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What goes down, must come up

One of the major developments that unfolded during the Summer of Covid was CME Group's announcement that it would wind down several of its regulatory reporting services, following a review that found the offerings no longer aligned with the exchange operator's business direction.

Since that announcement, our Josephine Gallagher has been breaking news left and right in the regulatory reporting space. First, she learned that Deutsche Börse was following the CME's lead and leaving the space. She then explained why this was all happening now. And then she did a deep dive into the vendors looking to fill the void left by CME and Deutsche Börse, one of those companies being SteelEye, which has been poaching former CME talent.

And as you'll read about on page 22, Jo learned that Bloomberg is raising the price of its Regulatory Reporting Hub (RHub) services by introducing a new flat fee and price range for a higher reporting threshold.

The regulatory reporting space has become too costly for many, as various vendors kept dropping the prices of their services for something that doesn't provide alpha for the end user. Eventually, a bottom is hit and the market needs to readjust. That's what appears to be happening here.

Bloomberg has previously faced criticism over the cost of its services. In one instance, Wall Street banks banded together to create Symphony in a bid to lessen their reliance on the ubiquitous—and expensive—Bloomberg Terminal. It is no easy feat, however, to take on a beast like Bloomberg. And as some major players have exited the regulatory reporting space, executives at Bloomberg feel that now is the time for a market adjustment. I suspect that others will follow suit. At the very least, they will be more discerning about which companies they decide to take on.

At the same time, some vendors will probably try to step in and offer lower prices, but you can only survive for so long running a business that can be onerous and in which you're not adding alpha-driving capabilities like with, say, an order management system (OMS). Yes, trading firms will always look for the lowest price, but at some point, stability becomes more important because the disruption caused by a system switchover like this every few years is not worth the money saved—so if it isn't providing alpha, maybe locking in something more stable is worth the price tag. wt

Anthony Malakian
Editor-in-Chief

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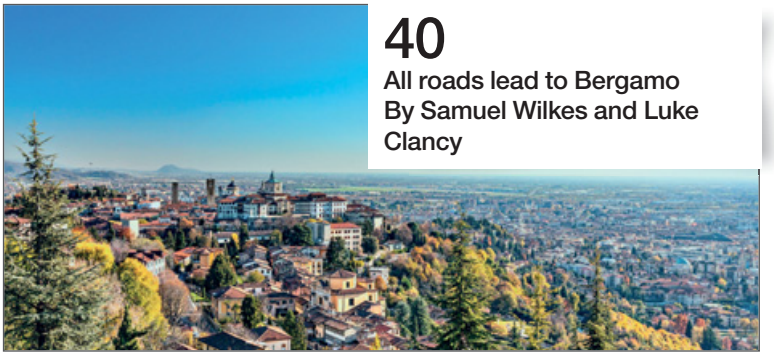

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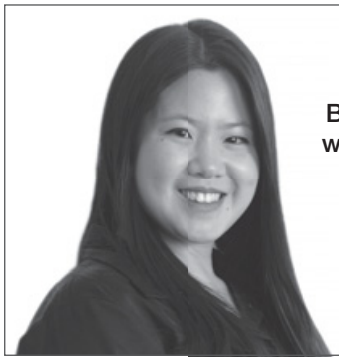

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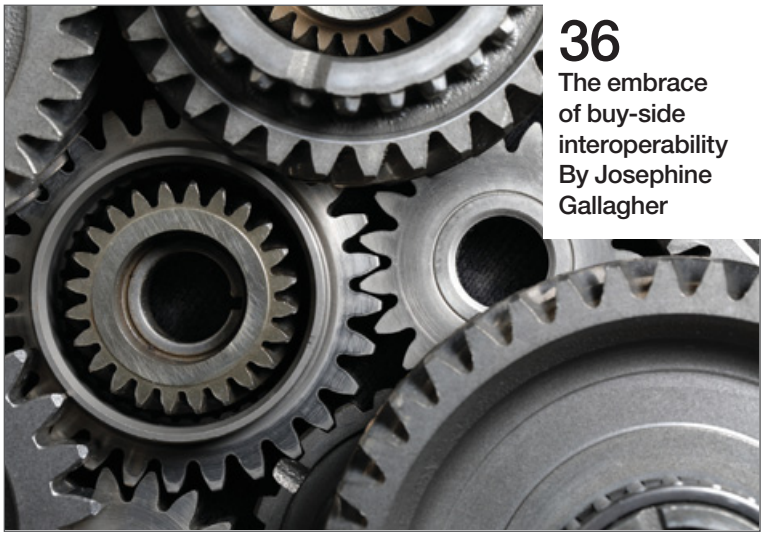

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By Josephine Gallagher

Algorithmics charts new course in year-plus after SS&C acquisition

After eight years with IBM, Algorithmics has grown its staff significantly in the year since SS&C bought the risk analytics provider. The vendor is now taking aim at tapping into SS&C's roster of buy-side users by embedding with the likes of Advent and Eze Software. By Anthony Malakian

Algorithmics, which started doing business in 1989, has known relative stability in its product line, establishing its bona fides in the realms of market risk analytics and regulatory services. It's on the M&A front that the changes have occurred.

In the 21st century, the vendor has been acquired three times. At the start of 2005, Fitch Group bought Algorithmics for $175 million. Then, in late 2011, it was tech behemoth IBM acquiring Algorithmics for about $380 million. That pairing was also not to be long lived, though, as Algorithmics was sold to SS&C Technologies for $88.8 million in late 2019.

SS&C is well known for its growth-through-acquisition strategy, which includes (but is certainly not limited to) the 2018 deals for Eze Software ($1.45 billion) and DST Systems ($5.4 billion), and the 2015 purchase of Advent Software ($2.6 billion). The Windsor, Connecticut-based company has had its fair share of tech integration experience. Since the deal closed on December 2, 2019, the team at Algorithmics has spent the last 14 months figuring out how to intertwine the company's risk tools into the larger SS&C product base, including Eze, DST, and Advent.

"We see a huge opportunity to embed our analytics and capabilities in other solutions across the SS&C portfolio," Mina Wallace, general manager of Algorithmics, tells *WatersTechnology*. "So part of the integration effort over the last year has been identifying where there's an opportunity for the functionality that we bring to the table to drive value, or vice versa, to drive value in our particular space."

To take advantage of this new opportunity, the company has gone on a hiring spree that dwarfs anything it experienced while under the IBM banner. Wallace says that over the last year, the company has hired more than 40 new employees; the positions run the gamut at the organization, but there's been a particular focus on people in development and implementation services.

Perhaps most interestingly, though, she says that roughly 10% of those new hires are former Algorithmics employees that left in the years after the IBM acquisition.

"We've hired more people in the last year than we hired in eight years at IBM," she says. "That's been an amazing opportunity for us. They went off to work at competitors or academia or practitioners, and it was less about us reaching out to folks; it was more about folks reaching out to us. It's a very tight community in financial risk management, and it's been terrific to have people reach out to us and ask if there's an opportunity for them."

Additionally, she says, being under the SS&C umbrella will also afford new opportunities for Algorithmics' 200-plus clients due to SS&C's many tentacles in the capital markets.

While most of these clients are also users of IBM technology, those relationships are more on the infra-

structure side. Whereas Algorithmics will be able to plug its risk analytics capabilities into the various SS&C trading platforms, it will also bolster its own regulatory and credit services specific to the capital markets.

"In general, our clients never had the sense that it was an opportunity for them to be part of the IBM world from a financial risk management perspective," Wallace says. "When we were acquired by SS&C, it became very obvious that because SS&C is completely focused on the areas of business that we're focused on, that the kind of investment that SS&C is willing to make is really much different than we've had at IBM. And we've experienced that over the last 14 months, for sure."

One of the immediate changes clients will notice is Algorithmics' expansion of its cloud capabilities, she adds.

"Under IBM, we were basically supporting the IBM cloud, which has a very small percentage of the market. We have now moved our first clients to AWS. We're working with all the major cloud platforms, which is key, because cloud is such an important part of the technology transformation that our clients are undergoing. They're feeling much more positive about the fact that we're able to support whatever they happen to choose from a cloud perspective."

While Wallace is clearly enjoying life at SS&C, she offers no criticism of IBM—the two owners are very different companies, with different sets of priorities.

One analyst who has worked with both companies says that the IBM partnership was "part good, part bad," but that this new pairing will "herald a shift in focus away from banks and on to the SS&C customer base … it could be a very positive turn as the buy side is the big growth area."

Bolstering the buy-side roster

Wallace also sees the buy side as being a ripe growth area for Algorithmics.

> "We've hired more people in the last year than we hired in eight years at IBM. That's been an amazing opportunity for us. [Former employees] went off to work at competitors or academia or practitioners, and it was less about us reaching out to folks; it was more about folks reaching out to us"
> **Mina Wallace, Algorithmics**

Karen Geiger
Algorithmics

First, though, it is tightening up its tech integrations and improving the user experience.

On the product side, in addition to conducting a rejig of the company's user interfaces to make them "as intuitively usable as the client would expect," Algorithmics is also building tighter connections with Armanta, which was acquired by IBM in May 2018 for an undisclosed amount. The Armanta unit, which specializes in risk management and data aggregation, came along with Algorithmics to SS&C.

Algorithmics first replaced its aggregation engine with Armanta's, and then the two companies worked on building a "common platform" for the Fundamental Review of the Trading Book (FRTB) regulation to allow for decision support, querying, and analysis. They are now working to create the same add-on functionality for the standardized approach for counterparty credit risk (SA-CCR) rule, which should complete by the end of June.

As Algorithmics then embeds these tools into the various SS&C platforms, the company will use a microservices model to deliver these analytics. "So it's not necessarily that the client would even know that it's Algorithmics—it's kind of like Algorithmics inside, basically—but now what we can do is we can replace an external supplier, or we can provide value beyond what they had before," she says.

In a previous interview with *WatersTechnology*, Karen Geiger, co-general manager of SS&C Advent, said that her unit has been in talks with the Algorithmics team to plug the latter's risk and analytics into Genesis, Advent's cloud-native portfolio construction and rebalancing platform. "There's a lot more deliberate collaboration than there has been in the past," said Geiger, who joined Advent in 1999.

Wallace, who joined Algorithmics in 2004 and is based in Toronto, where the company was born, says that the team will continue to focus on market risk calculations relating to things like FRTB, credit analytics, initial margining, and credit valuation adjustments (CVA), but being with SS&C will allow it to expand more broadly into the buy side, specifically around smaller and mid-size fund managers. Algorithmics has traditionally had a stronger presence amongst the largest banks and brokers, and the largest traditional asset managers.

Mike Megaw, managing director of Regulatory Analytics & Data at SS&C Technologies, who joined the company in 2005 after an acquisition, says that one of the biggest benefits for customers of both entities will come from running Algorithmics' analytics tools on the data residing in SS&C's record-keeping systems to find unique insights for users.

"Having the data from the record-keeping systems that can then feed into the algo solutions is really unparalleled," he says. "Nine times out of 10, when you're onboarding a risk management system or an analytics system, your biggest concerns are, where is the data going to come from, is it accurate, and then, ultimately, are the calculations accurate? By doing this, we can embed [Algorithmics] on top of our record-keeping systems and the data management part of it goes away." wt

Esma: Both OTC identifiers will not be required in Emir reporting

Market participants will not have to use both the UPI and the Isin in their submissions to trade repositories, EU policy officer says. By Mariella Reason

Market participants won't have to use two different codes to identify derivatives in regulatory reporting under the European Market Infrastructure Regulation (Emir), according to Joanna Lednicka, policy officer at the European Securities and Markets Authority (Esma).

Lednicka says the regulator is not in favor of requiring reporting counterparties to use both the unique product identifier (UPI) and the International Securities Identification Number (Isin) for over-the-counter (OTC) derivatives in their submissions to trade repositories under Emir. Either code would clearly identify an OTC product, she says, while "at the same time, this limits the burden to the industry by not requiring the provision of both Isin and UPI for the same products."

The main purpose of the UPI, which is still under development, is to provide a means of identification for OTC bilateral derivatives. So far, it is expected to be used only for the instruments falling under the Emir scope that are not subject to the Markets in Financial Instruments Regulation (Mifir) reporting, which are the derivatives that are neither admitted to trading nor traded on a venue or via a systematic internalizer. This expectation will ensure that all derivative products reported under Emir are identified using an international standard—either UPI or Isin—or, in other words, that the same instrument will not be subject to both Isin and UPI requirements.

UPI codes will be issued by the Derivatives Service Bureau (DSB), a subsidiary of the Association of National Numbering Agencies (Anna), from the third quarter of 2022. The UPI has been developed by a global initiative as a way of identifying OTC derivatives to enable global regulatory authorities to aggregate data on these transactions, and assess systemic risk.

Esma recently consulted on Mifir regulatory reporting and reference data requirements. In their responses to the consultation, many market participants expressed support for the creation of the UPI, but some were concerned that reporting a second code could lead to data quality issues, especially when used alongside the Isin.

Esma's Lednicka says there was "major support" among market participants for the continuation of the use of Isin for those products that are already identified using the code.

"We think that in the future, either all or the majority of the UPI reference data elements should not be required to be reported separately to the trade repository. This can be facilitated through the use of flexible validation rules on which Esma has started working," Lednicka says.

Esma has postponed the applicability date of the updated Emir validation rules from February 1 to March 8, 2021. These rules offer guidance on technical aspects of Emir, such as exactly what reference data needs to be reported to trade repositories.

Lednicka says that as well as the validation rules, Esma is working on guidelines for reporting, Q&As, and technical documentation to assist the industry in the implementation of the updated requirements under the Emir Refit—a set of amendments to Emir. "This guidance and documentation will also cover aspects related to the implementation of the international guidance, such as guidance on UPI, in the EU," Lednicka says.

Data quality concerns

Some market participants said in their responses to the Mifir consultation that they would prefer to have one standard for reporting derivatives, and are worried that this policy decision would jeopardize data quality in reports.

ING Bank said it is in favor of harmonization of reporting requirements, and the use of available and internationally accepted standards,

but that ING "would not be in favor of using Isins for some OTC derivatives transactions and UPIs for other OTC derivatives transactions and would expect one single, globally accepted product identifier for OTC derivatives."

Similarly, Commerzbank said it doesn't see a tangible benefit in switching from the Isin to the UPI, as the Isin has been adopted by Esma and is well established in Mifir reporting. The German bank said, "We feel that a potential use of the UPI as an alternative identifier for OTC derivatives will result in higher complexity and will result in considerable implementation efforts for all reporting entities."

But as Lednicka says, that will not be the case, and the UPI will only be required where the Isin is not.

"The challenge with the proposed approach is that firms would need to run two processes: one for the inclusion of UPI and one for Isin. Also, having an either-or scenario creates race conditions. On a global basis, we have generally found that the more complex the reporting requirements are made, the lower the data quality achieved," Kirston Winters, IHS Markit's managing director of the company's OTC derivatives trades processing business, MarkitSERV, tells *WatersTechnology*.

"Isin and UPI are different standards, and it is unclear how UPIs will be derived from Isins, particularly without causing data quality issues. This is a concern we think should be addressed as a priority," says Bloomberg's Richard Young, head of regulatory and industry relations for global data at the company.

Young also says he is concerned that the decision to mandate Isins means Emir reporting could "potentially diverge" from the standard international approach for OTC derivatives trade reporting, as the UPI was specifically designed for this purpose.

In 2016, Bloomberg's own Open Symbology unit fielded a rival standard to the Isin, the Financial Instrument Global Identifier (FIGI). At the time, Esma was in the process of selecting an identifier for derivatives to use in Mifir, and ultimately chose the Isin.

> "We're proposing to utilize the experience we've gained through the OTC Isin model to help us lay the foundations for UPI. This has been more than just with regard to the fee model, but also around the design and the development approach." **Emma Kalliomaki, DSB**

The UPI fee model

The DSB, to which Esma gave the mandate to develop Isins for regulatory reporting and today generates and distributes the codes, now also has the sole mandate to distribute the UPI and operate the UPI reference data library. Since then, the body has been working on a governance and pricing model for the code, aiming to be able to distribute it to market participants by next year.

The first round of industry consultation on fee model principles opened on January 12, with a deadline of March 5 for industry feedback. The consultation will look at expectations around UPI adoption and the estimated number of users, the types of users, the use of workflows, and cost allocation processes.

Emma Kalliomaki, DSB's managing director, is proposing that the code be charged for on a cost-recovery basis, using much the same model as the bureau uses to charge for the OTC Isin. "Essentially, it's the cost of the service divided by the number of users," Kalliomaki says.

Annual fees for the Isin are calculated using a model that applies ratios to users depending on the frequency of their use. So, for example, "standard" users and "power" users are assigned different variables and would be charged differently. The DSB says this ensures that users are charged fairly, according to their usage levels.

Having already developed the Isin—and having weathered some controversy during that project—Kalliomaki says the DSB has the foundations in place to build the UPI. "We're proposing to utilize the experience we've gained through the OTC Isin model to help us lay the foundations for UPI. This has been more than just with regard to the fee model, but also around the design and the development approach," she says.

Like the Isin, the UPI will be a key identifier in regulatory reporting. The UPI is being developed by the Financial Stability Board (FSB) and the DSB to harmonize the data elements that are reported to trade repositories. The FSB says individual jurisdictions should implement the UPI in their own regulations by the third quarter of 2022.

"The core purpose of the UPI is really to allow the global regulatory community to aggregate trade repository data, and then to be able to look at it holistically from a market abuse and systemic risk standpoint," Kalliomaki says. wt

Futures trading algos ripe for disruptive new entrants

Algorithm development specialist BestEx Research is making a play to address inefficiencies in futures trading algorithms. By Max Bowie

Automated trading algorithms are commonly used and well understood in equities markets, but their application in other asset classes, such as futures, has sometimes proved problematic. Though the use of trading algorithms in futures markets has grown over the past decade, those algorithms have not always properly addressed futures' market microstructure, and with firms now looking for more precise execution and analysis capabilities, a new breed of futures-specific algorithms is emerging.

Additionally, while brokers have offered buy-side clients access to their routing algorithms for almost 20 years in equities markets, buy-side futures traders say broker algo offerings in the space were either non-existent or insufficient, forcing firms to build their own.

"A decade ago, if you were building a strategy … [third-party] execution algorithms for futures and currencies didn't exist, so you had no choice but to build your own," says Brian Hurst, a former principal and 22-year veteran of AQR Capital Management, who is now looking to build his own asset management firm. "On the futures and foreign exchange side, there are not a lot of options. From what I've seen, brokers just copy and paste equity algorithms over for trading futures, without understanding the market microstructure."

Back in the day, AQR chose to create its own futures algorithms in-house, and in 2012, Hurst hired Hitesh Mittal as global head of trading to build out its execution algos and internal transaction cost analysis (TCA) capabilities. Mittal had previously spent 10 years at ITG, including as global head of algorithmic trading and liquidity management.

> "Firms end up losing a lot of alpha in execution costs … because some offerings from brokers today are not well-rounded, and don't take into account the idiosyncrasies of the futures markets, and don't have measurement tools"
> **Hitesh Mittal, BestEx Research**

"At AQR, we did it ourselves. And a lot of hedge funds of similar size are also doing this themselves … but it can be expensive to build and maintain a suite of algorithms," Mittal says. "On the one hand, equities and futures look similar—they are traded on exchanges and use similar order types—but there are some major differences … that can lead to very high costs. I was the guy complaining about this when I was on the buy side at AQR and had to build the algos myself."

Mittal left AQR in 2015, and two years later launched BestEx Research, which specializes in providing execution algorithms directly to buy-side firms, and to banks and brokers that white-label them and offer them to buy-side clients. Having started out providing algorithms for the equities markets, BestEx is now rolling out dedicated algorithms for futures trading, which Mittal says will be cheaper than building and maintaining algorithms in-house, while providing better performance than broker offerings.

"Firms end up losing a lot of alpha in execution costs … because some offerings from brokers today are not well-rounded, and don't take into account the idiosyncrasies of the futures markets, and don't have measurement

tools … so they end up deciding to do it themselves," Mittal says. "We're a technology firm that has the market microstructure knowledge. We understand trading and trading costs, and most of us have built electronic offerings on the buy side and sell side."

That experience also extends to how BestEx has assembled the various components of its offering: The company built its underlying infrastructure from scratch, and uses Pico Quantitative Trading to manage the infrastructure. So far, BestEx has certified the algorithms with Bloomberg, Trading Technologies, InfoReach, and TradingScreen, and plans to certify them with all trading front-ends.

But key are the execution algorithms themselves, also built from scratch by BestEx. Aside from being constructed specifically with the nuances of futures markets in mind, rather than being repurposed or tweaked versions of its equity algorithms, BestEx's new futures algorithms have discretion to speed up or slow down trading and to price and time orders, leveraging a proprietary short-term alpha model that uses a range of predictive factors to forecast upward or downward price movements likely to occur within the next few seconds.

"The biggest driver of trading cost is liquidity. So execution algorithms must take into account factors like the bid–offer spread and depth of book, and estimate what the liquidity and spread would be," Mittal says. "In equities, that's easy to estimate based on just a couple of weeks of data, because there's only one Microsoft stock, for example, and it usually behaves the same. But that doesn't apply to futures, because for each contract there are multiple expiries, and the liquidity in each expiry shifts on a daily basis … and that dynamic won't be captured by [repurposed] equity algorithms."

Also, because futures trade 24 hours, liquidity dynamics are different at different times of day. Mittal says BestEx's futures algorithms account for this, avoiding times when trading would have a high market impact and result in higher costs. Other futures-specific features include assessing queue length, participation rate, volatility, and tick size—which can vary on futures markets—to maximize spread capture. The result, Mittal says, represents a saving of up to 80% on execution costs, eliminating slippage to help asset managers maximize returns.

Hitesh Mittal
BestEx Research

Growing Focus on TCA

When *WatersTechnology* investigated the growing adoption of futures trading algorithms in 2013, only firms at the cutting edge of algorithmic development, such as Quantitative Investment Management and Quantitative Brokers, were looking closely at elements such as alpha decay or the inter-linkage between products that create the complex microstructure of futures markets, with most firms satisfied using volume- or time-weighted average price (VWAP or TWAP) benchmarks. Few had the appetite or patience for legged trades or the ability to create robust simulation environments to improve execution quality.

And while TCA is widely used in equities markets, acceptance in futures markets remains limited. David Easthope, senior analyst in Greenwich Associates' market structure and technology practice, and author of the new report *Equities TCA 2021—A Transitional Year*, says that while TCA use in equities markets is recovering and evolving into "an increasingly important tool for trading desks" and "moving from a post-trade report card to an interactive trading assistant" after being thrown off course by the Covid-19 pandemic, its adoption is still much lower in other asset classes.

The Greenwich survey polled North American equities traders about their TCA usage, but also asked what other asset classes their firms use TCA for. "The cross-utilization of TCA between equities and other asset classes is fairly low," Easthope says. Whereas TCA is commonly used by more than 80% of firms for equities trading, only around 10% of those firms also use it to support trading in other asset classes, and of those, the leading asset classes in terms of TCA adoption are currencies and corporate bonds.

"So I don't see a lot of TCA use for futures markets—at least, not by equities funds hedging with futures," Easthope says. "Unless you're deep in the weeds of futures trading, you probably don't need it."

This is exactly the group of futures trading professionals that are most sensitive to execution costs, and the market that BestEx is targeting: those deep in the weeds of futures, which recognize the potential of TCA to improve execution quality.

"If you're a commodity trading advisor with high turnover, who is trading futures all the time—as opposed to someone trading futures to hedge when they turn over their equities portfolio every six months—you're talking about multiple basis points per trade. That easily adds up … and that can determine whether you're in the top quartile or second quartile," Hurst says.

Demand among this client base has grown over the past decade as institutional futures investors have become more sophisticated and as lower interest rates and returns have made firms more cost-conscious, he adds. "Ten years ago at AQR, no client ever asked about transaction cost," Hurst adds. "By the time I left in 2019, it was a common thing for investors to ask about."

Causes of slower TCA adoption outside equities may simply be that the US Securities and Exchange Commission's best-execution requirements don't cover other asset classes, so there is no regulatory driver forcing adoption, or because many buy-side firms trade with a single futures commission merchant, so they don't need to prove best execution.

But whenever adoption increases, Mittal says BestEx already offers TCA, integrated with its algorithms. wt

SEC attorney defends personal information in the Cat

Regulators will need biographical information to get the most out of the Consolidated Audit Trail, advisor said, as broker-dealers and exchanges argue over liability for breaches. By Jo Wright

Broker-dealers are terrified that the sensitive data of their customers could end up in the hands of hackers, but an attorney from the US markets regulator said it is necessary to collect this data to give regulators the power to perform detailed analysis on equities and options transactions, and spot financial crime.

Hugh Beck, regulatory reporting advisor to Allison Herren Lee, the acting chair of the Securities and Exchange Commission (SEC), defended the regulator's requirement that personally identifiable information (PII) be included in reports to the Consolidated Audit Trail (Cat), the database being built to track equity and options trading activity.

Beck was speaking on a webinar hosted by the Securities Industry and Financial Markets Association (Sifma), whose clients include the broker-dealer community that must report data to the Cat. The platform requires broker-dealers to submit biographical information such as birth dates on customers (some of whom are known as "authorized traders" in the regulation that governs Cat) identified with a unique code—the Cat Customer ID.

Beck said that this information is critical to the regulators' ability to connect customers of broker-dealers with other accounts they may hold.

"Why is that important? Well, just imagine a scenario in which an unscrupulous trader is submitting disadvantageous orders into an account on which they are an authorized trader, and then an account on which they are a customer. They are submitting opposing orders, and hoping that they will cross, essentially transferring value from the account on which they are an authorized trader to an account on which they are a customer. Having a link between the two is what enables us to identify that scheme much more readily," Beck said.

> "Imagine that an investigator is looking at suspicious trading by an individual and comes into some new information that suggests that relatives are somehow involved. The investigator knows the last name of that individual, and so could run a search in Cat by tracing individuals of the same last name."
> **Hugh Beck, Securities and Exchange Commission**

"There is a host of reasons why having the unique CCID that links all accounts controlled by a person—whether in the capacity of authorized trader or in the capacity of a customer—is really important."

Against the stereotype of the lone rogue trader, many financial crimes—whether front-running, market abuse, or insider trading—are social crimes, Beck said, involving the participation of networks of individuals. Requiring biographical information is important in catching linkages between individuals.

"Imagine that an investigator is looking at suspicious trading by an individual and comes into some new information that suggests that relatives are somehow involved. The investigator knows the last name of that individual, and so could run a search in Cat by tracing individuals of the same last name," he said. "You can't do those searches if the customer and account information characteristics are not part of the database itself. It doesn't help to be able to ask the question afterwards about who did it if the question is about narrowing the search in the first instance."

But Beck added that these are the goals of Cat; how the system eventually achieves that goal of providing sufficient information is immaterial, and the regulator is prepared to work with the industry on addressing its concerns.

Data sticking point

Sifma held the webinar to update the industry on the progress of Cat, which is being implemented in phases. The project is an initiative of the SEC and 24 securities exchanges and securities associations, known as the self-regulatory organizations (SROs). The Cat's progress has been beset by delays since

its inception, but reporting and two of four phases of the Cat's transaction database are complete. The Cat receives billions of messages daily, said Ellen Greene, Sifma's managing director for equity and options market structure, who moderated the discussion.

However, the security of sensitive PII that is to go into a separate database—the Customer and Account Information System (CAIS), which will be maintained by the SROs—is a major sticking point in the project.

Sifma has frequently expressed concern for the safety of customer information in the Cat. Its president and CEO Ken Bentsen said the fact that sensitive data will be compiled in one place, and that some 3,000 users at 24 separate organizations will be able to bulk download and store this data, is hugely concerning. Sifma wants only the SEC and Finra to have access to the entire database, and said that broker-dealers and customers should not bear the liability of such risks to their information, especially as they have not chosen to submit it but are compelled to do so by regulation.

In the final days of 2020, the SROs filed a proposal with the SEC to amend the Cat user agreements to limit the SROs' liability for a data breach in the Cat system. While Sifma argues this is unfair, the SROs say that users of other reporting facilities that held sensitive data, such as the Order Audit Trail System (Oats), must agree to limitation of liability provisions, so why shouldn't that be the case for Cat?

In its latest salvo, Sifma sent a letter to the SEC in late January asking for a temporary pause in development and implementation of the Cat, to allow for a reassessment of whether the PII and other customer data planned to be reported to and maintained within the CAIS is necessary or appropriate to fulfil the purpose of the Cat, "particularly in light of the evolving risk landscape."

The Sifma letter referenced US tech firm SolarWinds, which suffered a massive data breach that was spread to its clients via routine software updates, allowing the hackers to spy on companies including Microsoft, Cisco, and Deloitte, and the US government, including the Treasury and Department of Homeland Security

"As the repository for virtually all of investors' equity and options trading activity in the United States, the Cat system will be an extremely attractive target for nation states and other bad actors. The recent discovery of the SolarWinds hack has greatly increased industry members' concerns about the security of data within the Cat System and its vulnerability to a breach," Sifma said in its letter.

Sifma's Greene said during the webinar that the organization believes that since the customer and account reporting phase of the Cat project is not scheduled to go live until July 2022, an SEC-ordered pause would not delay the final implementation and would allow for the continued development of the technical specifications consistent with current broker-dealer recordkeeping requirements.

Greene said it was "inconceivable from a risk management standpoint that the SEC would allow bulk downloading of customer and transaction data by the SROs," and that if a breach of the Cat were to occur, the SROs should be held liable.

"Sifma's guiding principle on this issue is that they who hold the data bear the liability, and we strenuously oppose efforts to shield responsibility for maintaining the security and privacy of such data. It is inappropriate and unfair for the SROs to unilaterally oppose limits on their own liability when they alone hold and control data," Greene said.

"Sifma's guiding principle on this issue is that they who hold the data bear the liability, and we strenuously oppose efforts to shield responsibility for maintaining the security and privacy of such data. It is inappropriate and unfair for the SROs to unilaterally oppose limits on their own liability when they alone hold and control data." **Ellen Greene, Sifma**

Security is expensive

During the webinar, Greene asked Michael J. Simon, chair of the Cat operating committee, why the committee has opposed attempts by the SEC to improve Cat security. In August 2020, the SEC proposed amendments to the Cat that, if they are adopted, will, among other measures, require that the SROs use analytical environments called Secure Analytical Workspaces (Saws) to review Cat data (a recommendation that Sifma endorses).

Simon responded by saying that these proposed amendments will make the Cat far more expensive to run without clarifying how they even will improve data security.

Security improvements to the Cat have already been made, he said. For example, as of March 2020, the SEC no longer requires social security numbers to be included in the PII reported to the Cat, and allows the use of the CCID, along with birth years, instead. The CAIS database, which is being built by vendor Kingland, is going to be maintained entirely separately from the transaction database and have extra levels of protection and extra access controls, he added.

Simon said the SEC's cost-benefit analyses in its Cat proposals have underestimated how much it will take to build the Saws that the SROs would have to use to look at Cat data.

The committee's comment letter opposing the amendments states the labor costs alone to build the proposed Saws would be about $26.4 million, which is 60-times greater than the commission's estimate of $441,600. Similarly, the cost of operating it would be about $34.4 million, over 40-times greater than the commission's estimate of $860,200. wt

PanAgora senior execs explain ESG framework, best practices

Waters Wavelength Podcast Interview Series: PanAgora's George Mussalli and Mike Chen hit on topics including building predictive models using point-in-time data, and balancing ESG portfolios.

By Anthony Malakian and Wei-Shen Wong

PanAgora Asset Management is a Boston-based, quantitative investment manager that has built a framework to incorporate ESG metrics into the firm's overall investment strategy.

George Mussalli, chief investment officer of equity investments at the firm, and Mike Chen, director of portfolio management and sustainable investing, joined the Waters Wavelength Podcast to talk about a range of topics relating to ESG. This story comes from that interview, which can be found at *www.waterstechnology.com/7797126*.

One of the topics broached looked at how a manager builds models that are predictive and forward looking, even if the data going into the model tends to be point-in-time.

This is a topic that was recently raised by Mary-Catherine Lader, who, at the start of 2020, was appointed to the role of head of Aladdin Sustainability at BlackRock. She told *WatersTechnology* that she expects to see sustainability data—which is just one piece of the overall ESG pie—"transition from being a point-in-time snapshot, to more predictive and forward-looking."

She continued: "Today, we have a few facts about a company; in the future, we expect that you'll have lots more unstructured data at your fingertips that an investor can use a software tool to predict—to model—how a company's performance in a certain area might change over time."

PanAgora is also looking to address this point-in-time data challenge to drive more future-looking insights that yield alpha. Chen said that one reason the firm can build more predictive models is advancement in the fields of natural language processing and, more generally, machine learning.

PanAgora is aiming for more future-looking ESG insights

He gave the example of a company that emits 10 million tons of carbon into the atmosphere annually, which is not great, to say the least. But if you simply look at that piece of point-in-time information, you might miss the larger picture. Let's say the company's management has also put out a very concrete plan that shows what they're doing to reduce their emissions, and they set a firm percentage-reduction outlook by a specific date, perhaps by introducing a new type of technology into the manufacturing process. Perhaps then that company becomes more palatable to include in an ESG portfolio.

"If you can somehow read into that report—which is more descriptive rather than a pure number—you can gauge management on whether their plans are effective," Chen says. "And you can actually gauge them on whether their plans are credible by looking at the words and the context of the words that they use. So you can gain a lot of forward-looking, predictive information if you apply some of these advanced technologies, such as NLP."

The tech, essentially, allows a company like PanAgora to ingest more—and potentially better—data. But to get to that point, Mussalli said it's important for the humans to first think about what data they need—essentially, which characteristics are most likely to lead to outperformance? "After long discussions, we then go out and look for this data—a lot of times, quants tend to do the opposite," he said.

Every morning, he added, he receives a flood of emails from data providers pitching "unique" offerings. Most recently, those pitches have tended to include data around Reddit forums like r/WallStreetBets. Mussalli said that method is reactive. "If you give a data scientist a piece of data, they're going to look for a signal and then make up the story after. What we do is kind of the opposite."

At PanAgora, the equity investment team comes up with a fundamental idea, and then they go out and look for data that provides a full picture of that idea. While he acknowledged that they might miss out on some opportunities, the group has "a pretty good hit-rate" using this method for security selection.

"The challenge is, when it's hard to find the data, the alpha potential is very high; and once everybody has the data, it goes away," Mussalli said.

For example, about 15 years ago, PanAgora would manually collect same-store sales figures from retailers like Gap and Home Depot, and interns would type that data into a spreadsheet, which would be loaded into the asset manager's model for this type of investment vehicle. "It worked great; it was the biggest alpha producer in the model for a long time," he said. "Then one day, Bloomberg has a field—same-source sales, you type it in, you download it, it's gone."

Fifteen years ago, ESG data was one dimensional and backward looking, because if you're the only company that has that data and knows how to use it, it could generate alpha. Today, "the amount of data that we need to capture to be ahead of the curve is exponentially bigger," he said. wt

OPEN OUTCRY

"When you look at the level of change, you look at the cost of the ambiguity of the regulatory text [and] you look at the variability of the quality of the data that's being delivered by clients—these factors have contributed to a high cost of delivering the service. That's why some other firms have shut down or sold their services, because firms have struggled to see a path to profitability." **Brian Lynch, global head of regulatory reporting at Bloomberg**

» *see page 22 for full feature…*

"We know what happens here in the consumer realm. There's all these congressional inquiries and so forth into the power of these social media firms. And in the business realm, where we're focused, it's the same problem. You're a bank sending your bids and offers to a marketplace, but you've got no way of knowing what that marketplace will do with that data. Maybe they'll execute your orders faithfully, fairly, and transparently, but maybe they'll front-run you, or maybe they'll sell that data to another firm. They may promise they won't, but you've got no technological way of enforcing that." **Richard Brown, chief technology officer at R3**

» *see page 14 for full feature…*

"Ion certainly has been buying up many sell-side assets, so there's no surprise here. For every asset class, every piece of the trading infrastructure, [Ion] just keeps adding to it. Broadly, legacy fintech has been flowing into a few hands, and Ion has been one of those hands that's been picking up a tremendous number of pieces across asset classes." **Brad Bailey, research director of consultancy Celent's capital markets division**

» *see page 18 for full feature…*

"We don't believe that closed systems will—I wouldn't say 'survive'—but that it will be the right way to capture the market in the long term. When you look at history, closed systems have sometimes had to have a significant ramp-up and there is a tipping point where closed systems will eventually go out of fashion and will not be up to date anymore." **Jörg Ambrosius, head of business at State Street's Emea unit**

» *see page 36 for full feature…*

"Imagine you were actually asked to create a portfolio on renewable energy. Your brain is going to think, 'That's solar, wind, hydro, etcetera.' You're immediately going to create a mind map in your head naturally, of words and phrases that are related to renewable energy before you start analyzing a company. So that's essentially what ThemeBot tries to do." **Yazann Romahi, managing director and CIO for quantitative beta solutions at JPMAM**

» *see page 32 for full feature…*

"The main hit for businesses is having to conduct fairly extensive repapering exercises because, in most instances, businesses haven't actually had to create a huge amount of paperwork for transferring data from the EU and the UK, or the other way around. So, it is going to cause quite a bit of heartache in terms of having to create that extra paperwork." **Arnav Joshi, senior associate at Clifford Chance**

» *see page 28 for full feature…*

"Moving a data center with lots of different clients and lots of different users is daunting." **An executive at a proprietary trading firm that makes markets on Euronext**

» *see page 40 for full feature…*

Confidentially speaking

Perhaps smarter than blockchain and certainly closer than quantum computing, confidential computing could accelerate banks' move to the cloud—if the industry gets it right. By Rebecca Natale

"It's a funny story," says Richard Brown, CTO of R3, an enterprise software firm originally set up in 2014 as a blockchain consortium backed by major banks. When the vendor started working on Conclave, its confidential computing platform, "we didn't envisage it being a new product. It was actually intended to improve some features of Corda, our blockchain."

Last week, R3 unveiled Conclave, almost two years after realizing that the improvements it was looking to make to Corda could pave the way for a new product line—one that underscores the growing awareness of, and urgent need for, data security and privacy among enterprises, consumers, and governments in the digital age.

Confidential computing involves two aspects. The first piece leverages what's known as an enclave, or trusted execution environment, which is a physical piece of hardware that isolates sensitive data within a CPU. In Conclave's case, it uses Intel's Software Guard Extensions (SGX) chip, and connects clients via a high-level API, which allows developers to write their own host apps on any operating system in any language that can run on a Java Virtual Machine, such as Java, Kotlin, or JavaScript.

The CPU on which the enclave is running creates a crypotgraphically secure "statement" that confirms the enclave is running the algorithm in question and specifies a public key that can be used to communicate with it. This statement, called an attestation, is then sent to anyone who wants to submit their data to the environment, Brown says. This type of computing is meant to give owners of data control over what happens to their data while it's in use, as opposed to its two other states, which are commonly focused on and for which there already many solutions: data that's at rest and data that's in motion.

Brown compares this to the padlock symbol that appears in the URL bar on a webpage, which lets users know that a site or service is trusted and safe, and that their data is secure as it travels across the web to the hosting company's servers. The padlock, though, does not indicate what will happen to that data once it reaches the other party, whether

it be a social media site, a bank, or an individual.

"We know what happens here in the consumer realm. There are all these congressional inquiries and so forth into the power of these social media firms. And in the business realm, where we're focused, it's the same problem," Brown says. "You're a bank sending your bids and offers to a marketplace, but you've got no way of knowing what that marketplace will do with that data. Maybe they'll execute your orders faithfully, fairly, and transparently, but maybe they'll front-run you, or maybe they'll sell that data to another firm. They may promise they won't, but you've got no technological way of enforcing that."

This same uncertainty around what happens to data in another entity's hand has colored financial institutions' arduous journeys to the cloud. There's concern over whether data is safe from the cloud not only from hackers and other bad actors, but the cloud providers themselves. For every announcement that a bank has chosen Google Cloud, Amazon Web Services, or Microsoft Azure for some business function, there are more functions that remain on-premises, bogged down by legacy technologies but unable to break away due to risk and control concerns. While vendors have been able to embrace cloud offerings more freely, highly regulated banks and buy-side shops handle highly sensitive customer and trade data, which demands a watertight ecosystem for running complex analytics and data science tasks.

Richard Brown
R3

Some of the major cloud providers have rolled out early stage confidential computing solutions, such as IBM's Hyper Protect Cloud Services, which launched in 2018. More recently, Google Cloud introduced its first confidential computing service last summer, and Microsoft Azure made its first similar solution, Attestation, "generally available" earlier this month after also first announcing it last summer. The main draw of such offerings is that the data stored by customers within the enclaves isn't visible or accessible even by the respective cloud providers.

In an example of how the technology works, an auction house needs to prove to bidders that any auction will be fair, that their bidding strategies won't be revealed to other entities—not even to the firm operating the exchange—and that their data will be used solely for the auction. Using confidential computing, the first thing the auction house would do is show the bidders, or their trusted auditors, how the auction would work, either via computer code or written-language rules. The second step is where the work gets harder, Brown says: The auction house would need to prove to bidders cryptographically that the code or rules they were shown are the ones actually running, then follow that by encrypting the bidders' data using a key that the auction house can prove is only known to that algorithm.

"So even though you've sent your data outside your organization, and it's gone across the internet to a completely different firm, you've encrypted it in a way so that the only computer in that big datacenter that can ever unlock your data is the computer running that specific algorithm," he says.

A potential buy-side use-case for Conclave, and confidential computing in general, is in the area of dark pools, says Brown. A dark pool operator's pitch to the buy side is that if shops route their orders through that operator, they'll rest on that operator's books, invisible to other market participants, until a matching order comes through so buyers and sellers can execute their desired orders without revealing their positions or moving the market. The potential problem with that, however, is that the operator is privy to that sensitive data, and they could, in theory, use it to their advantage.

"Conclave allows you to prove to your customers that even if you had a malicious employee, you simply could not front-run them, [and] you couldn't sell their data. So there's a strong competitive reason to want to adopt this technology because if you can prove to your customers that your marketplace is provably fair, then—all else being equal—buyers and sellers will want to use your venue, rather than one that cannot make that promise," Brown says.

Dave Thaler
Confidential Computing Consortium

If confidential computing's premise sounds similar to blockchain's—serving as a record of activity in which data can't be corrupted or deleted by other entities—that's because it is. Though R3 offers an open-source and commercial version of its Corda blockchain that counts industry players like Nasdaq and Six Digital Exchange among clients, and though blockchain's hype has reached high peaks more than once, the technology itself remains largely unused by most corners of finance outside of cryptocurrencies and know-your-customer (KYC) activities.

However, confidential computing, apart from helping banks and other institutions move to the cloud, could also be used to further blockchain's cause, says Dave Thaler, a Microsoft software architect and technical advisory council chair of the Confidential Computing Consortium, a Linux Foundation-hosted industry group founded in 2019 with members including big names like Google Cloud, Microsoft, Red Hat, and Intel. R3 joined the consortium last year.

"Blockchain relies on there being something fed into it that gets replicated across the distributed ledger. How do you know that the thing that's fed into it is the correct thing [to be] fed into it? How do you know that it hasn't been tampered with prior to being inserted into the blockchain? That's just an example of where you can use confidential computing to protect the data and the computing of the thing that creates the blockchain entry to begin with and then distributes it," Thaler says.

Confidential computing is already an established practice in other industries, such as gaming and retail finance. Microsoft uses it in the company's Xbox gaming consoles, says Thaler, as do chip cards, which have largely replaced magnetic-stripe credit and debit cards in the consumer market over the last few years. This means that capital markets firms could have an easier time taking it up for their own use-cases. Thaler's colleague, David Greene—chair of the consortium's outreach committee and chief revenue officer at software company Fortanix—pegs the timeline for industry adoption as likely coming well before the advent of commercialized quantum

devices, which would put the target for large-scale industry adoption somewhere within the next decade.

The conversation around data security, privacy, and ethics isn't specific to just the capital markets, as many industries, activists and regulatory bodies—notably, the EU's anticipated Gaia-X project is of the same vein—are attempting to address these concerns through a prism of different angles. This fact can help progress the field of confidential computing as different disciplines and applications can help the technology to evolve more quickly, says Gabriele Columbro, founder and executive director of the non-profit Fintech Open Source Foundation (Finos).

He says it will take industry collaboration to achieve these lofty security goals. Columbro recalls the time before 2018, back when Finos was known as the Symphony Software Foundation. Symphony is now a standalone chat and collaboration company for financial services valued at north of $1 billion.

"A big value proposition of Symphony [Software Foundation was] that firms could exchange information without Symphony ever being able to read those messages," he says. As Symphony has expanded beyond simple messaging to offer services such as chatbot-building tools and KYC functions, Columbro envisions confidential computing being used to facilitate cross-organization chat.

But he also takes issue with the industry potentially rallying behind the big cloud providers for these tools and other large-scale privatized, commercial projects. Columbro, a big advocate for open-source technology, open standards and transparency, believes that a technology like confidential computing—the point of which can mostly be distilled down to "proving" how one's data gets used—is best served by open-source projects, which can be audited, tracked, and improved by the public. He's wary that because consumers don't have access to private providers' source code, there will continue to be concerns around proving the efficacy of these enclaves' security.

He likens it to the blockchain movement, which presented numerous privatized options to the industry. Some of these offerings are still doing well, but Columbro comes from the perspective that blockchain is basically a network of trust, one that customers rely on to validate transactions, identities or some other fact, but the code underpinning the system cannot be provided to them.

Gabriele Columbro
Finos

"Maybe I'm a little biased here, but I still think that as much as the cloud vendors have a massive capacity and inherent interest to get this done—because luckily, for what we know, cloud vendors have not been selling our data in the backend like social media companies—but in order not to get into the same situation, I think it's important that whatever technology is actually rolled out for confidential computing is open source. ... I don't think proprietary confidential computing efforts could ever be 100% safe," he says.

Of course, he adds, you can expect any of the major cloud providers offering confidential computing services to write a contract that reflects the truth of what they're offering. "It's a fair assumption, but it's still an assumption," he says. wt

Ion Group acquires Dash Financial in move to bolster options execution

The deal will allow Ion to pair Dash alongside Fidessa as it looks to 'own the sell-side technology space.'

By Rebecca Natale and Anthony Malakian

A deal has been agreed in principle for Ion Group to buy Dash Financial from private equity firm Flexpoint Ford—the latest in a stream of deals for the fast-growing tech titan, and one that expands its services in options trading.

The purchase had been rumored in late January, with four sources telling *WatersTechnology* a deal was in the offing. A spokesperson for Ion confirmed some of the details on February 4. An acquisition agreement was signed in December 2020 and is expected to close in the second quarter of this year, pending approval from Finra.

Dash was launched in 2011 by Peter Maragos and David Karat under the premise of bringing transparency and customization to options execution. The company's suite of products includes Sensor, its multi-asset, algorithmic execution platform; Dash360, its visualization and analytics tool; BrokerPoint, its options routing network; Blaze, its order and execution management system; and Dash Prime, an introducing prime broker. According to the company's website, it routes about 16% of the daily Options Clearing Corp. volume. In 2018, Maragos and Karat partnered with Flexpoint Ford in a management-led buyout of Dash from private equity firm GTCR.

The spokesperson says Maragos and Karat will remain with the company after the deal closes.

"The Dash team sought a permanent strategic partner that would allow it to continue its investment in product growth and global expansion while also serving customers of all types—small broker-dealers, hedge funds, asset managers, and large investment banks—in an agency capacity," Hishaam Caramanli, chief product officer at Ion, tells *WatersTechnology*. "Ion enables this and more, and we look forward to soon welcoming the team to the Ion Group."

Financial terms were not disclosed, and sources were not able to confirm a price, though one source with knowledge of the acquisition says that while they haven't heard the exact price, "it's a lot of fuckin' money."

A second source says the Dash asking price was in the range of $700 million, but that for this deal they believe it to be closer to $500 million. Last September, *Barron's* reported that Dash was the "latest fintech up for sale," and sources said that the trading platform

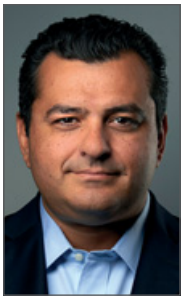
and execution services vendor was expected to sell for $700 million to $1 billion.

Expansion through acquisition

In the world of fintech M&A, Ion has been one of the most aggressive acquirers, with most deals backed by debt. Over the last 15 years, the company has acquired over 20 companies, including Fidessa, Broadway Technology, Openlink, and Allegro. In December, Ion sponsored a $500 million listing of a special purpose acquisition company with the US Securities and Exchange Commission (SEC) to help fuel further acquisitions.

"Ion certainly has been buying up many sell-side assets, so there's no surprise here," says Brad Bailey, research director of consultancy Celent's capital markets division. "For every asset class, every piece of the trading infrastructure, [Ion] just keeps adding to it. Broadly, legacy fintech has been flowing into a few hands, and Ion has been one of those hands that's been picking up a tremendous number of pieces across asset classes."

With its options heft, sources say Dash will fit nicely alongside the Fidessa offering, as Ion looks to expand its sell-side presence. "Ion is typically in fixed income, so this will complement Fidessa," says one of the sources with knowledge of the deal. "It looks like Ion wants to own the sell-side technology space."



Peter Maragos
Dash

Still, reaching that pairing has not come without turmoil, which could hint at what's to come at Dash.

Fidessa is a long-time favorite order management system (OMS) on the sell side, and one of Ion's most high-profile acquisitions in capital markets technology. In the first year following the deal's close in the summer of 2018, around a quarter of Fidessa's global workforce—then consisting of between 1,700 and 1,800 employees—had either resigned from the company voluntarily or were laid off.

A follow-up *WatersTechnology* investigation found employee morale had suffered, and multiple reports—from customers and from within the firm—said that service standards had dipped.

OPINION: For better or worse

By Anthony Malakian

Before I get into Ion acquiring Dash, let me brag for just a minute. First, we broke the news that Ion acquired Dash from private equity firm Flexpoint Ford. Second, I happen to know that the *The Wall Street Journal* was close to reporting the news, but we landed the jab first. Third, we often break news, but for us what's more important is that we provide the analysis around the news.

So if someone beats us to the punch, that's fine, because we'll write the *definitive piece* (we hope) around that nugget of news. And fourth, as a subscriber of *WatersTechnology*, you're privy to news that non-subscribers won't hear about for a long time because most every other media outlet that covers the world of fintech is not a subscriber to *WT*—and no one has followed our coverage of Ion-Dash. Don't worry, once this deal closes in the second quarter and a press release is put out, I'm sure the trade media will finally write about it. (Yes, I'm salty.)

OK, enough navel-gazing—let's get to the analysis.

Ion acquired a firm! Shocker! Next, you're going to tell me that SS&C Technologies has acquired a tech company. Mind blown.

But there are a few reasons to take interest in this deal. First, Ion is looking to build up its M&A war chest, and there are likely other deals in the trading technology space to come from the Irish company in the near future. In December, Ion sponsored a $500 million listing of a special purpose acquisition company with the US Securities and Exchange Commission (SEC) to help fuel further acquisitions. I could sit here and write that I know what that means … but I do not. Fortunately, I have reporters on staff that can explain what a "SPAC" is, but since they're not writing this column, we'll just press forward with the understanding that Ion is looking to make more deals.

Secondly, Dash, which specializes in options execution technology, fits nicely (according to sources) with another piece that Ion acquired a while back—Fidessa. As we've reported, the Fidessa addition hasn't exactly been seamless. But as Ion looks to strengthen its position on the sell side, this deal makes sense.

One source says: "Ion is typically in fixed income, so this will complement Fidessa. It looks like Ion wants to own the sell-side technology space."

A second source says: "That gives them a strong proposition in low-touch/algo trading in the US, which was the weak spot of Fidessa."

We followed up on our original deep-dive into the Fidessa workforce exodus by reporting that, according to two sources who were employed at Fidessa this past summer, one of whom was since made redundant, Fidessa has seen further layoffs. Of course, Fidessa was far from alone in making cuts during the pandemic … so read into that what you will.

Still, as Ion integrates Dash—the deal is expected to close in the second quarter, but nothing is finalized—industry observers will look at how Dash's staff reacts to being part of the Ion Empire.

Dash has seen solid stability in its senior ranks. Many of the company's senior executives—and the company is about 10 years old—have been there for six years or more. (I'm going to put the names in bold just for emphasis in case you only care about the person and not the title.)

Of course, there are cofounders **Peter Maragos** and **David Karat**, but there's also **Angelo Maragos**, chief product officer; **Artem Shum**, CTO; **Daniel Curley**, head of business development; **Evan Tindall**, head of business intelligence; **Stino Milito** and **Tim Miller**, the company's co-COOs; **Tommy Martin**, head of sales strategy and operations. **Oksana Gandzii**, head of routing, who helped build Dash's smart order router back in 2011 while at B2Bits (and later EPAM Systems), joined Dash in 2016. Shum was also originally at B2Bits.

Still others joined after acquisitions and stayed on, including managing directors **David Cross**, **David Dooman**, and **Eugene Kearns**, who came on after the LiquidPoint acquisition; and **Collin Carrico**, president of Dash Prime, and **Ben Schwartz**, chief strategy officer of Dash Prime, who joined from ERoom Securities.

Meanwhile, the company poached a handful of employees from Bloomberg, including **Steven Bonanno**, CTO; **Glenn Lesko**, chief growth officer; and **Jennifer Hubbs**, managing director of portfolio trading.

There are many metrics that can help prove the worth of an acquisition, but if staff from the acquired business stay on and buy into the acquirer's philosophy, I think that kind of stability is respected by users. (Fee increases and product reliability being the other big factors in client satisfaction.) As noted in the Fidessa exodus article I've previously mentioned, several users of Fidessa's OMS expressed worry to *WatersTechnology*. Additionally, users of Broadway Technology have expressed concerns about that vendor getting acquired by Ion. These are the same concerns raised by commodities traders. And as we reported in late 2019, a group of European and UK banks is considering building its own fixed-income trading software in a move that would allow the institutions to cut ties with Ion.

Mergers and acquisitions eventually boil down to a people problem. They can be good if they foster something of a rebirth, where new ideas are seeded and underperformers are weeded out. They can be bad if the camaraderie that made a company successful is stifled, and attrition results in innovation stagnation. Ion's M&A track record is likely to make clients of Dash at least take notice.

Finally, it's important to note that I'm not picking on Ion. This is some unsolicited advice, but the company has not done itself any favors on the PR front. The vendor's executives, led by CEO Andrea Pignataro, are not fans of talking to the media. Fair enough. It's my opinion, though, that this strategy can work for a secretive hedge fund, but it's a more challenging gambit for a tech company that has thousands of employees and clients, all of whom are individuals who have opinions.

And these are just my beliefs, but I don't think Ion is a raider acquirer the way that some private equity firms like to buy companies and strip them down for parts. There's a strategy here—they're just not very good at articulating it.

And while the company's executives are not required to talk to media outlets, users of their acquired toys do have concerns and want to let others know what those concerns are. I'm not suggesting that Ion's top brass should talk to *WatersTechnology*—although we are always willing to talk—but they should maybe reconsider their strategy as to how they're presenting themselves to the world.

Perhaps the majority of Ion's clients are thrilled and media outlets like *WatersTechnology* are only talking to the few malcontents. I guess time will tell.

Ion insisted customer service and satisfaction had improved.

Cuts continued last year, *WatersTechnology* has been told, albeit affecting far smaller numbers. According to two sources who were employed at Fidessa last summer, one of whom was since made redundant, the number of new layoffs totaled less than 20 across the firm's UK positions—the threshold level that would require group consultation—on top of an unknown number in the US and Asia. Of course, Fidessa was far from alone in making cuts during the pandemic.

The fixed-income front

And then there was the Broadway deal.

One year ago, Ion announced the purchase of the foreign exchange (FX) and fixed-income trading platform provider, but two months later in April, the UK Competition and Markets Authority (CMA) said Ion had failed to comply with a notice calling for "information and documents" in time, which extended the regulator's examination of the deal. In July, the CMA found that Ion's purchase of Broadway Technology raised competition concerns in the supply of electronic trading systems for fixed income, but not FX.

A month later, it was decided that Ion would split up Broadway to allay concerns the deal would erode competition between fixed-income trading software providers, keeping the FX business while finding another buyer for Broadway's fixed-income franchise. Finally, in November, the CMA approved the acquisition on the proviso that Ion sell Broadway's fixed-income business, including the underlying software and brand, to a consortium led by Broadway CEO Tyler Moeller.

David Karat
Dash

Competition concerns have long swirled around Ion. As was first reported jointly by *Waters Technology* and *Risk.net* in November 2019, a group of European and UK banks is considering building its own fixed-income trading software in a move that would allow the institutions to cut ties with Ion.

"All banks need to be more efficient, so when you have a player that's as dominant as Ion, it's a worry for everyone," said an e-commerce specialist at a bank, at the time. "It's in the industry's interest to have more competition." wt

Bloomberg's fee hikes: Sign of the times

Market participants say Bloomberg's price hikes reflect the struggle among regulatory reporting service providers to run sustainable and profitable businesses. By Josephine Gallagher

Bloomberg is raising the price of its Regulatory Reporting Hub (RHub) services by introducing a new flat fee and price range for a higher reporting threshold, *Waters Technology* has learned.

The pricing model revamp will apply to a group of consolidated services under RHub, including Bloomberg's original regulatory reporting offerings and the acquired RegTek Solutions product line. RHub supports reporting covering regulations such as the revised Markets in Financial Instruments Directive (Mifid II), the Securities Financing Transactions Regulation (SFTR), and the Trade Reporting and Compliance Engine (Trace) in the US. Following the RegTek acquisition in August 2019, its coverage has expanded to other regimes such as the Markets in Financial Instruments Regulation (Mifir), the European Market Infrastructure Regulation (Emir), and the Dodd–Frank Act. The new business model brings these services together under the one roof, as RHub.

The new annual flat fee for using RHub solutions will range from $25,000 to $50,000. In the former commercial model, clients were charged solely on the volume of transactions they reported. In the revised price plan, all clients will have to pay a new standard fee, the original volume charges, and a newly introduced threshold fee if the client reports above a certain amount. Users of Bloomberg regulated entities, such as its Approved Reporting Mechanism (ARM) and Approved Publication Arrangement (APA), will still pay a separate cost of anything up to $30,000, which is calculated using a metering structure or on a per-volume basis.

"Clients could see the impact of the base fee and the metering if they exceed the metering threshold they set in their contract, at contract renewal, but for clients who are below the threshold, they will only see the flat fee adjustments," says Brian Lynch, global head of regulatory reporting at Bloomberg, who attributes the increase in RHub fees to the "higher than anticipated cost" of building and maintaining a regulatory reporting business.

This high cost has left some providers with no choice but to exit the regulatory space entirely—most notably CME's decision to scale back its regulatory reporting activities in November and Deutsche Börse's move to sell off its reg business to MarketAxess in September 2020.

"When you look at the level of change, you look at the cost of the ambiguity of the regulatory text [and] you look at the variability of the quality of the data that's being delivered by clients—these factors have contributed to a high cost of delivering the service. That's why some other firms have shut down or sold their services, because firms have struggled to see a path to profitability," Lynch says.

Bloomberg could not disclose the details of the new reporting thresholds and how the prices are calculated, citing competitive reasons.

Legacy clients who contracted with Bloomberg before 2020 were notified of the new commercial model in the second quarter of last year by a letter, and were contacted by sales representatives. The changes took effect in October 2020, and will apply to clients when they renew their contracts, which are typically signed every two years. Any legacy clients that renewed their contract prior to October 2020 will not be impacted by the changes until their next renewal date. However, those that renewed in November or December last year had a short window to prepare for the increases. Lynch says only a few firms were up for renewal in those months, and that the accounts team worked with them prior to the notice period.

"We had looked at the numbers, we had looked at where the renewal cycle was, and there were very few who had a short time (several months) to react, and our account managers had already been speaking to those who did," he adds.

"When you look at the level of change, you look at the cost of the ambiguity of the regulatory text [and] you look at the variability of the quality of the data that's being delivered by clients—these factors have contributed to a high cost of delivering the service."
Brian Lynch, Bloomberg

All new customers onboarded in 2020 and since then were signed up to the new RHub commercial model.

Users can also opt in to a premium version of the RHub services, which includes added features, functionality, and jurisdictional coverage of other

regimes. For example, those clients that use the original Mifid II standalone solution could upgrade to the new iteration and use other RHub products to comply with other regulations, for a higher fee.

The premium version's features include enhanced reporting analytics, workflow visibility, and access to three-way reconciliation, which shows a view of the clients reporting data, data from the Bloomberg ARM, and data from regulators, such as the UK's Financial Conduct Authority (FCA).

Matt Smith
SteelEye

Sophie's choice

Over the next 20 months or so, depending on when their contracts are up for renewal, existing clients will have to decide whether to continue using the Mifid II or SFTR products as standalone solutions with the newly added flat fee, whether to opt into the premium services, or whether to shop around for other providers.

Vinod Jain, senior analyst at Boston-based consultancy Aite Group, says switching regulatory providers is not all that burdensome for a financial firm because much of the data being sent to these providers is the same, including the same fields and the same reporting specifications. For instance, the Regulated Technical Standards 22 (RTS 22) under Mifid II sets out the standard way for investment firms to report to the National Competent Authorities under the regime.

"The majority—or almost 90%—of [the reported data] being sent to Bloomberg, to Trax, or Tradeweb or any other platforms, would be very similar, and I believe if one changes the price, it's very easy on the client side to switch off one and switch to another provider," Jain says.

However, *Waters Technology* has previously reported on the challenges of porting data to a new provider, with sources citing the need for translation layers between different systems, and various implementation requirements.

Lynch says the responses from clients regarding the price changes are in line with the vendor's expectations.

"We've seen that attrition is very low. It is in line with expectations, and commercially it has been offset by clients who have opted to upgrade to the premium service, which takes the product to a new level. So right now, the model is largely in line with the expectations, and we'll continue to work with clients to hopefully get them all on board," Lynch says.

Vinod Jain
Aite Group

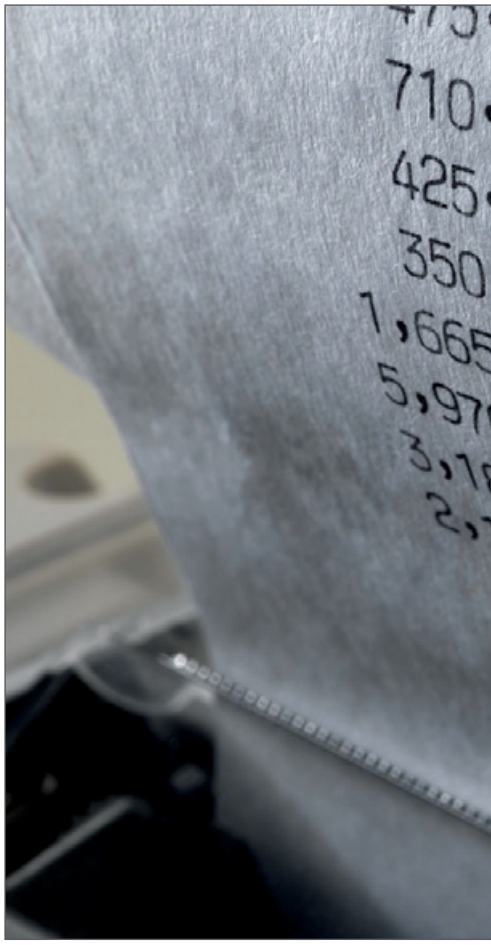
Joris Hillebrand, managing director at Synechron Business Consulting, says that typically in scenarios like these, a provider would work with its heavyweight clients to negotiate their contracts and avoid losing their business. However, the effects of consolidation in the regulatory reporting market and the growing importance of a smaller pool of large providers have changed the dynamics of the market.

"I can imagine if they are a very large client and they really don't want to lose their business, that there might be some room to negotiate, but this room is very limited, because of the consolidation and how these service providers have gained power, in general," he says.

Lynch says Bloomberg will work with clients to adapt to the new changes and help them to better interact with its services—for instance, by looking at how a firm can reduce its reporting volumes to avoid breaching the higher price threshold. Differentiated models, on the other hand, are not up for debate. Lynch says Bloomberg will not consider offering bespoke prices or customized functionality to customers, and will only provide a standard model. In the past, CME Group's Abide Financial was a popular choice among industry users because of its cheap deals and customized integrations—a business approach that many say resulted in pricing wars, thin profit margins, and its eventual unwinding.

This type of approach had a lasting impact, distorting users' perception of the reality of costs in this space. During the CME scaleback, from when the news first broke in May 2020 to when the services were cut off on November 30, many vendors vied to win the business of those looking for a new provider.

In those months, Matt Smith, CEO of SteelEye, a provider of regulatory reporting solutions, says the vendor walked away from several deals because former CME clients tried to negotiate

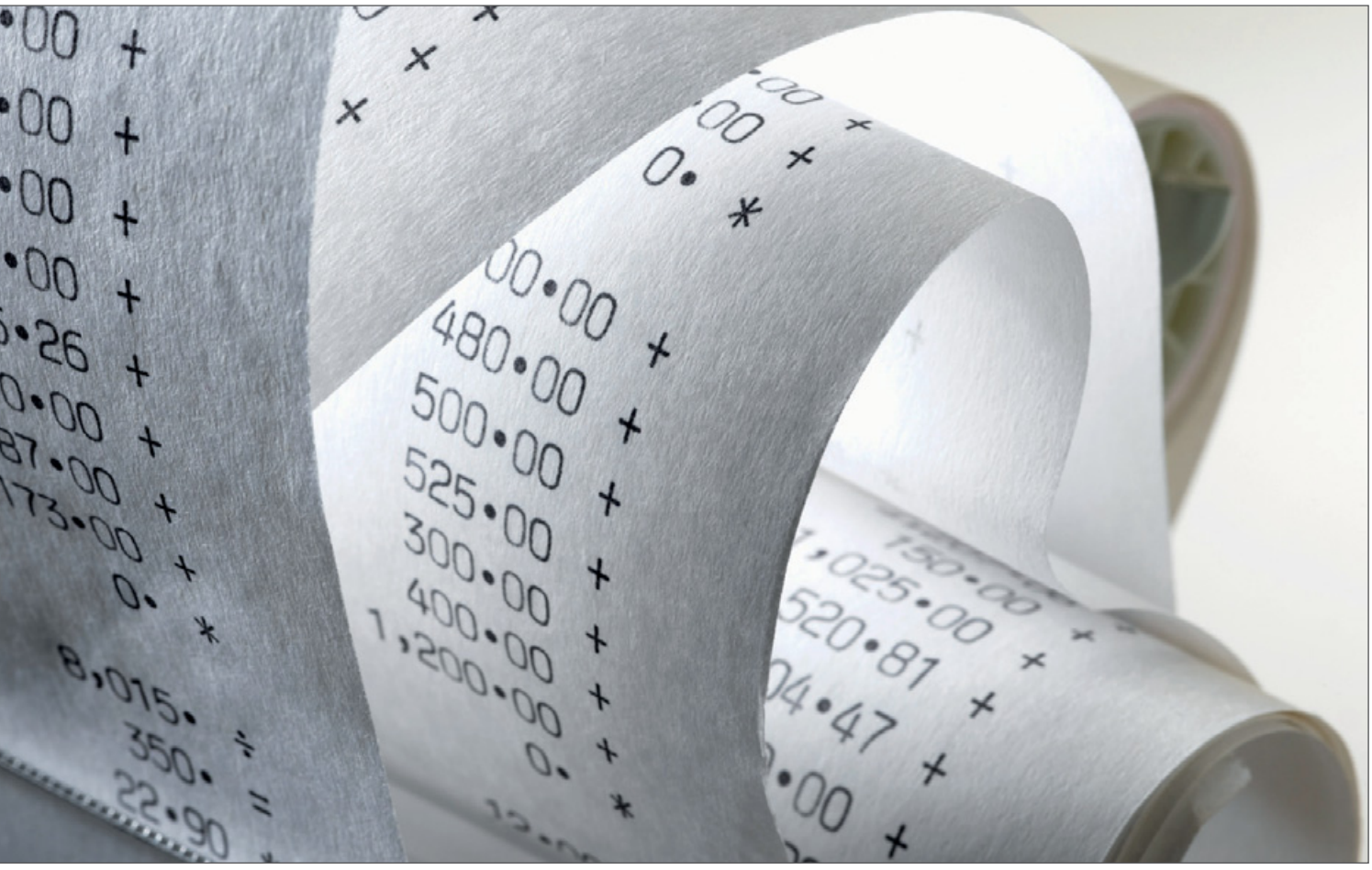


low and unrealistic rates. However, that didn't stop other providers from continuing to pursue the same approach as before. In several incidents, he says, CME clients tried to pressure SteelEye to drop its prices by showing it deals offered by competitors, who were trying to undercut their competition to gain more market share.

"We looked at the competing offers and, in a few instances, we could see that the pricing being offered was unsustainable, and as a result, we walked away from the deals saying, 'We need to price in a way that is sustainable,' as we don't want to increase prices on our clients later on," Smith says.

A sign of the times

Bloomberg began drawing up plans for its new pricing model at the end of 2019, before the fallout from Abide exiting the industry. At that point, Bloomberg had more than two years' worth of Mifid



II data, it had experience running the system, and it had a growing catalog of clients—the foundations on which to base the economics of a new pricing framework.

"That is when we sat down and worked through the economics of the business with our management committee and proposed a new pricing model," Lynch says. "Bloomberg takes time to go through the process before we go out to customers and make those changes."

To some, the news of price increases is no surprise. Tom Wieczorek, global head of product management at UnaVista, the London Stock Exchange Group's regulatory reporting platform, says providers charging higher premiums reflects how the industry is moving, and that regulated entities offering reporting services, such as APAs, ARMs, and trade repositories (TRs), are expensive businesses to run.

"I think it's because of the regulatory responsibilities, the overhead and risk management of running a regulated service come at a well-justified premium, so it's no surprise to us that this affects market dynamics and that the general trend in the industry is toward consolidation," he says.

One senior executive at a competing regulatory reporting vendor believes Bloomberg may have underestimated the overheads involved in running the business when the firm initially launched its RHub Mifid II service in 2017, ahead of the Mifid II go-live in January 2018.

"I think part of it is when they went into the reporting business, they didn't completely understand all the nuances of it because there was this mad rush to provide solutions for Mifid II. And I think as they got to the other side of Mifid go-live and had clients onboarded, they realized they had miscalculated certain things, and that their overheads and costs were much greater," the executive says.

> "We looked at the competing offers and, in a few instances, we could see that the pricing being offered was unsustainable, and as a result, we walked away from the deals saying, 'We need to price in a way that is sustainable,' as we don't want to increase prices on our clients later on."
> **Matt Smith, SteelEye**

Outside of building the technology and maintaining it, there are other costs to account for. The source says peripheral costs like cloud storage, managing reference data, and reporting to TRs need to be factored into a sustainable business model.

Some see the changes, such as consolidation, firms exiting the market, and price increases, as the fallout of an indus-

try that is maturing. Ronen Kertis, head of regulatory reporting at IHS Markit, says the rising costs are a consequence of financial firms and regulators demanding better solutions. Kertis was previously CEO of Tel Aviv-based regtech vendor Cappitech, which IHS Markit acquired in December last year.

"I think the regulatory reporting industry is maturing and participants are learning to ask for more mature and more robust products, and those products cannot be sold at a very low price as some might have done in the past," Kertis says.

Going forward, increased costs of compliance will most likely not come from existing regulations but rather from new regimes that emerge over time, he adds. According to a Greenwich Associates report, published on February 23, 69% of buy-side compliance executives interviewed expected to see increases in their budgets in 2021.

"Obviously, the more regulations there are, the more things you need to comply with as a firm, and this will mean more burden on the business from a cost perspective because you have more regulations to comply with, which is what happened with SFTR," Kertis says.

All regulatory reporting providers spoken to for this article say they have no current plans to increase their prices in the next 12 to 18 months. Lynch also says Bloomberg has no further plans to increase its reporting fees in the next year and a half.

Leveling the playing field

There are three main types of players in the regulatory reporting space: incumbent providers, smaller regtech firms, and the regulated entities, such as ARMs, APAs, or TRs, such as the Depository Trust and Clearing Corp. (DTCC). There is also a lot of overlap among providers, as some incumbents like UnaVista also run a regulated TR.

Within this bubble, there are two conflicting arguments: Smaller vendors argue that the rules of the market, from a commercial point of view, are stacked against them. For instance, Smith says the regulatory space is a challenging environment for competition to thrive in or for new entrants to break into because of how some ARMs or TRs price their services. Meanwhile, regulated entities say they are subject to greater scrutiny from regulators, and face greater commercial pressures.

Joris Hillebrand
Synechron Business

The anti-competitive argument is that because some ARMs or TRs offer discounts for higher volumes of transactions or Unique Trade Identifiers (UTIs) messages, entrants or smaller vendors have to absorb these costs, and at a disadvantage compared to incumbents that port larger flows to these entities. For example, under DTCC's TR fee structure for 2021, the more transactions a firm reports, the cheaper the transaction fee. Reporting over-the-counter (OTC) standard derivatives, for example, can cost $0.50 per OTC derivative for volumes between one to 5,000, whereas on the other end of the scale, it costs $0.16 for volumes over 1,000,001.

Smith believes the consequence of these discounts will be to cause an already squeezed market to become even smaller, forcing financial firms to choose from a limited pool of providers. However, one proposed resolution is for regulators to intervene to level the playing field.

"I'd like to see more from the regulator in terms of regulating price discounts for software providers," says SteelEye's Smith. "While as a software provider I like that I get cheaper costs with more clients, it becomes a model where new participants just cannot enter the market because the costs are so high initially."

IHS' Kertis agrees with the argument that it may be harder for new entrants to break into the space, and attributes this to the way the industry has matured. He says six years ago, when Cappitech first emerged, there were very few regtechs on the scene, and many financial firms ran their compliance functions in-house. Today, the landscape is very different. The technology, he says, has come a long way, and the barrier to entry is much higher.

"We've seen it maturing and growing in demand, so I think from that perspective, it probably would be more difficult for new entrants to come in, because the level of product and service that they would need to have from day one would be much higher than what would have been expected from a vendor five years ago," he says.

On the flip side, some regulated entities that offer reporting services feel they are faced with unfair commercial pressures. In their role, they fall under the direct scrutiny of regulators and have to meet strict commercial requirements. For instance, under Emir, all pricing for TR services must be made publicly available and approved by the European Securities and Markets Authority (Esma) in Europe, or the FCA in the UK.

UnaVista's Wieczorek says that unlike pure technology vendors, regulated entities have the added burden of adhering to strict risk and compliance demands. They are mandated to provide regulators with information and updates on their governance activities, compliance, risk, legal policies, and procedures.

Synechron's Hillebrand agrees with this view, in that TRs operate on heavily restricted terrain. "What you have seen over the years now is that supervisors are not only imposing fines to reporting parties for incorrect reporting, but also to trade repositories for not delivering the robustness in their services that is expected, and you have seen a few cases where trade repositories have received fines," he says.

Adding to these commercial pressures is the growing presence of the middle market. In contrast to arguments made by Smith and Kertis, Wieczorek says regulated businesses are the ones feeling the squeeze from all sides—and now even more so, as the bulging vendor community taps into their revenues.

"There is a plethora of players in the middle market that offer services to prepare the data and manage the workflow to regulated entities," Wieczorek says. "While they don't have the overhead of providing a complete solution and ensuring compliance for customers, they are connecting to those reliable and controlled regulated entities, which as a result are starting to become a mere endpoint of the data flow." wt

waterstechnology

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Data protectionism

A no-adequacy decision could create new logistical issues for compliance teams and data managers operating across the UK and the EEA. By Josephine Gallagher

Financial firms could be dealt a fresh batch of operational burdens due to Brexit if the European Commission (EC) decides that UK privacy laws offer an inadequate level of data protection for transferring personal data between the UK and European Union member states. If adequacy is not granted, compliance and operations teams of firms in the European Economic Area (EEA) will need to undergo onerous paper exercises and establish bilateral or multilateral data protection safeguards.

"The main hit for businesses is having to conduct fairly extensive repapering exercises because, in most instances, businesses haven't actually had to create a huge amount of paperwork for transferring data from the EU and the UK, or the other way around," says Arnav Joshi, senior associate at Clifford Chance, an international law firm. "So, it is going to cause quite a bit of heartache in terms of having to create that extra paperwork."

At the end of the Brexit transition period on December 31, 2020, the UK became a third country to the EU, an area that falls outside of the EU's General Data Protection Regulation (GDPR) zone. While GDPR principles have been incorporated into UK legislation, the EC must first deem its laws adequate to allow businesses in the EEA to continue transferring personal data to and from the UK without restrictions or applying added safeguards. The UK has already granted the EU adequacy.

As part of the new trade deal between the two blocks, the EU has delayed any restrictions for four months—with the potential of extending that by an additional two months—to allow for the EC to determine its adequacy decision. This review period is also known as the bridge.

Without adequacy, industry firms in the EEA will have to implement what are known as standard contractual clauses (SCCs), or model clauses. While SCCs are not new to businesses, as they are used to transfer data to other third countries that do not have adequacy decisions for them—the US, for example—the difference is the sheer volume of contracts that will need to be drafted by the likes of banks, trading firms, or vendors to avoid breaching EU GDPR rules.

"It's not only that we need [a single] standard contractual clause for a bank; they will probably need thousands of them," says Aleksandra Wojcik, senior associate for policy, technology, and operations at the Association for Financial Markets in Europe (AFME). "Our members are in the wholesale capital markets space, so we are talking about thousands of standard contractual clauses that will have to be put in place."

Alex Scheinman, director of privacy at ACA Aponix, a provider of compliance solutions, describes several scenarios in which a no-adequacy decision would prove problematic for financial firms. He says EEA-based firms can raise funds from institutional investors across the UK and EU, without any restrictions on the data they collect, or move between the different countries. But in the absence of an adequacy decision, raising such funds from entities in the UK will involve an added layer of complexity, requiring model clauses and individual agreements with institutional investors. Other relevant scenarios would include disrupting the movement of human resources data or client information between the UK and EU member states.

> "It's not only that we need [a single] standard contractual clause for a bank; they will probably need thousands of them. Our members are in the wholesale capital markets space, so we are talking about thousands of standard contractual clauses that will have to be put in place."
> **Aleksandra Wojcik, Association for Financial Markets in Europe**

Aleksandra Wojcik
AFME

Scheinman adds that there is more to an SCC than just signing a piece of paper.

"You are signing up to say, 'I am more or less committed to GDPR, but I'm also committed to notifying the exporter or the importer of data when there are changes in the data that's collected, stored, or processed,'" he says. "So, there is more than just signing a contract; you are also committing to certain behaviors and rules, and you add certain obligations to either notify regulators or notify the data exporter when you're using new third parties, for example. So, there's quite a bit to wrap your head around."

Complying with data protection rules and putting SCCs in place also require financial firms to have better visibility of their data flows. The more partnerships or relationships a firm has with other third-party entities, the more complicated that web of data becomes, says a data privacy counsel at an international technology and data firm.

"A lot depends on the structure of the company, as some companies may have very easy data flows, and they just transfer data from the UK to the US, and put a contractual clause in place and it's done. But you may also have other entities you are involved with outside of the US and UK, so then it starts to get a bit more complicated," they say.

There are alternative agreements that companies can use called binding corporate rules (BCRs), which allow contracts for transferring data to be formed with companies on a group level. This can drastically reduce the number of contractual agreements needed, but BCRs require a heavy volume of paperwork and can take up to a year to be approved by the EC, says Clifford Chance's Joshi. This burden of work would include defining the type of data being transferred, laying out the measures put in place to protect it, and identifying the types of data subjects involved.

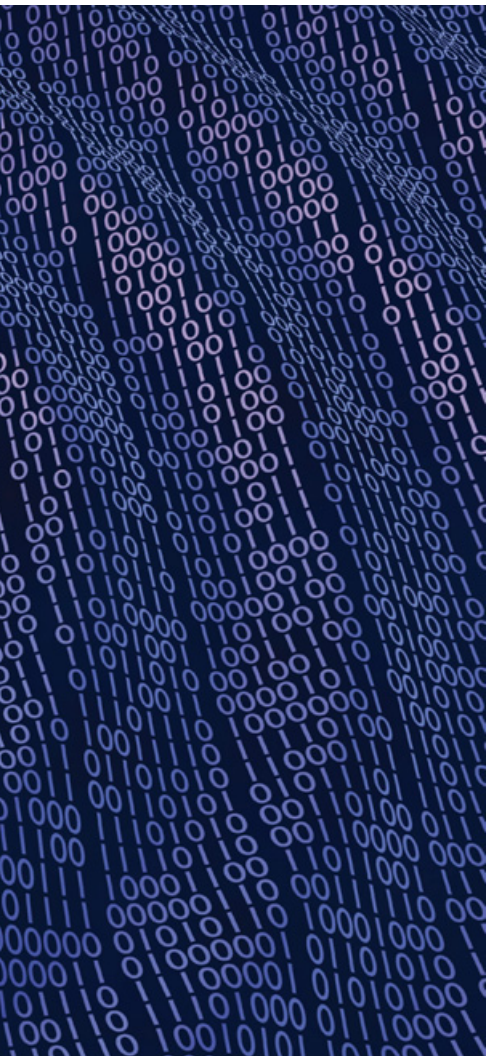
More red tape: Schrems II

Implementing SCCs will also become much more challenging in the months to come. In November 2020, the EC also introduced new SCC changes that will take effect later this year. Firms will be given a grace period of one year to repaper and comply with the rule from the implementation date.

"Once the new standard contractual clauses are adopted, members and all businesses operating in the EU will only have one year to change or repaper to the new standard contractual clauses," Wojcik says. "Our members may be in a situation where they're ready with the old standard contractual clauses, but will possibly have to do a repapering exercise all over again to live up to the standards of the new standard contractual clauses."

Wojcik says AFME is advocating to extend the grace period to three years, rather than one, to allow banks to have more time to update their SCCs.

The new SCCs aim to offer an additional layer of protection when moving data. In drafting the new SCC, the EC also considered the decision made by the Court of Justice of the European Union (CJEU) in the Schrems II case, which invalidated the EU and US Privacy Shield, a legal mechanism that allowed for the transfer of data between the two blocks.



> "The main hit for businesses is having to conduct fairly extensive repapering exercises because, in most instances, businesses haven't actually had to create a huge amount of paperwork for transferring data from the EU and the UK, or the other way around."
> **Arnav Joshi, Clifford Chance**

The Privacy Shield was deemed invalid due to invasive US surveillance laws, and failed to meet the same data protection standards required by the EU, thereby requiring the US to use SCCs to move its data. The main issue is that US laws stipulate that in the event of an investigation, the US government has the authority to access personal data stored or processed by a company located in the US—something the CJEU deems "disproportionate interference with the rights to protection of data and privacy" under GDPR.

In reaction to the Schrems II ruling, the EC has updated the SCCs to include more stringent obligations for firms when transferring data to and from third countries. Kathryn Rogers, partner at UK-based law firm Cripps Pemberton Greenish, says establishing SCCs will no longer be a tick-the-box exercise. Rather, those involved in transferring data within a firm—say, a bank or an asset manager—will have greater responsibilities.

Arnav Joshi
Clifford Chance

"As a result of Schrems II, the EC said it's not enough to simply put in place SCCs blindly and not think about it any further," Rogers says. "The person making the transfer also needs to consider a number of factors, such as whether the data subjects actually have protection in the country to which the data is being transferred, the level of data being transferred, the reason why it's being transferred, and whether the company you're transferring it to has a track record of keeping data safe."

Joshi also says that because of the Schrems ruling, firms will also have to conduct continuous assessments, rather than a one-time contractual exercise, to ensure the SCCs are regularly reviewed and updated to meet the needs of the EU's data protection requirements, the Schrems ruling, and other regulations evolving around the issue of human rights.

Playing politics

While most sources spoken to for this article are hopeful that the EU will grant the UK adequacy, there are some recent court decisions that have cast some doubt. In October 2020, the CJEU deemed the bulk of the UK's data collection regime illegal under EU law. The ruling stated that the UK's Investigatory Powers Act (IPA) violated fundamental rights to privacy and data protection under GDPR because it required companies such as telecommunications firms or internet service providers to retain communications data and enable UK security agencies to access it in an investigation.

Joshi says the difference between the US surveillance regime and the UK's IPA is that the UK system requires an independent redress or judiciary warrant to exercise these powers, which might offer the EU some comfort.

"For instance, with the US system, there is no independent redress of how a government authority would exercise its powers under these surveillance laws, whereas in the UK, any exercise under the surveillance laws is subject to independent redress in what is a very strong judiciary and court of law," he adds.

While no one can fully predict what the EC will decide in the coming months, Rogers says a no-adequacy decision would demonstrate to other countries how challenging it can be to achieve a level playing field with the EU on data movements, particularly given that the UK's laws on GDPR mirrored those of the EU upon its departure from the block. At the same time that it made the UK ruling, the CJEU called out EU member states Belgium and France for having unlawful surveillance regimes, in terms of data retention and collection practices for security services, failing to meet GDPR requirements.

Legal readings aside, politics may also play a role in trying to retrieve concessions from the UK in other aspects of the trade negotiations. Joshi says data transferring and adequacy could become yet another pawn in the game of politics.

"This could just become a political bargaining chip," he says. "So, it may not be 100% about the laws or about the data transfers; they would just know that because data transfers are important to both sets of negotiating parties, they could then apply higher standards [on data privacy] than they otherwise would [have before]." wt

The mind of a bot

JP Morgan Asset Management's ThemeBot uses textual relevance and revenue attribution to construct a list of stocks, which is then verified by JPMAM's active equity analysts. By Wei-Shen Wong

JP Morgan Asset Management is using an artificial intelligence (AI) tool to help its internal portfolio managers and analysts build thematic funds.

The tool, called ThemeBot, was created to help JPMAM's portfolio managers generate a list of stocks associated with a theme. For example, it was used to construct JPMAM's Genetic Therapies Fund, which aims to provide diversified exposure to companies in developed and emerging markets working on genetic treatments to address the underlying cause of diseases.

Since the fund's inception in October 2019, it has grown about 58% to a market value of $1.3 billion.

Yazann Romahi, managing director and CIO for quantitative beta solutions at JPMAM, says one of the issues with using AI in finance is that a lot of the models are essentially black boxes. "A crucial part of understanding what a model is giving you is actually being able to look under the hood, so to speak," he tells *WatersTechnology*.

According to Romahi, this is where ThemeBot's strengths come in. It first creates an initial seed query—for example, "gene," "cell," and/or "therapy." That is enough for the AI engine to analyze articles and other data sources and create an initial portfolio.

Mind mapping

ThemeBot screens more than 10,000 stocks globally using natural language processing (NLP) to analyze hundreds of millions of primary and secondary data sources like company profiles, sell-side research from JP Morgan, and external research, regulatory filings, and news articles.

Then, it creates a mind map of all the words and phrases that co-occur with "gene," "cell," and "therapy."

"Imagine you were actually asked to create a portfolio on renewable energy," Romahi says. "Your brain is going to think, 'That's solar, wind, hydro, etc.' You're immediately going to create a mind map in your head naturally, of words and phrases that are related to renewable energy before you start analyzing a company. So that's essentially what ThemeBot tries to do."

> "It looks at every stock in the universe that we defined. In this case, we used the S&P Broad Market Index universe, but we can make the universe narrower—we can make it region-specific—and it will rank every stock in that universe based on two things: textual relevance and revenue attribution."
> **Yazann Romahi, JP Morgan Asset Management**

Once ThemeBot generates the mind map of words and phrases related to the seed query, the analyst comes in. The larger the bubble on the mind map, the more relevant it is to the initial search.

Fundamental research analysts can then refine and augment the mind map results by adding words to an "Allow" and "Deny" list, essentially narrowing down the related words and phrases.

Romahi, whose team is focused on building factor and systematic solutions, says ThemeBot is "smart enough" to classify words like "and" and "or" as irrelevant to the seed query. The Allow and Deny list comprises words and phrases that the analyst wants to "lean into." For example, the Deny list will represent words and phrases that the analysts think might have co-occurred with those terms but are not relevant.

From those phrases, ThemeBot then generates a list of companies from the selected investment universe. For JPMAM's Genetic Therapies Fund, the universe used is S&P Broad Market Index—which spans 50 developed and emerging market countries, and more than 11,000 companies.

"It looks at every stock in the universe that we defined. In this case, we used the S&P Broad Market Index universe, but we can make the universe narrower—we can make it region-specific—and it will rank every stock in that universe based on two things: textual relevance and revenue attribution," he says.

Textual relevance and revenue attribution

Textual relevance calculates how often terms and phrases in the mind map and the Allow list appear in the company's regulatory filings, earnings transcripts, and news articles. Analysts can see where exactly those words and phrases appear in those data sources.

ThemeBot scores a company's textual relevance between 0 and 1, with 1 representing a high relevance of the terms and phrases appearing in the company's filings and news articles.

The second score is revenue attribution. The tool looks at the revenues of all the companies in the universe and determines the extent that those companies can link their revenue back to gene therapies.

For example, take uniQure, a Netherlands-based company focused on gene therapies to treat patients with hemophilia, Huntington's disease, and other severe genetic diseases. Using ThemeBot, uniQure has a score of 1 under revenue attribution, as 100% of its revenue is related to gene therapy.

"In this case, it's helped by the fact that the company itself breaks its revenue down on that basis, since they are a pure play," Romahi says.

Additionally, ThemeBot takes an aggregate score of the textual relevance, and revenue attribution and ranks how relevant the stock is.

"The beauty of that is because of this transparency, when we work, all our portfolios are done in collaboration with our active equity team, so we provide [a] safeguard. The idea is that with our research analysts, they're able to look at every single name, look at the output and verify that yes, this is indeed a gene therapy stock, and so on," he says.

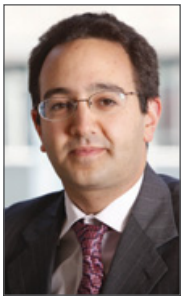
He says an interesting point about textual relevance is that a company may generate a smaller proportion of relevant words and phrases in their filings and news, but they may have a much higher dollar value—for example, if the theme is cloud computing and analysts are comparing Amazon and Dropbox. "Amazon is massive in cloud computing. But Dropbox is

100% cloud computing because that's all they do, whereas Amazon does lots of other things. Would you really rank Dropbox higher than Amazon? Probably not. So, you do need to take into account the size, and not just the percentage. So that's essentially the difference there," he says.

ThemeBot is a portfolio analysis tool, but the analyst has to assist the AI (to varying degrees) to create the initial mind map. The amount of assistance can depend on how focused the searches are. Romahi says creating a query on something like renewable energy probably wouldn't need much curating, as ThemeBot will produce a focused mind map. A broader theme or topic such as "circular economy" or "future city," meanwhile, might require more interpretation and work from active analysts.

In a live demonstration for *Waters-Technology*, where "quantum computing" was the seed query, ThemeBot curated words like qubit, entangle, supercomputer, and quantum compute—all terms related to quantum computing.

The companies—which included the likes of IBM and Barclays, both of which have active ongoing quantum computing projects and experimentations—showed revenue attribution of 0, as ThemeBot struggled to find companies reporting quantum computing-related revenues, despite having textual relevance to quantum computing. For example, both IBM and Barclays have a textual relevance of 1 in relation to the quantum computing query.



Yazann Romahi
JP Morgan Asset Management

"In this case, we would probably say that actually, this is probably too small a theme to create a portfolio on it, because it's unable to attribute revenue," he says.

Theme beta

Over the last year, JPMAM analysts built almost 100 themes, not all progressing to active portfolios. Romahi says some of these themes were created through client conversations or internal interest from JPMAM's analysts.

"We typically want to hold a diversified portfolio. So, we have exposure to the broad theme rather than any idiosyncratic stock-specific risk. We will typically hold the top 100 names of a theme, and this is very different from when you think about an active thematic strategy, for example, where they often have maybe 30 to 40 names," Romahi says. "This is much more about capturing the theme beta. So long as its aggregate score is high enough to be in the top 100 stocks, it will be in the portfolio."

Particularly for a theme that's quite early on in the development cycle, like genetic and cell therapies, there will be a lot of companies where revenues are still small. Although its textual relevance might be high, its revenue relevance could be low.

If a company is still early-stage, it will be ranked lower and JPMAM's weight on it will be lower. But as it starts to get its drugs through trials, its textual relevance will naturally increase. And, once the drugs go to the market, revenue relevance will also increase.

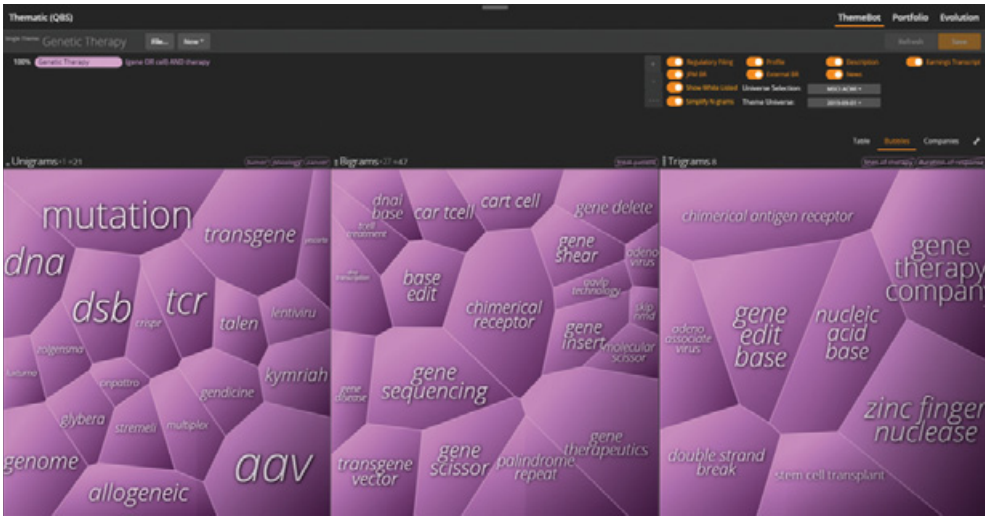
"What you will find is we will capture it early on, but at a small weight, and then over the lifecycle of the drug development and then to market, its weight will steadily increase in the portfolio," says Romahi.

Of course, any portfolio is not without risks. Some of the hazards particular to genetic therapies include large upfront costs, technology or drug failures, and proving efficacy. JPMAM caters to that by incorporating fundamental metrics as part of the portfolio weighting scheme. It uses 10 different metrics measuring profitability, financial risk, and earnings quality to ensure it captures companies with more robust earnings that do not take on too much leverage.

ThemeBot runs daily to capture any news events or mergers and acquisitions activity, but the formal rerunning of the output is done monthly. However, that doesn't necessarily mean there will be massive changes month-on-month. "The top names are probably going to stay the top names," he says. "It's more about capturing any new entrants or developments, whether the companies managed to get their drugs into phase one, two, and so on, so it may be more for sizing the portfolio weights. It's rebalanced on a monthly basis, but it's a relatively low-turnover strategy."

ThemeBot is similar to JPMAM's Textual Analytics tool. Romahi says ThemeBot is based on related technology and shares the underlying core.

"The intention is [for] all the [tools] that we all develop, we all share with each other," he says. "So that's why, for example, you have active analysts who are actually just using ThemeBot as part of their analysis of their own portfolios as well. Wherever there's innovation in terms of machine learning and big data, it's built into Spectrum (JPMAM's proprietary technology platform) through the technology and then it's available across the organization." wt



ThemeBot's mind map result for "gene or cell" and "therapy"

The embrace of buy-side interoperability

The partnership between the two major players in the buy-side technology space reflects the shift in how rivals do business.
By Josephine Gallagher

"There is a time to compete, and then there is a time to execute," says Jörg Ambrosius, describing how technology and service providers have revised the way they think about their competitors, not only on the buy side, but across the industry.

The head of business for State Street's Europe, Middle East, and Africa team says this change is driven by a demand for more choice—both for vendors and best-of-breed solutions—which in turn has forced providers' hands to develop interoperable tech and forge partnerships with their rivals. A recent substantive example of this is the strategic agreement signed last month between State Street and SimCorp, two major competitors when it comes to servicing the front-to-back office tech needs of buy-side firms.

The partnership agrees that both firms will fully integrate and co-invest in their technology and outsourcing services for the insurance community. The common denominator that has made this alliance possible is their shift to open technology—a shift, Ambrosius says, that is necessary for vendors to remain relevant.

"We don't believe that closed systems will—I wouldn't say 'survive'—but that it will be the right way to capture the market in the long term," he says. "When you look at history, closed systems have sometimes had to have a significant ramp-up and there is a tipping point where closed systems will eventually go out of fashion and will not be up to date anymore."

State Street and SimCorp have a shared interest in interop platforms and have spent several years transitioning to an open architecture. SimCorp began building its API technology for SimCorp Dimension four years ago, while State Street has spent the last two years upgrading its Alpha Platform to include Charles River's front office, in parallel to opening up its tech.

Brad Bailey, research director for capital markets at research and advisory firm Celent, describes this trend among rival vendors working together as "co-opetition," an agreement where separate providers believe a value proposition is worth more to a client by cooperating than by doing business individually. Bailey

says vendors know they cannot do it all on their own; in other words, no single vendor can develop best-of-breed solutions for all components of the trade lifecycle and peripheral tools, such as specialized risk models or analytics.

Dan Schleifer, CEO of Cosaic, a desktop integration platform provider, says open solutions force vendors to be competitive in what they do best but incentivize them to work with other firms in areas they fall short.

"As vendors, we would rather not have to be the best at everything we do, and I think competition is healthy for the industry," he says. "I think it allows for smaller and more innovative vendors to step in and say, 'I don't do A, B, and C, but I do B really well, so do A and C with the incumbent, or with the 800-pound gorilla, and just do B with me, because I'm better at that one thing.'"

The embrace of interoperability and modular technology among buy-side vendors raises the stakes for competition and helps resolve the issue of vendor lock-ins, meaning an asset manager, in this case, can more easily switch out applications. When an industry has more choice, it creates a healthy environment for new entrants and innovation to thrive. And most importantly, it forces incumbents to be competitive on pricing, helping to relieve some of the cost pressure on buy-side firms.

"This [shift to open tech] definitely keeps vendors on their toes," says Jay Wolstenholme, research director at Chartis Research, a subsidiary of Infopro Digital, the parent company of *WatersTechnology*. "There's a lot of competition out there, and at the end of the day, the asset owners—'we' being the asset owners—all the way up to the institutional level, we call the shots, we decide where we put our money, how we invest our money, and that criteria goes right up to the institutional investor level."

> "We don't believe that closed systems will—I wouldn't say 'survive'—but that it will be the right way to capture the market in the long term. When you look at history, closed systems have sometimes had to have a significant ramp-up and there is a tipping point where closed systems will eventually go out of fashion and will not be up to date anymore."
> **Jörg Ambrosius, State Street**

Dan Schleifer
Cosaic

The plumbing

The demand for interoperability and optionality goes hand in hand with other shifts on the buy side, as firms switch to running leaner shops and leveraging managed services. Celent's Bailey says the bulk of asset managers and hedge funds, not including the top 10 by assets under management, rely heavily on their vendors and service providers to absorb the cost of building these solutions from scratch, a tech spend they could not afford alone. Over time, he says, the move to outsourced solutions has ascended from the back office to the front office, where today more and more buy-side firms are now leveraging third-party trading platforms.

Where open technology plays a role is in making sure that multiple third-party solutions can talk to each other—an integration and cost burden that would typically fall on the end-user, rather than the vendor.

> "This is why these integrated solutions are so attractive. You have a one-stop-shop where you've got all the back-end taken care of, across the front-to-back office. And now the rest is all about portfolio managers focusing on their investment strategies."
> **Michael Mollemans, Chartis Research**

"This is why these integrated solutions are so attractive," says Michael Mollemans, research principal at Chartis. "You have a one-stop-shop where you've got all the back end taken care of, across the front-to-back office. And now the rest is all about portfolio managers focusing on their investment strategies."

Ambrosius says the vendor is responsible for the heavy lifting and connectivity behind the scenes. On the other hand, consumers of the technology should be preoccupied with the customization that occurs on the front end, something he describes as the "last mile"—such as proprietary analytics or risk modeling.

"One key element of [this integration] is to create the plumbing because you as a client shouldn't care about how SimCorp connects with State Street," Ambrosius says. "Where you do care is: 'Do I have—on the last mile—the right customization?' Because that's where the customization needs to happen; The customization should not happen on how [the user gets] State Street's technology to communicate with SimCorp's technology."

Jochen Müller
SimCorp

In the State Street–SimCorp example, both firms have a bilateral agreement to integrate their systems, but separately they work with other third-party vendors in the industry that plug into their front-to-back systems via APIs. One reason for this is to allow portfolio managers or risk management teams to diversify their strategies—beyond just leveraging a standardized platform.

Several other buy-side technology and service providers have also adopted APIs for integrating third-party systems. These include BlackRock's Aladdin Studio for building APIs, FIS's open API solutions, and Finastra's API framework, among many others.

"We see tremendous demand for openness, for interoperability, for the ability to take in third-party datasets, proprietary risk models, proprietary or third-party trading analytics, or how to leverage alternative data," Bailey says. "All these things are driving a competitive shift."

Pulling back the curtain

Most API integrations are typically simple in how they function and largely non-invasive. In simple terms, an API allows one application to communicate with another application under a set of defined rules negotiated by the parties involved—for example, if application A requests X data, application B will respond with Y.

API integrations can be done on the user side, where they connect their system to third parties, or where vendors take it upon themselves to integrate with other vendors. In the latter example, the data flows to and from vendor A's server or cloud to vendor B's server or cloud.

"You can think of an API, an interface, a little bit like something that sits out in front of a curtain [that anyone] can see, and then there is all the stuff behind the curtain, which only you can see. So it sounds like what State Street and SimCorp are saying is that as part of the partnership, they are going to let [their tech teams] behind the curtain and allow them deeper [access] into the technology that's not normally available to the outside world," he says.

Jochen Müller, chief commercial officer at SimCorp, says the Danish vendor has been given comprehen-

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> **Brad Bailey, Celent**

sive access to State Street's Alpha platform for the integration process. As a result, SimCorp is developing over 20 interfaces that will operate across the entire front-to-back office systems for insurance—including transaction management, corporate actions, collateral management, and reconciliations—through to State Street's custodial services. As part of the joint venture, both firms have also formed integration teams and made commitments to invest in the combined technology platform.

SimCorp will lease its technology to State Street for clients that opt to use its modules. SimCorp Dimension will be developed, maintained, and hosted by SimCorp, but all services and staffing will be handled by State Street.

Blurred lines

While the two firms do compete on some fronts, Müller and Ambrosius say the companies define themselves differently. SimCorp sees itself as a software solutions company, whereas State Street's primary focus is the delivery of managed services, such as fund administration and custody. This partnership is also not the first time the companies have collaborated. Since 2005, State Street Bank GmBH, headquartered in Munich, has used SimCorp Dimension for administration and fund accounting.

But there is no mistaking that competitive forces remain, despite the newly forged alliance and the embrace of open technology. Businesses are sustained by revenues at the end of the day. For this agreement to work, Ambrosius says both firms had to agree on an equal footing in terms of transparency, understanding how the relationship would work, how the tech would be rolled out, and how they communicated that to clients.

Müller and Ambrosius say there will, of course, be situations in which the two vie for users, but believe that the agreement will offer more opportunity to win new business rather than lose it to the partnering vendor.

"If there's a competitive situation, both organizations will make their pitch, but once a client has decided, we are then committed to executing that preferred option in the best interest of the client," Ambrosius says. "That, I think, is really important when you get into something like this. There is a time to compete, but then there's a time to execute."

There are limits to who a firm can partner with and how much it can commit. No firm wants to hand over its IP to its competitors. While agreements like these can generate business, there is a fine line between cooperation and competition, and it shouldn't be crossed.

"I do think there is a balance here in how co-opetition can work and for a vendor, the balance is the key to moving forward in the future—that is asking how open can we be, how much can we open a system to others so that it makes sense for us, and how can we partner with different players?" Bailey says. wt

All roads lead to Bergamo

Market participants fear a 'horrible' relocation project and more room for latency arbitrage should the exchange move its datacenter to Italy. By Samuel Wilkes and Luke Clancy

Key Takeaway

- Euronext, which runs exchanges around Europe, is assessing the feasibility of moving its datacenter from the UK to Italy.
- If the move goes ahead, firms co-locating with Euronext at the UK site will also need to pack their bags and relocate to Italy—a task described as "daunting."
- Market participants are also worried the move will create significant latency between Euronext's new datacenter and those of other exchange operators that cluster around London.
- The latency could then be used by high-frequency traders for latency arbitrage—a practice critics say increases the cost of liquidity.

Basildon, a grey industrial town about 30 miles from central London, may not bring to mind trading in stocks and listed derivatives, but for the past 10 years, it has been home to the technology underpinning exchanges around Europe.

That may be about to change, as Euronext—which operates venues in Amsterdam, Brussels, Dublin, Lisbon, Oslo and Paris—is considering moving its datacenter to Italy.

While a segment of Euronext's market-making members would be happy to leave the expensive Basildon site, many others worry about the costs and effort of relocation.

"Moving a datacenter with lots of different clients and lots of different users is daunting," says an executive at a proprietary trading firm that makes markets on Euronext.

There are also concerns about fragmenting Europe's exchange infrastructure even further, which could create more opportunities for high-frequency traders to engage in so-called latency arbitrage—a controversial strategy.

"Increased latency arbitrage opportunities will result in widening of spreads

by liquidity providers, which ultimately will increase costs for all participants," says an industry source.

Datacenters are the lifeblood of exchanges, housing their matching engines and market data systems. To speed up the connection to a venue, market-makers typically place their trading systems in the datacenter used by the exchange—a practice known as co-location.

In October, the London Stock Exchange Group (LSEG) agreed to sell Italian stock exchange operator Borsa Italiana to Euronext. In a subsequent note

Swings and roundabouts

Many industry sources bemoan the high rents levied by the Basildon datacenter, with the executive at the low-latency technology vendor even describing it as "the single most expensive place."

WatersTechnology sibling *Risk.net* has attempted to do its own comparison between the site and other major datacenters—not an easy task as co-locating fee structures vary between providers.

For example, Ice Data Services, which runs the Basildon center, offers its trading members discounts for renting multiple server cabinets, as does the LSEG at its datacenter in London. But the Equinix datacenter in Frankfurt, which supports Deutsche Börse, does not mention such discounts in its price list.

The discounts for multiple cabinets can make the LSEG's datacenter cheaper than Ice once a tenant rents five or more cabinets. The LSEG also knocks 5% off for tenants that sign a two-year rather than a one-year agreement.

But for firms that are not trading members, such as vendors wanting access to market data, Ice's cabinets are cheaper than the LSEG's.

Out of the three providers, Equinix in Frankfurt charges the least for renting a cabinet. Its most powerful cabinet comes with a monthly price tag of £2,158 ($3,045) but it is less powerful than what is on offer at Ice and the LSEG.

Both Ice and the LSEG also levy one-off installation fees. Equinix has not responded to *Risk.net* on whether its Frankfurt site charges for installation.

Ice's installation fees range from £6,000 to £10,000 depending on the cabinet's electrical power, while the LSEG charges a single fee of £11,300 per cabinet.

The Bergamo datacenter does not provide a public price list.

Ice declined to comment on the market perceptions that its Basildon datacenter is among the most expensive.

to shareholders, Euronext said the combined group would analyze the feasibility of transferring Euronext's datacenter to Milan by 2024, when the contract with its provider in Basildon will expire.

Although the potential relocation is outlined in a public document, not everyone has picked up on the news. Four sources *Waters Technology* sibling publication *Risk.net* spoke to were not aware of the plans.

New life in the sun

According to three sources with knowledge of the move, the new location under consideration by Euronext is not in Milan proper but about 31 miles from the city, in Ponte San Pietro in the Italian province of Bergamo. The province is home to a Tier 4 datacenter, considered very reliable, and which is large enough to house Euronext's operations.

Euronext declined to provide further information on the potential move from Basildon beyond what is contained in the note to shareholders. But sources point to a host of reasons why leaving the UK site makes sense for Euronext.

For one, many of the users of the Basildon datacenter, owned by Ice Data Services, complain that it is costly to lease (see box: *Swings and roundabouts*). That has garnered some support for the move among Euronext's market-making members.

An executive at a vendor of low-latency technology gives further reasons for Euronext's plans: "They want to have united operations and Borsa Italiana doesn't want to move because, presumably, the Italian government says so. They want to be inside the European Union given Brexit. And Ice is very expensive."

There is historical precedent for intervention by the Italian authorities. Four sources say the LSEG's transfer of Borsa Italiana's datacenter back to Milan from London in 2012 was prompted by pressure placed on the UK operator by the Italian government.

A person at a trading software vendor says this time the Italian government is insisting Borsa Italiana's datacenter remain in Italy, meaning that a combined datacenter once the integration with Euronext is complete will also have to be based in Italy.

An employee of another trading software vendor says Euronext's desire to leave Basildon goes back even further as it was already voiced by the firm's former management.

That comment is echoed by a former employee of a proprietary trading firm that makes markets on Euronext, who says: "Even before the Borsa acquisition, they wanted to remove their dependency on Ice." He adds that early last year he heard that the exchange operator was also eyeing Amsterdam and Paris as possible alternatives.

The Italian finance ministry has not responded to a request for comment on the allegations that it has played a role in Euronext's relocation plans.

Costs of moving

Despite the benefits of leaving Basildon, the move would come at a cost to Euronext's co-locating users.

"Datacenter moves are horrible projects for everyone," says the executive at the low-latency technology vendor. "So that's why you don't see too many of those. It will probably take two years to announce and prepare everything."

The former employee of the prop trading firm, who specializes in trading technology, explains that relocation would require buying duplicate equipment for the new site. It would not make sense to physically move existing equipment from Basildon because that

would incur trading downtime as the move was carried out.

Firms would then have to install various software on the equipment in the new location, including systems for client reporting, margin calculations and payments, and risk management, the person says. He estimates that the costs of relocation would range between €500,000 ($607,000) and €2 million.

He adds that if the costs of moving outweigh potential profits, a firm may simply stop trading certain strategies and that the costs may be justified only for bigger market-makers. In Stockholm, for example, only local Nordic and large European market-makers can justify the costs of establishing co-location servers to connect to the relatively small market run there by Nasdaq.

"It is very prohibitive to build optimal setups in many different locations because you spend a lot of money. There is a bit of a burden and a [revenue] threshold where this makes sense," the trading technology specialist says.

The person at the trading software vendor agrees: "It's a significant project for all the members who are co-located, for sure."

Arbitraging the distance

A broader implication of the move from Basildon to an Italian site is creating significant latency between Euronext's new datacenter and those of other exchange operators that cluster around London.

For example, the Chicago Board Options Exchange has a datacenter relatively close to Basildon: 74 miles away in Slough, on the other side of London. That distance with Euronext's datacenter will increase to around 808 miles if Euronext relocates to the Bergamo province.

Likewise, the LSEG has a datacenter in London for Turquoise, a trading venue for European stocks. Both of Euronext's rival exchange operators list Euronext securities, supported by the two datacenters.

"There are so many exchanges around London you basically have the minimum of latency [between venues]," says a second industry source. "If you move the Euronext site out to Bergamo, Italy, and leave the rest of the world in the UK, you obviously create latency."

The latency matters because it allows high-frequency traders to engage in latency arbitrage—a practice that exploits super-fast access to market information. For example, when a stock price moves on one exchange, arbitrageurs will dash to another venue where the price of the same stock has not yet moved in line, to buy or sell the security at a profit.

Opinions differ on whether latency arbitrage is good for the market.

Critics say the practice causes market-makers to widen their bid and ask quotes to account for the losses they may incur if high-frequency traders swoop in before they are able to align their offers with other venues.

"I don't think that connectivity technology or being very fast adds anything to the quality of the market," says the executive at the prop trading firm making markets on Euronext.

Like a number of other market participants that spoke to *Risk.net*, the executive would ideally like all of Europe's exchanges to use a single datacenter.

The first industry source says: "If all equity trading happened in the same datacenter, then in some ways that is ideal because there is very little opportunity for latency arbitrage. The more fragmented it gets, the more opportunities open up for latency arbitrage." wt

Co-location charges for exchange members (in GBP)

Datacenter provider and location	Product	One-off installation fee	Single cabinet monthly price	Three cabinets (price per cabinet)	Six cabinets	Nine cabinets	11 or more cabinets
Ice Data Services, Basildon, UK	5kW cabinet	6,000	4,600	4,370	4,140	4,140	3,910
London Stock Exchange Group, London, UK	5kW cabinet (LSEG does not offer 4kW cabinets)	11,300	6,050	5,050	4,050	3,000	2,300
Equinix, Frankfurt, Germany	The center, which hosts Deutsche Börse, does not have 5kW cabinets. Its most powerful cabinets are broadly equivalent to 4kW and cost £2,158 per month. *Risk.net* is not aware of any installation fees or discounts for multiple cabinets.						

Source: Risk.net research

Max Bowie

Data is boring, right?

Market data departments sometimes get pigeonholed somewhere between procurement and compliance, rather than driving the kind of cutting-edge initiatives that grab headlines. Max says that doesn't mean there aren't disruptive tech projects underway.

Market data, despite its importance to financial markets, is rarely a true hotbed of innovation. Aside from the growth of alternative data (which I admit, I always find very cool) and the issue of data latency—which spurred a budget-thirsty race-to-zero and drove the introduction of technologies such as co-location with marketplaces, microwave data networks, and dedicated hardware for processing data—most data issues revolve around how you get a price (or other piece of data) from A to B, and how you pay for it.

I'm not saying these aren't important issues; it's just that the basics of data management haven't changed much in a long time. But each element of the financial data industry is now facing some form of disruption that could usher in much more innovative approaches.

Let's start with the data itself. We understand alt data and sentiment data. But at the intersection of these lies the data that either made or broke hedge funds during the GameStop rally: unstructured messages on Reddit chat rooms. Were data scientists considering Reddit a source of market data before a bunch of amateurs outwitted some of the smartest minds on Wall Street? Probably not. They probably believed that buying feeds of investor activity from RobinHood, other retail platforms, and social media was sufficient insight into how crowd sentiment was moving on a stock. Now they may need to re-evaluate where they look for indicators of how markets will move.

Next, let's look at how the process of moving data from A to B is changing: one challenge is how to handle these new data types that don't conform to numerical values that can be easily tabulated. Tools like knowledge graphs—which visualize relationships between data points three-dimensionally—offer the potential to not only identify a firm's exposures and risks, but also to help define and connect data types that defy traditional descriptions.

"Were data scientists considering Reddit a source of market data before a bunch of amateurs outwitted some of the smartest minds on Wall Street? Probably not.

But these new data types still need to link to "traditional" market data that reflects specific assets traded on markets. So that data, and the basic mechanisms that distribute it correctly, aren't going away anytime soon. However, they are evolving, largely driven by the potential of the cloud to host new generations of data platforms—ranging from Refinitiv's Real Time Distribution System to solutions from new contenders like BCC Group or Pegasus Enterprise Solutions—and to replace dedicated networks for data transmission.

And here are some areas where another, hitherto-overhyped, technology may find its forte. Blockchain has been like a hammer looking for a nail beyond digital currencies. But it has some potential use cases here: arguably, its distributed ledger, which provides an immutable record of "transactions," could perform the function of proprietary identifiers, without the need for a proprietary identifier, and support trading in new asset classes by synthesizing them as digital assets. In addition, that immutable ledger can potentially solve a major data headache—the process of tracking and reconciling market data usage against license agreements, to ensure firms aren't over-using and under-reporting data usage. DLT management tools from firms like startup TradeX could establish an accurate record of who is permissioned to use data, and leveraging digital keys, can ensure that only those individuals or applications actually receive the data.

But what about the elephants in the room? I mean Google, Amazon, and Microsoft, whose clouds underpin an increasing amount of capital market systems. AWS not only provides hosting, it also runs the AWS Data Exchange. Google, likewise, is working with exchanges like CME Group to deliver data via the cloud. And Microsoft? Not only has the company announced major partnerships with FactSet and State Street, but it is teaming with Pimco, Man Group, State Street, IHS Markit, and McKinsey & Company to form a new tech company geared toward solving operations pains for buy-side firms.

Hey, I said market data wasn't innovative. I never said the innovators wouldn't find it attractive. And at the end of the day, these disruptors will see opportunities in areas that are slower to drive or adopt innovation by themselves. wt

Jo Wright

UK watchdogs run into security fears

Data security and innovation are always going to be in tension. A new plan to improve regulatory reporting might find itself facing worries over security, Jo says.

In 2019, the Bank of England, working closely with the Financial Conduct Authority, committed to overhauling its clapped-out data policy, admitting that technology and analytics had changed since its adoption in 2013. In early 2020, the central bank put out a discussion paper with some ideas on how it might transform the way it collects data from financial firms; among these multiple suggestions was one that would see the BoE shifting from a "push" to a "pull" model of data collection.

Currently, firms "push" data to the BoE, in that they generate and send reports. Under a "pull" model, the bank could query data held at firms and generate reports on demand. "This could improve speed and flexibility of reporting while reducing the marginal cost to firms of responding to new questions," the 2020 paper states.

The paper gave examples of pull models from Rwanda and Austria. Rwanda's central bank, for example, distributes reporting templates to institutions, then pulls data based on these templates from firms' core systems into its own data warehouse, performing transformations on them to meet reporting requirements.

Responses to the discussion paper were due by April 2020. After mulling over the 60 responses, in February the BoE laid out its plan for data collection in 2021 and beyond. Judging by what it says in the new plan, the bank has encountered a lot of pushback.

Respondents seem to have balked at the idea of the regulators having access to their systems and storing their data, the BoE says in the document. While firms agreed that there might be benefits in reducing reporting costs, "many firms disagreed strongly with any suggestion that it might result in the bank being able to pull data in real time, expressing unease about the regulator or central bank having direct access to their systems. In addition, firms had questions on the governance and security implications of a pull model, such as the mechanics of data verification, pulling and storing large volumes of data securely, and accountability in the event of a security breach," the bank says.

> Respondents seem to have balked at the idea of the regulators having access to their systems and storing their data.

This reminds me of the resistance the US Securities and Exchange Commission's Consolidated Audit Trail has faced from broker-dealers, whose trade association is currently engaged in a bitter debate with the exchanges that are running the Cat over whether the exchanges should be able to bulk download data that includes sensitive personally identifying information on customers. As my colleague Tony Malakian wrote recently, the Cat without PII is not an improvement on other databases that already exist, but data security is expensive and difficult to achieve. Perhaps the BoE will not want to get into these kinds of debates?

The 2021 plan doesn't say if the BoE has abandoned the pull idea entirely, however. That's not really the tone of this new plan, which is not prescriptive—rather, it's setting out the building blocks for collaboration with the industry. The bank sees its modernization unfolding in an iterative way, starting with limited use cases for the first three years, then gradually scaling to other activities. The BoE has settled on three themes that will form the basis of the plan: adopting common, open standards that identify and describe data consistently; modernizing the reporting instructions sent to firms (including writing them as computer code); and integrating reporting across domains.

The new plan lays out some alternatives to the pull model. These include using alternative data sources—such as from intermediaries like financial market infrastructures, rather than directly from banks. "This could result in fewer 'sources of truth' and a higher quality of data," the plan says. The bank could also align its data collection methods more closely with the data's intended purpose; that is, if the data wasn't needed in real time, it needn't be collected that way.

The pull model is just one aspect of a wide-ranging transformation plan, and there will be evolutions as this progresses. I'm curious, for example, about the potential implications of writing regulation as code, which has been recommended as a piece of this reform. But it's a sign of a broader issue that will become a theme over the years as regulators look to harness the power of data: can they safeguard precious industry information? wt

Wei-Shen Wong

BNY's crypto gambit will test custody tech

As more traditional banks are starting to enter the digital asset custody space, Wei-Shen questions how interoperable they'll be.

It wasn't so long ago that one of the major hindrances holding back institutional investors from cryptocurrencies and other digital assets was the lack of institutional-grade custody solutions. That is slowly changing.

In the past few years, a bunch of crypto players, including BitGo, Fincross International, and Velocity Ledger Financial and Prime Trust, have started catering to the institutional market.

But as Hu Liang, co-founder and chief executive of crypto-trading platform Omniex, told me recently, in order for crypto to become a true asset class, it's "absolutely required" for larger regulated institutions to be involved.

Now it looks like that's starting to happen. In February, BNY Mellon launched its Digital Assets unit to accelerate the development of solutions and capabilities to help clients cope with the needs of digital assets, including cryptocurrencies. The unit is currently developing a prototype for a multi-asset digital custody and administration platform for both traditional and digital assets. Pending further evaluations and approvals, BNY Mellon expects to offer some of these capabilities later this year.

Roman Regelman, BNY's chief executive of asset servicing and head of digital, told me that digital assets are becoming mainstream. "If you think of a hedge fund … let's say they have 10% in digital assets. Today, they have an entire infrastructure for 90% [of their fund] and an entire infrastructure for 10%. These two separate infrastructures have a different set of stakeholders, partners, and platforms. These two worlds don't meet. They cannot lend against one or borrow against the other. I can't give you the same reports," he says.

Two into one will go

It's a challenge that BNY aims to address by enabling clients to keep traditional assets and digital assets in the same portfolio. "I want to provide you with exactly the same infrastructure, so you have consistency in approach and reporting. That's the mission," Regelman says.

> Chief investment officers should be able to invest in whatever they want, without being constrained by their operating models

The technology involved in safeguarding digital assets differs in that it involves storage of digital keys, but Regelman says it's still custody of an asset—it's just that the asset is different.

And just as trading in traditional assets has evolved from paper-based certificates, the digital asset industry, too, will continue to evolve. Sure, the questions that need answering may be more complex than the current model, but it's also important to remember that the current model took years to perfect.

"There were tens of thousands of contracts written, there were precedents, and there were regulators providing clarity. This is all new. So working with clients is not just about providing them with the technology, which is obviously really important, but also working on all these processes," he says.

Ultimately, chief investment officers should be able to invest in whatever they want, without being constrained by their operating models. "Our job is to be an extension of them and provide an easy, seamless and interoperable way to support the investment," Regelman adds.

Interestingly, given the growing theme of interoperability in recent years, Regelman talks about the necessity of tying traditional platforms to digital asset/crypto platforms. As more institutions get involved in the crypto and digital assets space, they will naturally want their systems to interact with each other and to have a more consolidated view of their investments.

BNY Mellon is not alone. Northern Trust and Standard Chartered, through its SC Ventures unit, are also taking aim at the digital asset custody market. As yet, though, their goals appear to differ from those of BNY.

The two aim to launch Zodia Custody, which is still pending regulatory approval from the UK's Financial Conduct Authority, to enable institutions to invest in emerging cryptocurrency assets. Zodia combines the traditional custody principles and expertise of a bank with the agility of a fintech company to provide an infrastructure that meets institutional needs.

If, in the end, firms are managing their traditional assets and digital assets in two non-interoperable platforms, essentially creating an all-new silo, then it doesn't matter what technology is thrown at the crypto custody problem. It will always continue to struggle. wt

Human Capital

Broadridge taps Jerome Hoffman for international role

Broadridge has appointed Jerome Hoffman to the newly created role of head of international partnerships and alliances, focusing on Asia-Pacific and Europe, the Middle East and Africa.

Hoffman will focus on creating and developing relationships with firms across the financial services spectrum.

He has been with Broadridge since 2012, prior to which he held senior business development roles at Harland Financial, SIX Telekurs and Bank of Ireland.

Hoffman reports to Mike Thrower, VP of international account management, and will work with Ira Newman, Broadridge's head of global partnerships and alliances.

Jerome Hoffman

Liquidnet hires John Emmert for portfolio trading team

Liquidnet has hired John Emmert as head of trading for the Americas.

Most recently, Emmert worked at ITG as director on the global portfolio trading team, where his responsibilities included managing global portfolio trading baskets, advising clients on execution strategies, and managing the firm's global equity prospecting initiative. Prior to ITG, Emmert worked for 10 years at Deutsche Bank Securities as director in the global program sales and trading group.

Based in New York, he reports directly to Liquidnet's head of execution and quantitative services, Americas, Mike Capelli.

Alejandro Nicolas Aguzin

Von M. Hughes

HKEX taps Alejandro Nicolas Aguzin for leadership role

Hong Kong Exchanges and Clearing (HKEX) has appointed Alejandro Nicolas Aguzin as chief executive, effective May 24, for a term of three years, subject to the approval of the Securities and Futures Commission. Aguzin will also become an *ex officio* board member.

Aguzin joins HKEX from JP Morgan, where he was International Private Bank CEO and a member of the operating committee for the asset and wealth management businesses.

Calvin Tai will step down as interim CEO but will remain co-president and chief operating officer of the exchange.

TP Icap names Andrew Polydor head of global markets

TP Icap has appointed Andrew Polydor as head of global markets.

In this newly created role, Polydor will be responsible for the group's global broking division, in addition to his current role as head of the energy and commodities division, a position he has held for the past 12 years.

Polydor began his financial career in 1982 before setting up Prebon Energy Sydney in the late 1990s. He later transferred to London to run Prebon's growing energy business in Europe and rose to the position of global head of E&C at Tullett Prebon in 2008, becoming chief executive of TP Icap E&C in 2016.

Euronext taps Piero Novelli for leadership role

Euronext has named Piero Novelli as its new chairman. Novelli will step down from all executive positions before taking up the role. His appointment remains subject to the approval of regulatory authorities and Euronext shareholders.

Novelli was co-president of UBS Investment Bank and a member of UBS Group executive board since 2018. He was appointed co-executive chairman of global investment banking in 2017, and became sole global head of mergers and acquisitions in 2016. He has also held senior roles at Nomura and Merrill Lynch.

Von M. Hughes joins Tradeweb board of directors

Tradeweb has appointed Von M. Hughes as an independent director.

Hughes is a partner and managing director of PAAMCO Prisma, where he serves as head of strategic advisory and client acquisition. He joined the board of directors for PAAMCO Prisma Holdings in 2018.

Hughes has been with PAAMCO Prisma, formerly known as PAAMCO, since 2003 and has served in a number of senior roles at the firm.

BNP Paribas AM appoints deputy chief executive

BNP Paribas Asset Management has appointed Sandro Pierri as deputy chief executive, in addition to his role as head of the fund's global client group, a position he has held since 2017.

Between 2002 and 2003, Pierri was CEO of ING Group's Italian retail business. He joined Pioneer

Investments, UniCredit's asset management division, in 2004, and spent 10 years in various commercial and managerial positions.

Pierri is based in London and reports to CEO Frédéric Janbon.

Trading Technologies announces new hires

Trading Technologies International has announced the promotion of four executive leaders. Farley Owens is now president; Roger Mills is chief financial officer; Guy Scott is EVP global head of sales; and Bharat Mittal is chief technology officer.

The appointments come as the company also announces that Michael Kraines, who served as president and chief financial officer, has left the firm for another opportunity.

BestEx names Richard Chase chief compliance officer

BestEx Research Group has hired Richard Chase as chief compliance officer of subsidiary BestEx Research Securities.

Most recently, Chase was general counsel at RBC Capital Markets. Prior to that, he held senior legal and compliance roles at Wessels Arnold & Henderson, US Bancorp Piper Jaffray, and Lehman Brothers.

He reports to chief executive Hitesh Mittal.

Philip Barnes joins Big xyt as Asia-Pacific managing director

Big xyt has appointed Philip Barnes as managing director and head of business development in Asia-Pacific.

He joins Big xyt from Amaggio Partners where, as founding partner and chief commercial officer, he established a strategic business development and management consultancy servicing the Asia-Pacific region.

Barnes has held several senior Asia-Pacific management positions, including head of global derivatives business development at NYSE Euronext.

MACROBOND FINANCIAL HIRES HOWARD REES AS CCO

Macrobond Financial, a provider of economic and financial data, has appointed Howard Rees as chief commercial officer.

Rees will oversee all Macrobond's global sales, customer activities, and strategic partnerships. He will be based in the firm's London office.

Rees most recently served as head of international sales at Burgiss, where he led the US private equity data and analytics provider's expansion across key markets. Prior to that, he held multiple senior leadership sales roles at Bloomberg LP globally.

Howard Rees

Manooj Mistry

Michael Gouverneur

American Portfolios promotes Steve Krameisen to CTO

American Portfolios Financial Services has promoted Steve Krameisen to chief technology officer.

His new role includes overseeing the development and implementation of IT strategies to accommodate current and future organizational needs while meeting the firm's operational and financial goals.

Krameisen joined the firm last year as chief information security officer.

Sterling Trading Tech taps Erik Schmidt as COO

Sterling Trading Tech has appointed Erik Schmidt as chief operating officer. He has more than 25 years' capital markets experience in strategic initiatives for financial technology and international trading organizations.

Schmidt joined Sterling in 2019 to lead the client services team and implement processes and procedures to help the firm scale and manage growth. He has worked with a variety of firms in the past, including Gelber Group, Deutsche Bank, and Mako Trading.

Substantive Research makes senior hires

Substantive Research has appointed Michael Malpiede as senior sales associate for the Americas. The firm has also bolstered its UK team with the hire of Alex Mackinnon as sales associate, in addition to hiring two developers, Daniel Kasprowicz and Kelly Jones.

Planixs taps Michael Gouverneur for regional sales

Planixs has announced that it is expanding its continental European operations with the hire of Michael Gouverneur as regional sales manager.

Gouverneur will support Planixs' existing European customer base and capitalize on sales opportunities in continental Europe.

He joins Planixs from Calypso Technology, where he was a regional sales manager.

Manooj Mistry joins HANetf as chief operating officer

HANetf has appointed Manooj Mistry as chief operating officer as part of its continued expansion.

Mistry has more than 25 years' experience of leadership in asset management and exchange-traded funds business development, as a former chief executive of DWS Investments UK and head of Xtrackers ETFs and index investing at DWS.

Reporting to co-CEO Nik Bienkowski, he will lead the product development, operational and regulatory aspects of the HANetf business.

Ipushpull hires Neil Weatherall as head of technical sales

Neil Weatherall has joined capital markets fintech Ipushpull as head of technical sales.

Weatherall previously worked at Natwest Markets and RBC Capital Markets. wt

waters tech

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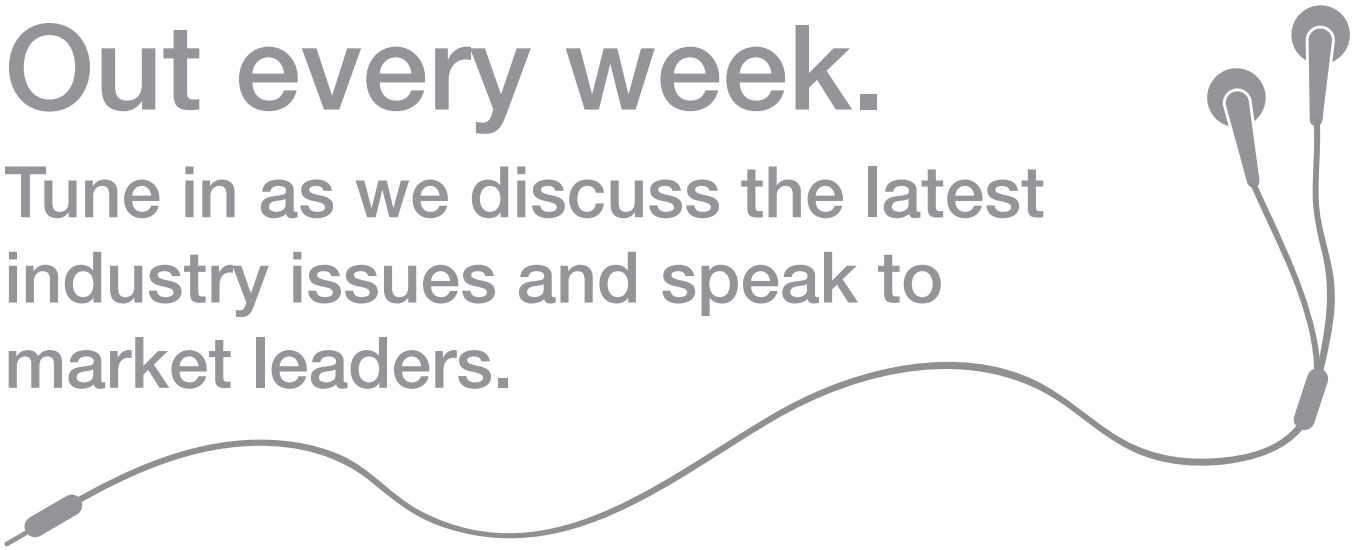

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