over a half century of litigations experience to align rights and obligations globally. We have learned that, when one is not required to pay for the use of others' intellectual property, streamers exploit the content creators with rent seeking behaviours and/or selectively paying rebates and other perks to the elites.

We picture traders as performance artists, algorithm developers (including the risk control professionals) as musicians, composers, and sound engineers producing songs, and their respective financial institutions as record label companies. Trading venues (TVs), including Regulated Markets (RM), Multilateral Trading Facilities (MTFs), Systematic Internalisers (SIs), Designated Publishing Entities (DPEs), or Approved Publication Arrangements (APAs) are streaming platforms, not content creators. Or else, they should not immune from liabilities if the contents that they stream may cause market chaos or manipulation.

Agency trading, retail brokerage, order routers or other non-algorithm market participants to some extents are functions like the "non-featured" musicians or "DJ mixing engineers". They typically earn the 5% in the music industry, and the remaining 95% would be a "pass-through" payment to the original "content" creators. For example, 20 days' trade/ order sequence per month; the equivalent to twenty songs; and a retail broker might keep 5% of the royalty. The retail broker would have discretion to determine how the remaining 95% "pass-through" would be allocated. For example: (i) fee/ commission waiver; (ii) designate the restricted fund to investor education programs; (iii) rebate directly back to the end investors, etc. Different retail brokers can have different reward programs – by quotes / trades contribution, different rate for different classes of liquid or illiquid securities, etc. Terms and conditions of rewards, fee waivers, and/or investor education programs must be fully disclosed and be subjected to audit to ensure no retention of the "pass-through" money by the retail broker. A rule of thumb under this hypothetical model is: 5% performance royalty for each layer of data aggregation.

Original content creators who compose quotes and trades should be entitled to copyright royalties. Trading venues and APAs should bear royalty payments and earn appropriate subscription fees to cover their cost. Nevertheless, the Facebook case affirmed that data should be owned by "content creators" instead of the streaming platforms. We strongly suggest that policy makers revisit the definition of Market Data Contributors (MDCs) when considering a revenue-sharing scheme for CT.

We despise regulatory price control (https://www.cato.org/commentary/problems-price-controls). We advocate for a "4-part test" that taken directly from the music industry's copyright laws. "4-Part Test" deemed an agreeable principle universally – (1) willing seller willing buyer standard; (2) same parties' test; (3) "effective competition" test; and (4) same rights test. It is time-tested and simple enough to be used by the Music Industry.

What gets paid and who gets what should NOT be dictated by regulators NOR by a small group of people in a "governance committee". The US SEC's CT-Plan is problematic, The US D.C. Circuit ruling in July 2022 weakens the already weak proposition of the SEC's governance requirements over the equity CT-Plan. The US decentralized competing model (DCM) of 2/3 Self-Regulatory Organizations (SROs) and 1/3 non-SROs representation in the operating committee cannot be executed. The SEC prescribed minimum terms and conditions for CT-Plan Version 2 in replacing the non-SRO representation provisions are ineffective (see this).

As long as the CT is NOT in competition with Trading Venues' Proprietary Products, and/or the dominant Trading Venues and APAs incur almost no incremental cost to become a CT Provider, they would not mind the CT acting as a second line product to generate additional profits for the "Market Data Contributors" under the revenue-redistribution scheme.

Known issues in relation to market data agreements such as "(i) onerous administrative obligations on data users, for example through frequent and detailed requests on the use of data; (ii) ambiguous language in the agreement; (iii) frequent unilateral amendments to the agreement; (iv) general lack of transparency on terms and conditions; (iv) excessive fees; (v) increase of fees through penalties; and (iv) overly burdensome audits" cannot be resolved or reconciled through further rewarding these streamers – Trading Venues, DPEs, APAs when they have not pay their fair royalties to content creators (broker-dealers) and turnaround to rent seek on the contents and exploit others. It is unjust and therefore we strongly disagree with the assessment.

The proposed revenue redistribution scheme misplaced or neglected private rights (who owns the data) and undermined social costs. It exacerbates market data/ market structure problems even further. It only benefits the trading venues, big law and consulting firms and enforcers of existing flawed licensing framework, where they may use new obligations and compliance requirements or their added cost as an excuse. In turn, further raising price on market data and related services. It is a DISASTER for market participants!!
<ESMA_QUESTION_CP2_18>

Q19: For the identification of the venue of first admission to trading, do you prefer option (A) use of FIRDS, option (B) the CTP collects the relevant information itself? Please explain and provide any alternative option you consider more appropriate.

<ESMA_QUESTION_CP2_19>
We acknowledge that Market Identifier Codes (MICs) is commonly used in the EU and UK. MarketID field is used by the CTA and UTP in the US, which is also a four-character alphanumeric code that follows the ISO 10383 standard. We find it amusing for many of the questions relating to the Reference Data space, when the CT supposes to focus primarily on Market Data reform.

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 (see this: https://www.yalelawjournal.org/article/open-access). We have no problem with option (A) FIRDS. Yet, there is a global trend where everything, every person or party, and their every action are authenticated in multiple ways and dynamically in real-time. A.I., large language models, public key infrastructure and other tech advancements are transforming how data and meta data are captured, used and predicted to authenticate the who, what, where, and when without the need of a designated "identifier". Would reference data and taxonomy still require a structured schema and be reported daily instead of real-time?

Per the US SEC Commissioner Hester Peirce on her speech about Financial Data Transparency Act Joint Data Standards Proposal, she stated "Hardwiring a technology into a rule runs the risk of preserving that requirement far after that technology's expiration date… could inhibit data standards from evolving over time or force firms to maintain parallel data systems… affords some flexibility in data transmission and schema and taxonomy format standards, while specifying other data standards… Would the balance the proposal strikes allow data standards to be updated in a timely manner? If not, what would work better? How often should regulators revisit the mandated standards to ensure that they remain current? Should we build a requirement to revisit the standards into the final rule? How, if at all, will artificial intelligence or other technologies influence the need for structured data? How should we take these potential future developments into account..."
<ESMA_QUESTION_CP2_19>

Q20: Do you agree that a flag indicating that the transaction was subject to an LIS waiver should be information to be sent to (but not published by) the CTP? If not, please explain.

<ESMA_QUESTION_CP2_20>
The reason that this question appears in this Chapter 4 "RTS on the revenue distribution scheme of CTPs" instead of "transparency regime" is that it affects the calculation in 'dividing the cake". From a transparency perspective, there should be risk study on how frequent that 'LIS waiver' was being used abusively, and have it caused extraordinary market volatility and what's the magnitude of impacts (i.e., divergence between private rights and social cost).
<ESMA_QUESTION_CP2_20>

Q21: Could the determination of the pre-trade volume be done differently by the CTP (e.g. proxy this volume with the pre-trade data received) but at the same time sufficiently accurately? If yes, please explain.

<ESMA_QUESTION_CP2_21>

The US SIP is currently doing it after the fact. Proxying the volume with pre-trade data received or accrual would not be a good estimate. Predicting volume fluctuations is extremely difficult if not impossible.
<ESMA_QUESTION_CP2_21>

Q22: Do you agree that the methodology to distribute the revenues should require the conversion of the values into percentages? If not, please explain.

<ESMA_QUESTION_CP2_22>
See our responses to Q17 and Q18. Policy makers must first address the question of 'who owns the data' to have the right focus.
<ESMA_QUESTION_CP2_22>

Q23: Do you agree with the transactions to include and exclude for the determination of the volume for criteria #1 and #2? If not, please explain.

<ESMA_QUESTION_CP2_23>
Disagree. Many of the flags are more relevant to the non-equity CT than the equity CT. There may be flagging issues and increase administrative burden. Possible disincentivize trades over dark and HFT. Please also see our responses to Q17 and Q18. Policy makers must first address the question of 'who owns the data' to have the right focus.
<ESMA_QUESTION_CP2_23>

Q24: What would be your view on the frequency of redistribution? Which issues do you foresee in the redistribution process? How could those issues be solved? Please explain.

<ESMA_QUESTION_CP2_24>
No matter the frequency of redistribution in "dividing the cake", public trust in government and the stock market is at low point. As explained in our responses to Q17 and Q18, the revenue redistribution scheme is inequitable. Policy makers must first address the question of 'who owns the data' to have the right focus. We encourage the EU to learn from the policy mistake in the US, where both the original funding and executed share models for the US Consolidated Audit Trail are inequitable and the US SEC is being challenged in court.
<ESMA_QUESTION_CP2_24>

Q25: Do you agree with the proposed timeline for the update of the list of data contributors and the identified issues? How could the issues be solved? Please explain.

<ESMA_QUESTION_CP2_25>

The list itself is not wrong/ The problem is who are the true “market data contributors”. See our responses to Q17 and Q18. Policy makers must first address the question of ‘who owns the data’ to have the right focus.
<ESMA_QUESTION_CP2_25>

Q26: What would be your view on the issues for the first year of operations of the CTP? How could those issues be solved? Please explain.

<ESMA_QUESTION_CP2_26>
The revenue distribution scheme of CTPs will reward and penalize the wrong parties. Reasonable Commerical Basis (RCB) would NOT help the industry. Inequity cannot be measured by accounting costs. It only benefits the trading venues, big law and consulting firms and enforcers of existing flawed licensing framework. Trading venues are likely to overstate their estimated costs required to implement and comply with the draft amended RTS. This would be done in order to negotiate for the maximum amount in revenue sharing. They may even use this compliance requirement or added cost to implement and comply with the RTS, further raising prices on market data and related services. It exacerbates market data/ market structure problems even further. Investment firms may not be aware of related implementation and compliance costs because timestamp tolerance and other specifications are not yet available in RTS. The cost could be comparable to the US Consolidated Audit Trail (CAT) depending on the ultimate design of CT. It is a DISASTER for market participants!! Probable chance of litigations, as the US SEC have been challenged in courts.

Regardless of the US, UK, or EU, dismissing related market structure issues and be short-sighted to do the bare minimum in “checking the box” for market data reform is indeed a race towards the bottom. It will NOT achieve the goal of “affecting competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users.” Market reform should be about the divergence between private rights and social costs, as well as addressing extraordinary market volatility amid transition from latency to A.I. Algo driven markets.

Go back to the drawing board and focus on doing the right things to prevent furtherance of public mistrust of government and the stock market. Please be remineded, the goals of market data reforms, include, but are not limited to: ‘affect competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users’, as well as addressing concerns over market data agreements such as ”(i) onerous administrative obligations on data users, for example through frequent and detailed requests on the use of data; (ii) ambiguous language in the agreement; (iii) frequent unilateral amendments to the agreement; (iv) general lack of transparency on terms and conditions; (iv) excessive fees; (v) increase of fees through penalties; and (iv) overly burdensome audits.” The starting point is “who owns the data” in order to have the right focus. See our responses to Q17 and Q18.
<ESMA_QUESTION_CP2_26>

Q27: Do you agree with ESMA preferred proposal to set the weights of the revenue redistribution scheme to 4.5, 4.0 and 1.5 for the small trading venue criterion, the young instruments criterion and the transparent instruments criterion, respectively? If not, please explain.

<ESMA_QUESTION_CP2_27>
The ESMA proposal set the weights as follow:
- SMALL TRADING VENUE – the weight assigned to this criterion should be the highest and should apply to a data contributor which is a regulated market or an SME growth market whose annual trading volume of shares represents 1 % or less of the annual trading volume of shares in the Union ("small trading venue)";

- YOUNG INSTRUMENTS – second highest and should apply to a data contributor which is a trading venue that provided initial admission to trading of shares or ETFs five years before the date of entry into force of the MiFIR review or thereafter;

- PRE-TRADE TRANSPARENT TRADING VENUE – the weight assigned to this criterion should be the lowest and pertains to transactions in shares and ETFs that have been concluded on a trading system that provides pre-trade transparency (i.e. those are neither referenced price transactions nor are negotiated transactions) and where those transactions did not result from orders that were subject to the large in scale (LIS) waiver.

We are NOT convinced. As explained in our responses to Q18 and Q26, the proposed revenue redistribution schemet is inequitable. Replicating the revenue sharing model of Securities Information Processor (SIP) in the US is flawed. Market data, BestEx disclosure, access fee rebate, payment for order flow (PFOF), and other market structure issues are all intertwined. Schwab's empirical evidence proves 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.

What gets paid and who gets what should NOT be dictated by regulators NOR by a small group of people in a "governance committee". The US CT-Plan version 1 that attempted to get 1/3 non-SRO representatives on the CT operating committee is worse than the Jukebox era of 50/50 in the 1970s for the music industry. Yet, the US D.C. Circuit ruling in July 2022 weakens this already weak proposition of the SEC. The SEC has until the 21st of September 2024 to determine whether to approve or disapprove CT-Plan version 2. The EU may observe the outcome to consider how best to negotiate with the TVs and APAs and fight for the rights of the broader industry and improve market data, market integrity, and market structure.

Thus far, we only see the formalization of 15 minutes delayed market data for FREE in the proposal, which most exchanges in Europe are already doing. Trading Venues, DPEs, APAs do not need to incur much extra, while having the public fund to build the CT as their second line of products profiting from revenue redistribution scheme.

In the US, market particpants suffered from the regulators prolonged toleration of price discrimination practices that further heighten costs on Proprietary Products, exacerbating the latency difference, and/or changing rebates/ incentives for others. In return, redistribution of displayed market data for retail is “FREE”, enabling zero commission, subsidizing investor eduction programs, etc. This makes US retail trading more competitive than, said Canada where Canada has no consolidated tape and market data and connectivity attribute to 60% of retail trading platform’s total cost. The EU and policy makers around the world can use this as reference.

We argue that there should be substantially more the industry can fight for if copyright licensing framework can be adopted. There are many relevant use-cases to learn from the Music Industry. According to Prof. Hannes Datta, Prof. George Know, and Prof. Bart J. Bronnenberg in their study, “adoption of streaming leads to: INCREASES in QUANTITY of consumption … INCREASES in VARIETY of consumption… INCREASE in DISCOVERY of NEW music … Streaming revenues are climbing not only because more consumers are adopting streaming, but because consumers’ OVERALL consumption of music is GROWING as well. Streaming creates a MORE LEVEL PLAYING FIELD for SMALLER artists… Streaming EXPANDS consumers’ ATTENTION to a WIDER SET of artists… Streaming INCREASES consumer WELFARE by reducing search frictions (e.g., ENHANCING DISCOVERY) and help users DISCOVER NEW HIGH-VALUE CONTENT.” ‘Discovery’ in the context of Capital Markets, can encompass VERACITY in price discovery, VELOCITY in filling orders/ finding matches, as well as discovering unknowns. Pareto improvement is achieved when someone is better off without anybody worse off or win-win for all.
<ESMA_QUESTION_CP2_27>

Q28: Would you consider appropriate that the weight (percentages) sum to 10 (100%)? If not, please explain and provide your alternative proposal for the weights (percentages).

<ESMA_QUESTION_CP2_28>
See our responses to Q18, Q26, and Q27.
<ESMA_QUESTION_CP2_28>

Q29: Do you agree with the proposed (i) frequency of the determination of the weights (ii) timing of determination of the weights (iii) timing of application of the weights? If not, please explain.

<ESMA_QUESTION_CP2_29>

See our responses to Q18, Q26, and Q27
<ESMA_QUESTION_CP2_29>

Q30: Do you agree with the proposed text? Have you identified any missing points or issues?

<ESMA_QUESTION_CP2_30>
See our responses to Q2, Q4, Q15, Q18, Q26, and Q27.
<ESMA_QUESTION_CP2_30>

Q31: Do you agree with ESMA's proposal on the criteria for a potential suspension of redistribution in case of serious and repeated breach by the CTP? If not, which alternative or/and additional criteria would you consider relevant?

<ESMA_QUESTION_CP2_31>
It should be suspend permanently until Trading Venues, DPEs, APAs are paying their fair royalties to content creators (broker-dealers) and stop rent seeking / exploitation on the contents. See our responses to Q18, Q26, and Q27
<ESMA_QUESTION_CP2_31>

Q32: Do you agree with ESMA's proposal on the procedure for the suspension and the resumption of redistribution? If not, which alternative approach would you consider suitable?

<ESMA_QUESTION_CP2_32>
See our response to Q31.
<ESMA_QUESTION_CP2_32>

Q33: Do you agree with ESMA's proposal on the timing of the procedure for the suspension and the resumption of redistribution? If not, which alternative approach would you consider suitable?

<ESMA_QUESTION_CP2_33>
The revenue redistribution scheme may inadvertently enforce the existing flawed licensing framework. Who are the true "market data contributors"? Policy makers must first address the question of 'who owns the data' to have the right focus. See our responses to Q18, Q26, and Q27, and Q31.
<ESMA_QUESTION_CP2_33>

Q34: Do you agree with ESMA's proposal regarding a one-week timeframe for data contributors to furnish evidence of non-breaches? If you disagree, could you suggest an alternative approach that you find appropriate?

<ESMA_QUESTION_CP2_34>
The revenue redistribution scheme may inadvertently enforce the existing flawed licensing framework. Who are the true "market data contributors"? Policy makers must first address the question of 'who owns the data' to have the right focus. See our responses to Q18, Q26, and Q27, and Q31.
<ESMA_QUESTION_CP2_34>

Q35: Do you agree with ESMA's expectation on the notification to be made by the CTP to the competent authority of the data contributor once a suspension has been triggered?

<ESMA_QUESTION_CP2_35>
Do regulators want to further burden market participants? Push them to subscribe to Equity CT while the feed has little to no value to them? Again, is the primary purpose of market data reform to help the stock exchanges make more money through revenue distribution scheme, and/or to move the non-exchange order flow to get on the Lit Exchange for better price discovery? The market data reform policy goals of 'affecting competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users', as well as addressing concerns over market data agreements seem totally forgotten or being neglected. National Competent Authorities (NCAs) should work with the European Commissions and the ESMA to right course the direction for Equity CT. See our responses to Q2, Q4, Q15, Q18, Q26, Q27, and Q31.
<ESMA_QUESTION_CP2_35>

Q36: Do you agree with ESMA's proposal on the approach to the retained revenue? In your view, which rate should apply to compound the interest on retained revenue?

<ESMA_QUESTION_CP2_36>
Wishful thinking for an Equity CT with little to no value.
<ESMA_QUESTION_CP2_36>

Section 5 – RTS on the synchronisation of business clocks

Q37: Do you agree with the proposed approach on synchronisation to reference time? If not, please explain.

<ESMA_QUESTION_CP2_37>

We agree with the Coordinated universal time (UTC) recommendation. Many European countries host atomic clocks that contribute to the International Atomic Time (TAI) and, by extension, UTC. These clocks are located in national metrology institutes and observatories across Europe. Clocks synchronised via Global Navigation Satellite Systems (GNSS) can achieve high precision and accuracy by leveraging signals from satellites equipped with atomic clocks.

We have reservation with paragraph 173 in Section 5.2.1 Reference time, quoted “ESMA neither intends to specify the requirement further, nor to define how entities in scope shall disseminate time internally (i.e. between the “master” clock synchronised to the external data source and the other internal “slave” clocks).”

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 to nanosecond-level vs millisecond-level, see this: https://www.geeksforgeeks.org/difference-between-ntp-and-ptp/). Some systems include mechanisms to detect and correct errors in synchronization. For example, if a slave clock detects a significant deviation from the master clock, it can trigger a resynchronization process.

Amazon Time Sync Service provides time synchronization over Network Time Protocols. It 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. Why not learn from the current practices of High Frequency Trading firms/ self-aggregators when pursuing sub-microsecond precision?

Precision Time Protocol (PTP) is recommended to support a timestamp granularity of 0.1 microseconds (see our response to Q38). Also, to preven echosystem degradation as mentioned earlier in our response to Q2, ESMA should have authority to mandate proper SECURITY protection over both CT and the Trading Venues’ Proprietary Products (PPs) and APAs’ value added services (VAS), requires SYCHRONIZATION of both CT and PP and VAS in accordance with an Atomic Clock and prohibits the circumvention of SECURITY measures. We recommend beefing up the reference time section accordingly.
<ESMA_QUESTION_CP2_37>

Q38: Do you support a timestamp granularity of 0.1 microseconds for operators of trading venues whose gateway-to-gateway latency is smaller than 1 millisecond? If not, please explain. Would you argue for an even smaller granularity? If yes, please explain.

<ESMA_QUESTION_CP2_38>
Yes, we strongly support that. Unlike Bond and Derivatives, Equity is predominately low-touch, a few high-touch, and rarely OTC. A timestamp granularity of 0.1 microseconds would improve sequencing accuracy to around a hundred of messages that happening at given point in time suitable for trade analytics in equity markets.

We want to emphasize that, when one is looking at the amount 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 thousand. The CT needs to have an effective audit trail that helps market participants better understand how the markets are operating at any given point in time.

We do not want to see the EU's CT development to follow the footsteps of the US consolidated audit trail projects that wasted substantial amounts of money and has not achieved its originally stated goals.

Others may point to the technical challenges, such as 'upgrading systems to support such high precision can be costly and complex'. There are corresponding solutions. Moore's law suggests the number of transistors on a microchip doubles approximately every two years, while the cost of computers is halved. High-performance hardware and software capable of handling nanosecond-level timestamps. In all circumstances, data volume would grow in a world craving for ever more data, system and infrastructure upgrade is inevitable. To prevent strain in storage and processing capabilities, efficient data compression and other innovative solutions can be implemented to handle large datasets without compromising performance. There are tools and techniques for precise latency measurement to test and validate systems and ensure accurate reporting. For those still using legacy protocols and cited challenge in ensuring all systems are synchronized to the same time source with high precision, it is time to migrate to PTP if they want to stay relevant in the equity markets.

A timestamp granularity of 0.1 microseconds is the best provision throughout the entire proposal. This level of precision helps ensure accurate sequencing of trades. It is suitable for trade analytics in an increasing algorithmic and artificial intelligence (A.I.) driven capital markets. It keeps us remaining hopeful for the EU equity CT. It deserves a round of applaud.
<ESMA_QUESTION_CP2_38>

Q39: Do you support the proposed approach on the level of accuracy for trading venue members, participants or users? If not, please explain.

<ESMA_QUESTION_CP2_39>
Yes. We are thankful that ESMA have consider implementing the proposal on increasing timestamp granularity set in section 5.2.2, apply the same to participants engaging in High Frequency Trading, as well as the interplay with the Distributed Ledger Technology (DLT) Pilot Regulation.

<ESMA_QUESTION_CP2_39>

Q40: Do you agree with the proposed approach on traceability to UTC? If not, please explain.

<ESMA_QUESTION_CP2_40>
By leveraging signals from satellites equipped with atomic clocks, clocks synchronized via Global Navigation Satellite Systems (GNSS) can achieve high precision and accuracy ranging from better than 1 microsecond to a few milliseconds depending on the specific setup and protocols used. GNSS may be used as a baseline. Other systems that can achieve even higher precision include:

1. Inertial Navigation Systems (INS): INS uses accelerometers and gyroscopes to track the position and orientation of an object. When combined with GNSS (GNSS/INS integration), it can provide highly accurate positioning, especially in environments where GNSS signals are weak or unavailable.

2. Real-Time Kinematic (RTK) GNSS: RTK enhances standard GNSS accuracy by using a base station to provide real-time corrections to a rover receiver. This method can achieve centimeter-level precision.

3. Post-Processing Kinematic (PPK) GNSS: Similar to RTK, PPK involves recording GNSS data and processing it after the fact to achieve high accuracy. This method is useful in situations where real-time corrections are not feasible.

4. Very Long Baseline Interferometry (VLBI): Used primarily in astronomy and geodesy, VLBI measures the time difference between signals received at different locations to achieve extremely high precision in positioning.

To be in line with the timestamp granularity requirement of 0.1 microseconds to improve sequencing accuracy to around a hundred of messages that happening at given point in time suitable for trade analytics in equity markets, ESMA may consider the above options in addition to GNSS baseline.
<ESMA_QUESTION_CP2_40>

Q41: Do you agree with the proposed accuracy levels for APAs, SIs, DPEs and CTPs? If not, please explain.

<ESMA_QUESTION_CP2_41>
ESMA prosposes the following accuracy levels for APAs, SIs, DPEs and CTPs:

	Maximum divergence from UTC	**Granularity of timestamp**

APA and CTP	1 millisecond or better	1 millisecond or better
SI with gateway-to-gateway latency less than one millisecond	100 microseconds	1 microsecond or better
DPE and SI with gateway-to-gateway latency higher than one millisecond	1 millisecond or better	1 millisecond or better

We think the accuracy level for CTP should be higher than APAs. If APAs can effectively achieve the market data reform goals, such as 'affecting competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users', as well as addressing concerns over market data agreements such as: "(i) onerous administrative obligations on data users, for example through frequent and detailed requests on the use of data; (ii) ambiguous language in the agreement; (iii) frequent unilateral amendments to the agreement; (iv) general lack of transparency on terms and conditions; (iv) excessive fees; (v) increase of fees through penalties; and (iv) overly burdensome audits", then there is no need to build CT. Many of these cited problems indeed rooted from trading venues and their affiliated vendors.

CTP should use the same "Maximum divergence from UTC" (100 microseconds) and "Granularity of timestamp" (1 microsecond or better) as the requirements for SI with gateway-to-gateway latency less than one millisecond.

Please also observe the US FINRA regulatory Notice 20-41 as reference. "Manual Order Event" and "Reportable Event" are defined under Section 1.1 of the CAT NMS Plan and FINRA Rule 6810.

Last but not least, for pre-trade, should CT be a reasonable compromise if not a close-substitute to Trading Venues' proproprietary products (PPs) and APAs' value-added services (VAS) is both a technical and economic matters. The relative availability of PPs and VAS versus CT is a technical matter, for example, it may not be feasible for 80% of all market participants to connect via collocation concurrently. CT ought to meet majority of market participants' needs, while PPs and VAS are supposed to have FAIR ACCESS if one is willing to pay a premium.

ESMA should consider the use of Time-Lock Encryption (TLE) to make market data available SECURELY in synchronized time. The former SEC Chair Mary Jo White has stated the need to "deemphasize speed as a key to trading success." TLE protects time sensitive information from being decrypted prematurely. It eliminates the problem of where the CT data center is located (Frankfurt, Zurich, Stockholm, Madrid, Bergamo). The online gaming industry is using TLE to promote fairness.

This is by no means asking regulators to prescribe a certain technology. Yet, the ESMA should have authority to mandate proper SECURITY protection over both CT and the Trading Venues'

Proprietary Products (PPs) and APAs' value added services (VAS), requires SYCHRONIZATION of both CT and PP and VAS in accordance with an Atomic Clock and prohibits the circumvention of SECURITY measures.
<ESMA_QUESTION_CP2_41>

Q42: Do you think that more stringent requirements should be set for SIs compared to DPEs considering they have pre-trade transparency obligations? If not, please explain.

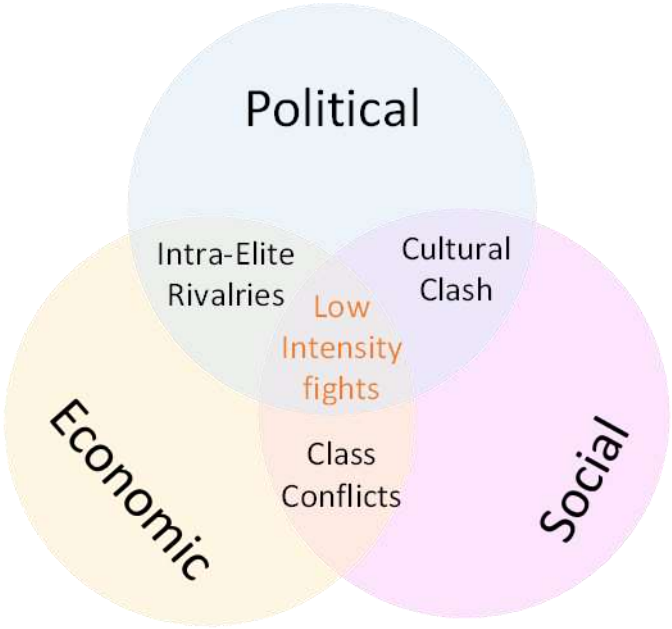
<ESMA_QUESTION_CP2_42>
For both DPEs and SIs, if their system captures time in finer increments, then they should report in such finer increment up to nanoseconds. Maximum divergence from UTC should also be tighten accordingly. Also, ESMA should consider the use of Time-Lock Encryption (TLE) and bring DPEs and SIs within scope to make market data available SECURELY in synchronized time. See our response to Q41.
<ESMA_QUESTION_CP2_42>

Section 6 – RTS/ITS on the authorisation and organisational requirements for DRSPs

Q43: Do you agree with the approach proposed by ESMA?

<ESMA_QUESTION_CP2_43>
No, we disagree. What gets paid and who gets what should NOT be dictated by regulators NOR by a small group of people in a "governance committee". The US CT-Plan version 1 that attempted to get 1/3 non-SRO representatives on the CT operating committee is worse than the Jukebox era of 50/50 in the 1970s for the music industry. Yet, the US D.C. Circuit ruling in July 2022 weakens this already weak proposition of the SEC. The SEC has until the 21st of September 2024 to determine whether to approve or disapprove CT-Plan version 2. The EU may observe the outcome to consider how best to negotiate with the TVs and APAs and fight for the rights of the broader industry and improve market data, market integrity, and market structure.

ESMA should consider minimizing "low intensity fights" in the governance of CT, see below diagram that adopted from Prof. Peter Turchin's model



As illustrated in above diagram, the balance of power across different market centers, the Elites (i.e., the Haves), versus the Have-nots would determine the level of intra-elite rivalries, cultural clashes, class conflicts, and what an acceptable tolerance of low-intensity fight is.

Again, the relative availability, price, and latency difference of mass market products (CT) versus TVs' PPs are crucial. ESMA should mandate the "Availability" of market data across CT, PPs, DPEs, SIs and APAs' VAS be SECURED and Synchronized in accordance with an atomic clock. Also, ESMA should affirm data ownership rights belong to the "content creators" (i.e. broker-dealers are analogous to publishers of contents, while trading venues and data redistributors are analogous to "streaming platforms") and adopt a COPYRIGHT LICENSING MECHANISM.

Last but not least, we despise regulatory price control (https://www.cato.org/commentary/problems-price-controls). We advocate for a "4-part test" that taken directly from the music industry's copyright laws. "4-Part Test" deemed an agreeable principle universally – (1) willing seller willing buyer standard; (2) same parties' test; (3) "effective competition" test; and (4) same rights test. It is time-tested and simple enough to be used by the Music Industry. See our response to Q18.
<ESMA_QUESTION_CP2_43>

Q44: Do you agree to include new authorisation provisions on ownership structure and internal controls for APAs and ARMs?

<ESMA_QUESTION_CP2_44>

CTP should be separate requirements than APAs. If APAs can effectively achieve the market data reform goals, such as 'affecting competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users', as well as addressing concerns over market data agreements such as: "(i) onerous administrative obligations on data users, for example through frequent and detailed requests on the use of data; (ii) ambiguous language in the agreement; (iii) frequent unilateral amendments to the agreement; (iv) general lack of transparency on terms and conditions; (iv) excessive fees; (v) increase of fees through penalties; and (iv) overly burdensome audits", then there is no need to build CT. Many of these cited problems indeed rooted from trading venues and their affiliated vendors.

What gets paid and who gets what should NOT be dictated by regulators NOR by a small group of people in a "governance committee". The US SEC's CT-Plan is problematic, The US D.C. Circuit ruling in July 2022 weakens the already weak proposition of the SEC's governance requirements over the equity CT-Plan. The US decentralized competing model (DCM) of 2/3 Self-Regulatory Organizations (SROs) and 1/3 non-SROs representation in the operating committee cannot be executed. The SEC prescribed minimum terms and conditions for CT-Plan Version 2 in replacing the non-SRO representation provisions are ineffective (see our comment letter to the US SEC).

Instead of finessing with APAs and ARMs' ownership structure that may be challenged in court, please see our response to Q43 for counter suggestions.
<ESMA_QUESTION_CP2_44>

Q45: Do you have any further comments or suggestions on the draft RTS? Please elaborate your answer.

<ESMA_QUESTION_CP2_45>
Reasonable Commerical Basis (RCB) would NOT help the industry. Inequity cannot be measured by accounting costs. It only benefits the trading venues, big law and consulting firms and enforcers of existing flawed licensing framework. Trading venues are likely to overstate their estimated costs required to implement and comply with the draft amended RTS. This would be done in order to negotiate for the maximum amount in revenue sharing. They may even use this compliance requirement or added cost to implement and comply with the RTS, further raising prices on market data and related services. It exacerbates market data/ market structure problems even further. Investment firms may not be aware of related implementation and compliance costs because timestamp tolerance and other specifications are not yet available in RTS. The cost could be comparable to the US Consolidated Audit Trail (CAT) depending on the ultimate design of CT. It is a DISASTER for market participants!! Probable chance of litigations, as the US SEC have been challenged in courts.

CT should be a reasonable compromise if not a close-substitute to Trading Venues' proproprietary products (PPs) and APAs' value-added services (VAS). Please be remineded, the goals of market

data reforms, include, but not limited to: 'affect competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users', as well as addressing concerns over market data agreements such as "(i) onerous administrative obligations on data users, for example through frequent and detailed requests on the use of data; (ii) ambiguous language in the agreement; (iii) frequent unilateral amendments to the agreement; (iv) general lack of transparency on terms and conditions; (iv) excessive fees; (v) increase of fees through penalties; and (iv) overly burdensome audits." See our responses to Q2, Q4, Q15, Q18, Q26, Q27, and Q31, Q37, Q38, Q41, and Q43.
<ESMA_QUESTION_CP2_45>

Q46: Do you agree with the approach proposed by ESMA?

<ESMA_QUESTION_CP2_46>
For operational resilience, this is a worth reading comparing the standards in EU, UK, and the US: https://www.whitecase.com/insight-our-thinking/financial-regulatory-observer-2022-operational-resilience-uk-eu-and-us Also, we suggest ESMA to observe the US SEC Regulation System Compliance and Integrity (SCI) - Proposed Expansion and Updates: https://www.sec.gov/files/rules/proposed/2023/34-97143.pdf + industry's feedbacks: https://www.sec.gov/comments/s7-07-23/s70723.htm

Unlike Bond and Derivatives, Equity is predominately low-touch, a few high-touch, and rarely OTC. The Equity data quality issues, such as the Bershire event in June 2024, the $440 Million Software Error - Knight Capital, flash crashes, the MEME stock phenomenon, and other vulnerabilities are all related to surge in activities, spikes, outages, volatility interruption mechanisms, i.e., operational resilience is totally relevant. It is a critical factor to the success of CT and market integrity (many still remember the LME and other cases). Without appropriate load balancing, accessing the packet rate over a millisecond or sub-microsecond window, latency, capacity planning, BCP/DR, and system glitch concerns, the Equity CT won't be able to properly function.
<ESMA_QUESTION_CP2_46>

Q47: Do you foresee specific conflicts of interests that may arise between (i) CTP and data contributors and (ii) CTP and clients and users?

<ESMA_QUESTION_CP2_47>
Conflicts of interests and endless arguments is foreseeable. ESMA should consider minimizing "low intensity fights" in the governance of CT (see our response to Q43). Also, ESMA should observe the US Consolidated Audit Trail project. FINRA and Amazon Web Services (AWS), FINRA's cloud vendor, should fend off any public concerns about too big to fail (TBTF) by voluntarily providing full disclosure. The US SEC should scrutinize that CAT funding will not be mixed-in and/or cross-subsidize existing surveillance and cloud processing business. There is a

thin line between synergy and potential conflicts of interest (especially, as FINRA also holds the SRO power to fine broker-dealers over surveillance system deficiencies.

Again, Reasonable Commerical Basis (RCB) would NOT help the industry. Inequity cannot be measured by accounting costs. The proposed revenue redistribution scheme misplaced or neglected private rights (who owns the data) and undermined social costs. It only benefits the trading venues, big law and consulting firms and enforcers of existing flawed licensing framework. Trading venues are likely to overstate their estimated costs required to implement and comply with the draft amended RTS. This would be done in order to negotiate for the maximum amount in revenue sharing. They may even use this compliance requirement or added cost to implement and comply with the RTS, further raising prices on market data and related services. It exacerbates market data/ market structure problems even further.
<ESMA_QUESTION_CP2_47>

Q48: What other elements, if any, should be included in the RTS on authorisation of CTPs?

<ESMA_QUESTION_CP2_48>
Whether policy makers in EU will permit a CTP operator to use a separate legal entity to provide competing value-added services with APAs and TVs. This helps avoid cross-subsidization and is easier to compare bids for CT from different potential vendors. Yet, it did not change the fact that TVs and APAs have the upper hand in controlling data supply. CTP is at a disadvantage and extra burdens under the FCA required conditions. We doubt any potential vendor will be willing to be a CTP pure play and function as a “loss leader,” except in one scenario.

The scenario is, assuming a potential CTP bidder can create a PP so unique and desirable that no other TVs or APAs can offer or compete. That bidder uses the separate legal entity of CTP to distribute or grant access of such PP discriminatory to select users under the condition of they must first become subscribers of CT. In essence, this is bundling of PP and CT, where the bundling itself is a form of price-discrimination, doubling the rents seek. It is undesirable and unfair.
<ESMA_QUESTION_CP2_48>

Q49: What other elements, if any, should be included in the RTS on authorisation of CTPs?

<ESMA_QUESTION_CP2_49>
See our response to Q48.
<ESMA_QUESTION_CP2_49>

Section 7 – Criteria to assess CTP applicants

Q50: How would you define retail investors, academics and civil society organisations for the purpose of the CTP?

<ESMA_QUESTION_CP2_50>
MEME stock events defies the typical stereotype or definition of retail investors. In the cyberpunk era, who has the sophistication to Gamma squeeze the hedge funds, mobilize the naïve to move prices (the gag would have been prohibited if it occurred at a broker-dealer), lambast the top market-makers to advance controversial agenda on payment for order flow. 'Street Kid' may not be the underserved and the most vulnerable that people stereotyped. Be mindful of these insurgents.

It is noteworthy that those who play only a few single notes (e.g., 'do, 'ra', 'me') are not entitled to copyright royalty. Those able to compose a full song (meaningful sequences of a series of notes) are compensated. The music industry's rationale for not allowing anyone to claim copyright over a few single notes is that they do not want someone claiming exclusive right over, e.g., 'do, 'ra', 'me' and preclude the broader composer community to use these basic notes for creative works. Similar logic should apply to our capital markets. If someone is only able to play a few "music notes" (individual orders) rather than compose a complete "song" (trade algo), then it is our opinion that they deserve the appropriate investor protection. Regulators may then better draw the line in distinguishing between the "Professionals" versus the "non-Professionals" (retail, average investors).

In the music industry, performance of a work done in the course of face-to-face instruction in a classroom (or a similar place – online learning site devoted to instruction), or performances done as part of instructional activities of a nonprofit institution, may not be an infringement of copyright. The same logics should apply to Teaching (Academic) Exemptions for the Capital Markets.
<ESMA_QUESTION_CP2_50>

Q51: What are in your view the most important elements that should be taken into account when defining the governance structure of the CTP?

<ESMA_QUESTION_CP2_51>
See our response to Q43.
<ESMA_QUESTION_CP2_51>

Q52: Should the CTP include representation of other stakeholders within their governance structure?

<ESMA_QUESTION_CP2_52>
See our response to Q43.

<ESMA_QUESTION_CP2_52>

Q53: Do you agree with the proposed approach on the assessment of necessity of joint application?

<ESMA_QUESTION_CP2_53>
ESMA should observe the US Consolidated Audit Trail project about joint application. FINRA and Amazon Web Services (AWS), FINRA's cloud vendor, should fend off any public concerns about too big to fail (TBTF) by voluntarily providing full disclosure. The US SEC should scrutinize that CAT funding will not be mixed-in and/or cross-subsidize existing surveillance and cloud processing business. There is a thin line between synergy and potential conflicts of interest (especially, as FINRA also holds the SRO power to fine broker-dealers over surveillance system deficiencies. See our response to Q47.
<ESMA_QUESTION_CP2_53>

Q54: Which minimum requirements on identifying and addressing potential conflicts of interest would you consider relevant?

<ESMA_QUESTION_CP2_54>
See our response to Q47.
<ESMA_QUESTION_CP2_54>

Q55: To score the applicants on their development expenditure and operating costs, ESMA intends to look at the costs the applicant will need to cover on an annual basis. Do you agree with this approach? If not, which alternative approach would you deem more appropriate?

<ESMA_QUESTION_CP2_55>
Anglo-Dutch hybrid auction is more efficient than the ascending auction because it allows bidders to reveal their true valuations in the second stage. It is also more revenue-generating than the sealed-bid auction because it encourages bidders to bid higher than their true valuations.

However, the Anglo-Dutch auction also has some disadvantages. For example, it is more complex than other auction formats, which can make it difficult for bidders to understand the rules and strategies. It can also be more time-consuming than other auction formats, which can be a disadvantage in situations where time is limited.
Because of demand uncertainty, a single round of bidding on price increases the 'winner's curse' risk whereby the winning bid ends up being lower than what is required for the bidder to make a positive return on their investment.

Weighting in numerous factors and requirements under CP23/33, we think Anglo-Dutch hybrid auction is more suitable.
<ESMA_QUESTION_CP2_55>

Q56: The simplicity of the fee structure and licensing models can be scored by taking into account the number of tiers, fee types and licensing models. Does this accurately reflect simplicity? If not, would you propose a different approach to assess simplicity? Please elaborate.

<ESMA_QUESTION_CP2_56>
We have reservations with the IPUG's suggestion of "the main economic element of bids to be a CTP should be maximum revenue that a CTP earns over the tender period. This is based on the premise that the CTP should function as a utility and therefore should be restricted in what it can extract overall from the consolidation of data. Any revenues earned over the maximum revenue threshold would then be returned to users in subsequent years through reduced prices." We think there is merit in DotEcon report that said, "a crucial concern with this model (requiring bidders to submit prices for a set of components specified by the policy maker and allowing the bidders to specify their own price list) is that it provides little incentive for the CTP to maximise uptake of the CT once the revenue limit is achieved (see this FCA publication).

Factors to consider in bidding should include, but not limited to, the bidders' articulation or substantiation on how they plan to achieve and be able to balance between the short term and long term goals of:
G1) Encourage a CTP to come forward to operate a CT for bonds in the short term.

G2) Affect competitive pressures for existing sellers of market data, resulting in cheaper, higher quality and more accessible data for its users, where we would interpret it as: CT is a reasonable compromise if not a close substitute of TVs' PPs and APAs' value-added services on day 1 (short term), and the overall UK bond markets show improvements in trading volume, veracity (price discovery), velocity in filling orders, and varieties (diversified market participation instead of concentrated trading between Elites), i.e. collectively the 4Vs, by year 5 (long term).

G3) Achieve better market data by reforming rules on the content and timing of pre- and post-trade data in the long term.

G4) CT being widely available and affordable to at least 80% of market participants when it is up and running; at least 15% of all market participants in the UK subscribe to CT by year 2 and at least 30% in subscription demand by year 4; selfsustaining in financial performance of CTP by year 5, i.e., net assets, profits, and operating cash flow must be positive.

G5) Using TRACE and Securities Information Processors (SIPs) in the US as benchmarks, the UK CTs should be in-par or better in terms of performance (% of uptime and latency); the FCA should mandate proper SECURITY protection over both CT and trading venues (TVs)' Proprietary Products (PPs)/ APAs' value-added services, requires SYCHRONIZATION of both CT and PP in accordance with an Atomic Clock and prohibits the circumvention of SECURITY measures.

G6) Minimize "low intensity fights" in the governance of CT (see below diagram that adopted from Prof. Peter Turchin's model),5 policy makers should refrain from regulatory price control6 and consider adopting 4-Part test7 that was taken directly from the music industry's copyright laws for objective rate setting
<ESMA_QUESTION_CP2_56>

Q57: The approach proposed for the assessment of the ability of CTP applicants to process data is grounded on the assessment of the technological infrastructure in ensuring scalability, low-latency, accuracy and security throughout the data lifecycle. Do you agree with this approach, or would you consider additional elements to be assessed?

<ESMA_QUESTION_CP2_57>
It seems a bit short-term oriented. CT as a critical infrastructure for the EU, 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. Be encouraged, we see tremendous opportunities for the EU if we can build better market data and solving market structure issues than other jurisdictions.
<ESMA_QUESTION_CP2_57>

Q58: Which is the minimum speed of dissemination you would consider appropriate for the CTP? Please distinguish between asset classes (and for the case of the equity CTP, between pre- and post-trade date).

<ESMA_QUESTION_CP2_58>
Rather than a static minimum speed of dissemination, technology performance evolves over time. So, for equity CTP, leading, not trailing, the performance of any APAs and US Securities Information Processors (SIP) should be the standard. See our response to Q37, Q38, and Q41.

For fixed income market in the EU, the concept of "as close to real-time as technically possible" currently allows for a maximum delay of 5 minutes, after a less strict requirement of 15 minutes during the first three years of application of MiFIR. The UK FCA on page 19 of CP23/32 paragraph 3.34 states "the information to be disclosed include the execution time of a trade, details of the instrument being traded, price and size. They must be made available as close to real time as possible and in any case within 5 minutes of execution."

The US FINRA proposed to reduce TRACE reporting time frame to 1 minute for all TRACE-Eligible Securities, including U.S. Treasury Securities, with exceptions for member firms with de-minimis reporting activity and for manual trades, in the US. A trade association – SIFMA have stated that "the proposed 1 minute reporting rule (if) adopted (would) expose the broker-dealer community to significant liability and creating risk to the function of some fixed income markets… FINRA … should … examine impacts to liquidity, depth, concentration, and transparency …" The ESMA should observe if this FINRA proposal may or may not be approved in determining appropriate harmonization of regime or not with other jurisdictions.
<ESMA_QUESTION_CP2_58>

Q59: The proposed approach to data quality would reward additional commitments and measures that CTP applicants intend to put in place. Do you agree with this approach ? What additional commitments and measures would you consider appropriate?

<ESMA_QUESTION_CP2_59>
No comment for this question at this time.
<ESMA_QUESTION_CP2_59>

Q60: The proposed approach to modern interface and connectivity is grounded on the assessment of the interface technology in terms of reliability, scalability, low latency and security. Do you agree with this approach, or would you consider additional elements to be assessed?

<ESMA_QUESTION_CP2_60>
We have concerns with the "minimum requirements" approach. As pointed out in our response to Q2 and according to this empirical study, minimum requirements for the technical criteria are barriers to innovation. Potential bidders to become CT Providers (CTPs) in the EU would prioritize compliance over creativity. Its focus is on meeting regulatory requirements rather than exploring better ways to address problems (e.g. RTS-13 Article 10 incomplete or potentially erroneous information a.k.a. data quality issues + security and synchronization challenge amid aggregation distance/ location differential issues).

Per the US SEC Commissioner Hester Peirce on her speech about Financial Data Transparency Act Joint Data Standards Proposal, she stated "Hardwiring a technology into a rule runs the risk of preserving that requirement far after that technology's expiration date… could inhibit data standards from evolving over time or force firms to maintain parallel data systems… affords some flexibility in data transmission and schema and taxonomy format standards, while specifying other data standards… Would the balance the proposal strikes allow data standards to be updated in a timely manner? If not, what would work better? How often should regulators revisit the mandated standards to ensure that they remain current? Should we build a requirement to revisit the

standards into the final rule? How, if at all, will artificial intelligence or other technologies influence the need for structured data? How should we take these potential future developments into account..."

Let's prevent ecosystem degradation and consider the best design if re-building the European capital markets from the ground-up. It is not that the EU should, or should not, be a close follower to the US standard, but from a macro prospective, traditional financial industry is facing competition with decentralized finance (DeFi). If we stop innovation or carrying too many unnecessary legacies, we will lose the next generations of market partipants.
<ESMA_QUESTION_CP2_60>

Q61: Do you agree with the proposed approach to record keeping, based on the provision of document supporting intended compliance?

<ESMA_QUESTION_CP2_61>
No objection.
<ESMA_QUESTION_CP2_61>

Q62: The proposed approach to resilience, business continuity and cyber risks is grounded in assessing mandatory DORA requirements applicable to CTPs as a first step (selection criterion), to then reward additional commitments and measures CTPs applicants intended to put in place to mitigate and address outages and cyber-risk . Do you agree with this approach? What additional commitments and measures would you consider appropriate?

<ESMA_QUESTION_CP2_62>
It is worth noting that the Equity data quality issues, such as the Bershire event in June 2024, the $440 Million Software Error - Knight Capital, flash crashes, the MEME stock phenomenon, and other vulnerabilities are all related to surge in activities, spikes, outages, volatility interruption mechanisms, i.e., operational resilience (OR). It is a critical factor to the success of CT and market integrity (many still remember the LME and other cases, where some see the price and some don't). Without appropriate load balancing, accessing the packet rate over a millisecond or sub-microsecond window, latency, capacity planning, BCP/DR, and addressing system glitch concerns, the Equity CT won't be able to properly function.

Please see this worth reading article that compares Operational Resilience in the EU, UK and US: https://www.whitecase.com/insight-our-thinking/financial-regulatory-observer-2022-operational-resilience-uk-eu-and-us. Also, the ESMA may want to consider the US SEC latest proposed expansion to Regulation System Compliance and Integrity (SCI); related industry's feedbacks are available at: https://www.sec.gov/comments/s7-07-23/s70723.htm

For cybersecurity and improving trust in CT, please see this: https://www.linkedin.com/pulse/improving-trust-amid-race-technologies-kelvin-to-8vxrc
<ESMA_QUESTION_CP2_62>

Q63: Do you agree with the use of the Power Utilisation Effectiveness (PUE) as the metric to assess the energy consumption of the CTP? If not, which alternative approach would you favour?

<ESMA_QUESTION_CP2_63>
No comment for this question at this time.
<ESMA_QUESTION_CP2_63>

Annex II – Cost Benefit Analysis:

Q64: What costs do you expect in order to comply with the proposed minimum requirements for the quality of transmission protocols? What benefits do you expect? Please indicate to what role (data contributor, CTP, or CT user) your response refers.

<ESMA_QUESTION_CP2_64>
Trading venues are likely to overstate their estimated costs required to implement and comply with the draft amended RTS. This would be done in order to negotiate for the maximum amount in revenue sharing. They may even use this compliance requirement or added cost to implement and comply with the RTS, further raising prices on market data and related services. It exacerbates market data/ market structure problems even further. Investment firms may not be aware of related implementation and compliance costs because timestamp tolerance and other specifications are not yet available in RTS. The cost could be comparable to the US Consolidated Audit Trail (CAT) depending on the ultimate design of CT.
<ESMA_QUESTION_CP2_64>

Q65: What costs do you expect in order to comply with the proposed data format for input and output data? What benefits do you expect? Please indicate to what role (data contributor, CTP, CT user) your response refers.

<ESMA_QUESTION_CP2_65>
When one is looking at the amount 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

thousand. The CT needs to have an effective audit trail that helps market participants better understand how the markets are operating at any given point in time.

We do not want to see the EU's CT development to follow the footsteps of the US consolidated audit trail projects that wasted substantial amounts of money (hundres of million to a billion) and has not achieved its originally stated goals (see our response to Q38).

The EU should NOT accept the "rubbish in, rubbish out" mentality in dictating the data quality for CT. Please also see our response to Q64.
<ESMA_QUESTION_CP2_65>

Q66: Do you expect the benefits from the proposed real time data transmission requirement for input data to outweigh the operational costs borne by data contributors?

<ESMA_QUESTION_CP2_66>
A timestamp granularity of 0.1 microseconds is the best provision throughout the entire proposal. This level of precision helps ensure accurate sequencing of trades. It is suitable for trade analytics in an increasing algorithmic and artificial intelligence (A.I.) driven capital markets. It keeps us remaining hopeful for the EU equity CT. The benefits outweight related costs. Again, inequity cannot be measured by accounting costs. The proposed revenue redistribution scheme misplaced or neglected private rights (who owns the data) and undermined social costs. It only benefits the trading venues, big law and consulting firms and enforcers of existing flawed licensing framework. Right coursing that would save the industry billions if not trillions.
<ESMA_QUESTION_CP2_66>

Q67: Do you think that the input and output data fields strike a balance between reporting burden for data contributors/CTPs and benefits for CT users?

<ESMA_QUESTION_CP2_67>
"Obligating market data contributors to provide the CT Provider with all the market data under the new Article 22b(2) in MiFIR, in a harmonized format, through a high-quality transmission protocol, and as close to real-time as is technically possible" is problematic. "Same manner and methods" provision under the US Market Data Infrastructure Rule requirements it is merely a standard price list. Neither is it equivalent to Latency Equalization, nor can it achieve the same results as using Time-Lock Encryption (TLE) to make market data available SECURELY in synchronized time.

The problem with both the US SIP revenue sharing scheme and the EU revenue redistribution scheme is that the true "market data contributors" is not well-defined. CTPs may reward and penalize the wrong parties. Policy makers must first address the question of 'who owns the data'. The Facebook case affirmed that data should be owned by "content creators" instead of the

streaming platforms. We strongly suggest that policy makers revisit the definition of Market Data Contributors (MDCs).

Trading venues are likely to overstate their estimated costs required to implement and comply with the draft amended RTS. This would be done in order to negotiate for the maximum amount in revenue sharing. They may even use this compliance requirement or added cost to implement and comply with the RTS, further raising prices on market data and related services. It exacerbates market data/ market structure problems even further.
<ESMA_QUESTION_CP2_67>

Q68: Do you think that the proposed data quality requirements are sufficient to achieve the CT's objectives without generating excessive compliance burdens? Please explain.

<ESMA_QUESTION_CP2_68>
Absolutely not. "Quality without appropriate benchmark is NOT quality." See our responses to Q2, Q4, Q15, Q18, Q26, Q27, and Q31, Q37, Q38, Q41, and Q43. In additions, operational resilience is a critical factor to the success of CT and market integrity (many still remember the LME and other cases, where some see the price and some don't). Without appropriate load balancing, accessing the packet rate over a millisecond or sub-microsecond window, latency, capacity planning, BCP/DR, and addressing system glitch concerns, the Equity CT won't be able to properly function.
<ESMA_QUESTION_CP2_68>

Q69: Which costs do you expect to implement the revenue distribution scheme? Please differentiate between one-off and on-going costs, between fixed and variable costs as well as between direct and indirect costs.

<ESMA_QUESTION_CP2_69>
We are NOT convinced that the proposed RTS on the revenue distribution scheme is equitable. It misplaced or neglected private rights (who owns the data) and undermined social costs. The revenue redistribution scheme may inadvertently enforce the existing flawed licensing framework. Who are the true "market data contributors"? No matter the frequency of redistribution in "dividing the cake", public trust in government and the stock market is at low point. We encourage the EU to learn from the policy mistake in the US, where both the original funding and executed share models for the US Consolidated Audit Trail are inequitable and the US SEC is being challenged in court. We strongly suggest that policy makers revisit the definition of Market Data Contributors (MDCs). See our responses to Q18, Q26, and Q27, and Q31.
<ESMA_QUESTION_CP2_69>

Q70: Which costs do you expect to implement the suspension and the resumption of the revenue distribution scheme? Please differentiate between one-off and on-going costs, between fixed and variable costs as well as between direct and indirect costs.

<ESMA_QUESTION_CP2_70>
See our response to Q31.
<ESMA_QUESTION_CP2_70>