Capital Markets on quest to profit from MP3 like the music industry

Market data infrastructure has **polarized** the industry and large exchange groups. That being said, there is **viable option** to bring them together. By adopting new innovations, everyone gets a bigger piece by **growing the pie**. The music industry eventually figured out how to profit from MP3 after the long years of litigation with Napster. Today many of us are enjoying the use of iTunes, iHeartRadio, Pandora, Spotify, etc. It's a matter of recognizing the inevitable force of crowd economy – i.e. "a dynamic ecosystem of productive people who participate through a platform with a purpose to achieve mutually beneficial goals".

The SEC's market data infrastructure proposal is impractical, or with reference to a Rosenblatt Securities' snap poll, some called it "too much, too late". Aside from the arguments over the controversial Order Protection Rule, there is concern about **connectivity disparity** (100G vs 10G), as some called it the "conflation problem". While the SEC has no solution for that, I advocate for mandating a maximum disparity ratio < 2.5 times and the use of **time-lock encryption**. This enables core data to evolve along with the broader ecosystem and improved market integrity. "Same format" hurts the average investor and gives High Frequency Trading firms (HFTs) a permanent advantage. **Format transformation** (to a higher compression ratio) is the ONLY mean for anyone to catch up.

Frankly, the phenomenon of who owns the data and why some earn 32 mils rebates and others don't, is like the 'Animal Farm' – Negotiate to be 'More Equal'. One may argue that the Exchanges are using order flow data and turnaround selling market data back at a premium price is unfair, or concerned that payment for order flow (PFOF) may induce conflicts. Indisputably, Exchanges are intermediates have to provide value-added functions. Their **value-add arises from aggregating and transforming data**; via whatever intellectual properties (IP) they own. The industry cannot take away the ownership rights of Exchange over market data (not even partially) without paying compensation, unless the SEC determines Exchanges should spin-off data business to curb potential abuse.

Assuming the same logic can be applied to different contexts or situations,

- Can Self-Aggregator (SA) whom perform certain value-added functions and transform market data feeds into streaming of trade signals and be allowed to **share 'trade signals' internally with their affiliates**?
- Referring back to 'Napster disrupting the big record companies' lesson, the infringement was caused by sharing of songs without consent by the artists/ musicians. **What if SA provides express consent** to allow sharing of "trade signals" with respect to order flow they contributed?
- Can an Exchange leverages index products to stream/ redistribute other venues' transformed "market signals" to their members if they are under license to use my **patent** – "Efficient use of computing resources through transformation and comparison of trade data to musical piece representation and metrical tree"?
- Can streaming of 'trade signals' be utilized to optimize execution performance? What other use cases can there be?

Think about all the benefits of playing trade order sequences as music to your ears. You **no longer be bounded by the high cost to perfect the quality of your data** beyond that 50± milliseconds because even though thousand trades happen within that short time range, you would **still be able to detect essential trade signals in real-time**. By placing more emphasis on the information hierarchy than the data structure itself, it enables reconstruction of market events, monitor market behavior, conduct research, identify and investigate potential misconduct, etc. without the hassle of measuring vectors graphically. Indeed, the **industry has been stuck with the paradigm** of outdated measurements (e.g. Value-at-Risk) and blindsided by so-called "visualization" tools that had so many false positives/ negatives. Old metrics are not effective to deal with rapid issues proliferated by hidden problems and silos. Now is the time to rethink!

Borrowing the concept from music plagiarism detection, my invention is able to **compare similar trade patterns at superfast speed** (up to 50 milliseconds), hence enabling the implementation of risk controls, cross-assets/ market surveillance, and identification of market signals in real-time. In trading, the market has shifted by the time you achieved "golden source" of perfect data. A **timely trade action** is substantially superior than a neural network A.I. generated strategies that come too late.

Continuing the lesson learned from how the music industry deters piracy theft problem and comes up with new revenue models for different constituents. Our industry has over emphasized pure speed and not enough **rewards for the originality of trade strategies**. Discovering alpha or hidden trade patterns and gauging the right market timing are hard. Sadly the related profits are short lived because latency arbitrage takes a significant piece away. Below is what I envisage, the idea is similar to Quantopian's strategies of **enabling the crowd**:

1. An open platform or Bloomberg-like terminal where "trade signals" are streamed and shared. There will be a **community library** for some basic trade patterns that everyone can use to monitor market activities.

2. Users can also use these basic patterns and other provided composing tools to derive their own trade strategies. It is **like a music editor** that even teenagers would be able to tweak audio spectrum around to mix or create jingles.

3. They can then put their assembled strategies to a provided **simulation tool for back-testing**. One can choose to share newly identified patterns (in full or in part) with the crowd and be rewarded for their contribution.

4. The more complete pattern they share the more likely to attract **mass subscriptions for higher royalty revenue**. Or they can choose to share only a small part or delay the sharing until their perceived alpha is optimized.

5. Interested parties may listen to t**hese samples before subscribing**. Given everyone's portfolio may be a little different, some minor alternations could possibly unleash tremendous values.

6. This library of both free and subscription based patterns would grow over time. It will **shorten development time** and get the industry excited in **race to reduce unknown unknowns** (98% → 99.9% incremental improvement is better than 85% → 90% because it is 95% error reductions vs just 33%).

7. Think of it as equipping the crowd of average investors, so they have a reasonable chance to compete with the professionals. Hence, make the stuck-at-home trading phenomenon since the pandemic sustainable.

8. Think of it as way to replace loss revenue since the race towards zero commission.

9. Think of it as avoidance of regulatory burden from overly prescriptive rules/ standards that may take forever to achieve. Let's **boil down essential improvements** and keep the rest simple and transparent.

10. Think of the boundless possibilities to **reduce unnecessary complexity/ barriers** within the liquidity-removal fee avoidance wheel, shake up the current straight line "drag race" with a little uphill/ downhill/ curvy, so the market will reach new equilibrium for "speed heterogeneity" (through the use of time-lock synchronization and altering format for higher data compression ratio) that improve liquidity, grow the pie and everyone gets a bigger piece.

There is **money on the table**. Crowd driven technologies would spur new economic and business opportunities, or at least a FCA's research has cited, "eliminating latency arbitrage would **reduce the cost of trading by 17%** and that the total sums at stake are on the order of $5 billion annually in global equity markets." I believe enthusiasts would pitch in to derive customer values. After all, crowd economy would prevail (once again through MP3 sharing) by returning power to the **People**, whom seek higher **Purpose**, at a common **Platform**, encourages **Participation**, and drive **Productivity** growth!

*By **Kelvin To**, Founder and President of Data Boiler Technologies*

At Data Boiler, we are more the Qualcomm than the Apple. Between my patented inventions and the wealth of experience of my partner, Peter Martyn, we humbly seek opportunities if some of our skills can be put into appropriate use in driving forward meaningful market reform.