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Markets, Regulators Struggle to Handle Early Mifid II Data

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Esma's Mifid II 'Grace Period'; Institutional Investors' About-Face on Cryptocurrencies

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Getting Your Bitcoin's Worth

As we enter a New Year marked by the go-live of Mifid II, I'm beginning to think that firms weren't being entirely truthful when they said that their every waking moment all last year was spent thinking about and working toward Mifid compliance.

There are two things that sparked my suspicions: first, the fact that so many market participants would have fallen short of complying that pan-European regulator the European Securities and Markets Authority needed to institute a six-month "grace period" for compliance with the Legal Entity Identifier requirements of the new rules; and second, Bitcoin.

Many are reporting 2017 as the year that cryptocurrencies came of age, gaining legitimacy and investor trust. I would suggest that in fact, 2017 will be remembered as the year that institutional investors and trading firms that had previously shunned the then-risky digital currency world began to not only take interest in it, but to start figuring out how they could urgently gain exposure to this space. The reason, I'd wager, is that firms caught themselves salivating over those massive price swings, and believe there's plenty more volatility yet to play out, which they have the expertise to exploit.

But here's the catch: When entering any new market, you first want to thoroughly test your hypotheses and models—painstakingly developed and honed using various historical datasets—against live market data before putting them live. The problem is, market data in the way we understand it for other markets and asset classes simply doesn't exist to the same extent (yet) for cryptocurrencies, while historical data is short-lived and volatile. Call me over-cautious, but that sounds like diving into a murky pool without first checking how deep it is, or whether you can actually swim.

Of course, others have noticed this, and in some cases, it has led them to create new data vendors focused on crypto data to address this new market opportunity.

From an area woefully under-regulated to one that many argue is over-regulated, this issue of *Inside Data Management* contains two features examining the early impacts of Mifid II in practice, including the challenges posed by its trade reporting requirements, a deep dive into the latest trials and tribulations affecting the US Consolidated Audit Trail, and a look at how FPGA cards are being exploited in the capital markets, a decade after they were first introduced to slash latency and boost processing power of feed handlers. With all these topics up for review, you can be sure you're getting your Bitcoin's worth. ■

Max Bowie
Editor

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January 2018

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ISIN Utility Increases Fees as User Numbers Rise

The Derivatives Services Bureau (DSB), the global utility run by the Association of National Numbering Agencies for the creation of International Securities Identification Numbers (ISINs) for over-the-counter derivatives, has raised fees for current user contracts running from October 2017 through December 2018. The increased fees reflect a jump from 78 to 103 paying users from late December 2017.

According to the DSB, the biggest revenue impact was an increase from 66 to 78 power users, while the pool of users accessing the utility's free data services jumped 93 percent.

"Whilst we are delighted with the large uptake of the DSB's free, open data services, we are mindful that the smaller-than-expected number of users contributing to the DSB's cost recovery results in an increase in individual user fees," says Emma Kalliomaki, DSB managing director, in a statement. She adds that the DSB believes user numbers will grow further as it continues to receive new inquiries from firms just realizing they will be creating over-the-counter ISINs. The company also expects to add users as a result of the increase in systematic internalizers later in 2018.

The annual fee for 'power users' has jumped to €112,500

User fees pay for the DSB's overheads, which amount to €9.2 million ($11.3 million), 4.8 percent higher than the €8.8 million previously stated. According to the DSB, the fee calculation is based on the contracts in force as of January 5 and the user categories those contracts represent. Currently, investment banks bear the highest burden of cost recovery, at 54 percent, followed by trading venues at 33 percent. Other sectors, including asset management and data management, cover 13 percent. Excess revenues caused by contracts signed after January 5 will go to defraying user fees for the next contract year. Annual fees for infrequent users remain at €3,000, mid-level users see an increase from €22,000 to €37,500, and the annual fee for power users has almost doubled from €65,000 to €112,500.

"The proportionately higher participation of banks relative to trading venues in the cost recovery validates the design of the OTC-ISIN as internally useful for business operations beyond satisfying reference data reporting obligations under Mifid II," says Kalliomaki.

Later this year, the DSB will reopen the fee model consultation with the industry, with a goal of redefining the cost-recovery model for 2019 by evaluating data and usage patterns in 2018.

Vela Adds Virtu to SI Data Hub

Ollie Cadman, Vela Trading Technologies

Vela Trading Technologies, a provider of low-latency direct and aggregated data feeds and feed handlers, is adding Virtu Financial to the list of electronic liquidity providers delivering market data via its Systematic Internaliser (SI) Data Hub.

The hub aggregates SI data and provides clients with custom SI price feeds through a single API connection. The market data solution is part of Vela's Mifid II solution suite.

"Integrating Virtu's disclosed liquidity streams into the Vela SI Data Hub delivers a seamless and cost-effective connectivity solution for clients to access Virtu's competitive and transparent liquidity across equity and ETF [exchange-traded fund] securities in a Mifid II-compliant environment," says Christiaan Scholtes, head of markets for Europe, the Middle East and Africa (EMEA) at Virtu Financial, in a statement.

Ollie Cadman, head of EMEA business operations at Vela, says the vendor's agile feed handler integration process means that as more firms register as SIs, Vela can work with them to become a member of the SI Data Hub and ensure mutual clients receive the data.

Vela is currently integrating data from firms that have already registered as SIs, as well as some that planned to register after the January 3 Mifid II deadline.

Citi Pays $11.5M After Finra Finds Ratings Failings

US regulator the Financial Industry Regulatory Authority (Finra) has fined Citigroup $5.5 million and ordered the firm to pay $6 million in compensation to retail investors for displaying inaccurate research ratings for equities.

Between February 2011 and December 2015, Citi displayed inaccurate research ratings for more than 1,800 equities—more than a third of those covered by the firm—which Finra says caused "widespread, adverse consequences." For example, because of the errors in the ratings feed that Citi provided to its clearing firm, the clearer displayed the wrong rating, a rating for a security that Citi did not rate, or displayed no rating for securities that the bank did rate.

In addition, Citi brokers solicited deals using the wrong ratings and "negligently made inaccurate statements to customers," and which violated client firms' portfolio guidelines—for instance, which prohibit their portfolios from holding securities with a "sell" rating—and made inaccurate statements or omissions on more than 19,000 research ratings on customer account statements.

Citi also failed to correct the inaccurate ratings, despite "numerous red flags," and did not conduct testing to verify the accuracy of its ratings—though the firm did identify and report the issues itself.

EDM Council, eLearningCurve Partner for Data Management Training

Data industry body the EDM Council has announced plans for a new range of online training and certification programs, in partnership with data management training provider eLearningCurve. The EDM Council will offer members subsidized training and certification across data management disciplines. It will also work with eLearningCurve to develop online courses and certification programs for its Data Capability Assessment Model and Financial Industry Business Ontology standards.

ADVFN Adds CME Bitcoin Data

Online market data provider ADVFN has begun providing delayed data on Chicago Mercantile Exchange-listed bitcoin futures free of charge to investors on its advfn.com and investorshub.com websites, following the start of trading in the contracts on CME Group on December 18. Any of the websites' four million registered users can view quotes, charts and real-time news on CME bitcoin futures, can add the contracts to their portfolios, and can view them on pages alongside their other investments.

Esma Preps for Electronic Financial Reports by 2020

New format to be mandatory in the EU

Pan-European regulator the European Securities and Markets Authority (Esma) has released the final draft Regulatory Technical Standards (RTS) for a new, standardized electronic format governing how companies prepare and report financial results, to enable investors and financial firms to consume annual reports from European Union-based issuers in a machine-readable format.

All EU-domiciled issuers must use the new standard, dubbed the European Single Electronic Format (ESEF), from 2020. ESEF leverages an extension of the IFRS (International Financial Reporting Standard) Taxonomy and XHTML, an extension of the HTML language used to code web pages, and embeds inline XBRL (eXtensible Business Reporting Language) to tag any consolidated financial statements reported in IFRS format, making the statements structured, machine readable, and able to be transformed and used in other formats such as SQL or Microsoft Excel without needing to re-key data.

"The draft RTS… is a significant step forward in the digitization of financial information of European issuers. The introduction of the new reporting format in 2020 will make financial statements more accessible and more easily comparable for investors across the EU, supporting transparency and contributing to increased investor protection," says Esma chairman Steven Maijoor.

ANNA Unveils ISIN Lookup Service

The Association of National Numbering Agencies (ANNA) has launched its ISIN Lookup Service, which enables any user to find and download ISIN (International Securities Identification Number) codes and associated reference data. The service matches reference data provided by users—such as instrument type, country, currency and issuer name—against the ANNA Service Bureau's global ISIN database, which comprises the millions of ISINs issued on securities. However, ISINs allocated to over-the-counter derivatives are not available via the look-up service. Instead, users must look search for these through ANNA's Derivatives Service Bureau (DSB) Web interface.

Users can also search for companion codes—the Classification of Financial Instruments (CFI) and Financial Instrument Short Name.

Users can register for and access the ANNA ISIN Lookup Service via the ISIN page of ANNA's website, and can register to use the DSB by contacting *support@anna-isin.com*.

DTCC Launches Exception Management Service

Post-trade market infrastructure provider the Depository Trust & Clearing Corporation (DTCC) is adding an exception management tool to its Institutional Trade Processing product suite.

The DTCC's Exception Manager enables market participants to publish, manage and communicate exceptions—defined as any transaction that requires user attention to settle successfully—through the trade lifecycle, and supports all securities transactions globally.

"Post-trade exception processing often creates operational risk and a significant amount of inefficiency for all parties to a trade. Trade data needs to be consumed and processed from many disparate systems, including matching engines, trading counterparties, settlement entities and market infrastructure providers—and the related communications, which are predominantly emails, are overwhelming, cumbersome to manage and introduce risk," says Matthew Stauffer, managing director and head of institutional trade processing at the DTCC, in a statement.

Matthew Stauffer, Depository Trust & Clearing Corporation

Exception Manager aims to solve these problems via a central online industry platform that provides a single view of all trade exceptions accompanied by analytics and paths to solve the problem, such as incorrect standing settlement instructions (SSIs).

In 2017, a DTCC survey revealed that 78 percent of major buy-side and sell-side professionals identified missing or incomplete SSIs as the biggest pain point affecting post-trade processes, while 80 percent reported that faster resolution of exceptions is a key factor in a T+2 settlement cycle environment.

Tradeweb APA Bug Mires Start of Mifir Reporting

Technical problems with one of Europe's reporting platforms prevented several banks from submitting trade reports in the first days of new transparency rules, sources say. Tradeweb's Approved Publication Arrangement (APA), which is backed by a number of major banks, refused key aspects of trade reports from several clients until January 4, 2018, according to the sources.

The problem stemmed from the APA rejecting elements of non-equity trade reports where the International Securities Identification Number (ISIN) attached to the submission did not match those held in Tradeweb's systems, *WatersTechnology* understands. Under the Markets in Financial Instruments Regulation (Mifir), market participants are required to report details of trades across asset classes in real-time, or near to that, with trade reports conducted off-exchange sent to APAs. ISINs, as the name implies, are used to identify the instrument traded, but can encompass a wide universe of instruments. Those stored in Tradeweb's systems, people familiar with the situation say, did not cover the breadth of ISINs issued.

The identifiers in Tradeweb's systems failed to match the breadth of ISINs that had been issued, sources say

Tradeweb is one of six APAs authorized by the UK Financial Conduct Authority, with others registered by Abide Financial, Bloomberg, Cboe Europe, the London Stock Exchange Group and Trax. Sources say this problem did not occur at the other APAs.

Tradeweb reportedly addressed the issue on January 4, telling clients that the ability to submit ISINs with reports that did not match those in the system would be enabled and that it would be "switching that on" to stop rejections occurring. A Tradeweb spokesperson confirmed that there had been a "mapping issue" with a number of trades related to the ISINs reported, but that this had been resolved, and only affected a small number of clients. The spokesperson added that the APA had since processed 20,000 trades and marked upwards of 60,000 as deferred.

European reporting regimes have typically had difficult initial periods. When derivatives reporting to trade repositories began in 2014, technical glitches at the largest repository meant participants were unable to submit their trade reports at first. But this is not the first time that identifiers have been in the spotlight in the build-up to Mifir's go-live date on January 3.

On December 20, the European Securities and Markets Authority (Esma) issued a six-month reprieve on including Legal Entity Identifiers (LEIs)—which track the institution trading, rather than the instrument—with trade and transaction reports. Esma had previously operated a "no LEI, no trade" policy. It came under criticism for the late approach to relief, but chairman Steven Maijoor defended the decision. "We had the right balance giving the strongest possible incentive to have as many LEIs as possible at the start of Mifid II on January 3," he said, in comments reported by *Risk.net*.

Swedish Financial Regulator Grants Nasdaq APA License

Nasdaq Nordic, the Scandinavian arm of US exchange Nasdaq, has received Approved Publication Arrangement (APA) status by Finansinpektionen, the Swedish Financial Supervisory Authority, allowing the exchange group to publish reports of over-the-counter trades executed off a regulated trading venue, in compliance with Mifid II.

Under the new regulation, investment firms are required to publish all OTC trades. The APA designation allows Nasdaq Nordic to report trades on behalf of European firms. Nasdaq Nordic has already been granted Approved Reporting Mechanism (ARM) status for transaction reporting.

"Having Approved Publication Arrangement [status] moving forward is important for us and our clients as we look to meet the new Mifid requirements. We plan to implement APA across all Nordic exchanges in order to provide a one-stop shop for all trade publication needs," says Nasdaq vice president and head of Nordic fixed income Fredrik Ekstrom, in a statement.

Thomson Reuters Takes Cboe One Equities Feed to Eikon, Elektron

Kevin Carrai, Cboe

Thomson Reuters has begun sourcing market data from Cboe Global Markets' four equities markets (previously operated by Bats Global Markets and Direct Edge) via the exchange's Cboe One real-time feed.

The Cboe One feed provides equities quote and trade data from Cboe's BZX, BYX, EDGA and EDGX US equities exchanges under a single license. Thomson Reuters will make data from the Cboe One Summary Feed—which delivers a unified view of aggregated best bid and offer quotes and last sale data—available via its Elektron data platform and via its Eikon data desktop terminal.

"Cboe One is geared towards the sophisticated professional investor, and Thomson Reuters, with its incredible global presence and vast customer base, is an ideal distribution partner to reach all investors," says Kevin Carrai, vice president of market data and access services at Cboe, in a statement.

Esma Warns Rating Agencies, Repositories Over Fees

Pan-European regulator the European Securities and Markets Authority (Esma) says in a new report that it has identified problems with fee structures and client disclosures at credit rating agencies, adding that there are "significant areas for improvement" in the transparency of the fees.

In the report—which took a little over a year to compile—Esma says it is difficult for clients of credit rating agencies to understand the reasons behind fee levels. The regulator says it has concerns that there is no apparent link between the fees charged by rating agencies and the costs involved in actually calculating and providing the ratings.

The report also questions the practices of trade repositories, saying they must show how their fees are driven by costs. Esma currently authorizes eight repositories—including those operated by Bloomberg, the Depository Trust & Clearing Corporation, and London Stock Exchange-owned Unavista—that market participants must use to record derivatives trades. The regulator says trade repositories could achieve greater transparency through reductions in complexity and ensuring their fee schedules are easier to compare, and by disclosing sufficient information to enable clients to estimate any additional reporting costs.

Steven Maijoor, European Securities and Markets Authority

Esma says various users of credit rating agencies had raised concerns based on its cost-based principles, regarding issues such as non-transparent price increases in the credit rating industry that do not seem based on costs but are instead driven by the value of the product or service to clients, and which might have discriminatory consequences and prevent fair competition.

Market participants have also complained that trade repository fee schedules are not easily comparable for users, and that it is difficult to identify which repository would best serve their needs.

Esma chairman Steven Maijoor says the ultimate aim of the report is to "ensure that customers know exactly what they are paying for and how the fees they are charged are set." The regulator has found significant areas for improvement "by both [credit rating agencies and trade repositories] in their current fee practices, particularly in the areas of transparency and disclosure. While some improvements have been made… Esma will give supervisory priority to the issues identified regarding transparency and disclosure, the fee-setting process and interaction with entities related to [them]," he adds.

Raymond James Enlists Red Deer for Mifid II Research

Raymond James, a provider of investment banking, asset management and financial planning services, has chosen financial technology and data discovery provider Red Deer Systems to manage its research consumption under Mifid II. The vendor's research valuation management solution will enable Raymond James to manage its entitlements, inducement, consumption and voting requirements. Research consumption can be managed quantitatively as well as qualitatively.

The tool captures and attributes research consumption across all channels, including email, chat, and voice, with the aim of giving buy-side firms the most accurate view of their research value. It also includes advanced budget management features that allow firms to allocate budgets at the fund, strategy, or individual level, and to track contributions from hard and soft budgets, while an alert function helps ensure budget thresholds are maintained.

"Post-January 3, our clients are moving from initial regulatory compliance to looking for better ways to service their investors. The ability to accurately articulate and attribute research consumption and value allows for transparency to investors and shareholders alike," says Henry Price, chief commercial officer at Red Deer.

BSO Buys Apsara, Gets Private Equity Funding

Michael Ourabah, BSO

Network and hosting provider BSO has acquired Apsara Networks, a supplier of wireless connectivity to financial markets, for an undisclosed sum, using funds raised by selling a minority stake to Boston-based private equity fund Abry to finance the deal.

Apsara operates a New Jersey route connecting Nasdaq, NYSE and Bats, and is building a microwave path from Digital Realty's datacenter facility at 350 East Cermak Road in Chicago to CME Group's datacenter in Aurora, Illinois, which the vendor expects to complete later this year.

"The acquisition of Apsara Networks enables us to offer unrivalled low-latency access, network resiliency and enhanced managed services to clients across established and emerging markets," says BSO founder and CEO Michael Ourabah, in a statement.

"Being able to deliver the next generation of trading infrastructure through this acquisition truly cements our market-leading position. Abry's proven experience and additional capital has been pivotal to making this deal happen, and to providing us with the resources needed to accelerate our future expansion plans," he adds.

Mifid Data Runs Aground with Issues at European Regulators

Glitches and halts marked the first few weeks of transparency requirements at systems operated by regulators. Aggelos Andreou, Jo Faulkner and James Rundle report.

Hours-long halts, backed up reports, expensive fees for systems that aren't working properly—these are just some of the complaints from market participants about systems put in place by regulators in Europe to receive trade reports, which have reportedly had a spotty record since new transparency rules went live at the start of the year.

Under the revised Markets in Financial Instruments Directive (Mifid II), firms are required to submit trade reports in near-real-time to approved reporting mechanisms (ARMs), which send them on to systems operated by National Competent Authorities (NCAs).

However, problems reportedly began occurring at systems operated by NCAs immediately after Mifid II's January 3 implementation date.

Sources tell *WatersTechnology* that the UK Financial Conduct Authority's (FCA) Market Data Processor (MDP) has been particularly unreliable.

"There were a lot of teething problems with the software provided," one source at a European exchange says. "The regulators and the so-called 'expert' who provided the reporting system didn't predict that the amount of data that the firms needed to submit would be enormous. Everyone I know had problems with submitting their data, even prior to January 3, there were many testing days where the system was not up and we were unable to test it."

The regulator was forced to ask UnaVista, the London Stock Exchange Group-operated reporting platform, to stop sending it messages on January 4 for a number of hours due to system failure, according to multiple sources with direct knowledge of the issue.

The Financial Conduct Authority experienced problems with data submissions

"I'm hearing we are not the only ones having some issues with inconsistent validations between MDP and [European Securities and Markets Authority] validations spec, also slow or no responses coming back," says a source at a UK bank. "We saw UnaVista was asked by the FCA to stop sending messages for a few hours one day in the first week."

A spokesperson for the London Stock Exchange Group declined to comment.

Widespread Problems

However, it appears that the FCA is not the only regulator that appears to be having issues with reporting requirements.

WatersTechnology understands that the Hellenic Capital Market Commission (HCMC) was forced to ask markets participants to stop sending reports for almost two hours on implementation day.

Eva Matthaiou, a member of the HCMC, confirms that the regulator had to suspend the submission of transaction reports, due to the system being unable to handle the large amounts of data it was receiving. "We did have some technical difficulties, but they were only for a couple of hours," she says. "We may have been overoptimistic about our system's capacity prior to implementation, although we have now fixed the issue and we monitor the situation closely."

According to a senior source in the Hellenic Exchanges—widely known as Athens Stock Exchange—the technical issues had severe implications for a vulnerable market like Greece. "This issue cost us a lot," they say. "It resulted in dismissing more than a quarter of the daily trades on January 3, as traders couldn't complete their transactions."

'Massive Data Volumes'

The data volumes are known to be immense. The ICY system operated by the Autorité des Marchés Financiers (AMF), the French NCA, processed over three million reports in its first five days of operation, according to Philippe Guillot, head of markets at the AMF. These reports are also four times as large as those received under Mifid, he continued. Larger ARMs and APAs are known to have processed and deferred tens of thousands of trade reports in the first few days of reporting.

One source at a major European bank says that "most of the NCAs and some of the ARMs seem to be having an issue with massive data volumes. We have seen trades queued at the ARMs for days because they could not be submitted to the NCAs, due to issues at the NCA. The FCA is no exception."

Another source at a European exchange says that it will be some time before reporting regimes run "as smoothly as envisaged."

"Reporting requirements have put a lot of pressure on all parties—be it NCAs, service providers, or users. On top, there are the different approaches of the NCAs in terms of data formats, just to name one thing," they say. ■

TRG Debuts Index Commission Management in FITS

TRG's new module arose from a "groundswell" of demand from clients to manage their index costs alongside the costs of index data, the company's CTO tells Max Bowie.

Data inventory and cost management software provider TRG (formerly The Roberts Group) has launched an index commission management module as part of its FITS (Financial Information Tracking System) that will allow firms to manage the cost of licensing indexes for creating funds alongside their index data management activities.

The new module—which TRG rolled out to interested clients on January 2—includes new screens for FITS users to add details pertaining to licensing of indexes themselves, which fund managers use to create passively managed investable products. These details include information about the commission arrangement with each index provider used—which vary by index provider and by individual index, as well as by the amount of assets under management within a fund using that index—as well as regular fund valuations, which can be automatically uploaded into FITS for the platform to calculate and reconcile costs against providers' invoices, reducing the amount of manual processing associated with license and cost management.

Richard Mundell, CTO at TRG, says this fund valuation data should be readily available from a firm's fund managers themselves, or from its position-keeping systems, while the front-office should also be able to provide details of the deal struck with index providers to license their indexes. "You enter those terms into FITS just as you would a data contract that you'd negotiated with a vendor. You can literally add the details of a commercial relationship into FITS in 30 seconds," he says. "You pick a fund from a list and enter that pricing structure."

"It's an additional module to FITS, but… it's a new option on screens that people already deal with all the time. It's very simple to deploy—we turn on a license key, and the client can start using it," Mundell says, adding that some clients are already live with the new module. "They've had the software since January 2, and they've started onboarding funds."

> "Previously, fund managers generally licensed indexes separately from index data. But over time, fund managers have grown the number of passive funds they run, and that meant that the spreadsheets they were using to calculate the costs were not good enough anymore." Richard Mundell, TRG

Mundell says the vendor developed the new module in response to conversations with clients that began in late 2016. "There was a groundswell of demand all at once. Clients started talking about tracking index data licensing and index commission licensing for their passive funds together. Previously, fund managers generally licensed indexes separately from index data. But over time, fund managers have grown the number of passive funds they run, and that meant that the spreadsheets they were using to calculate the costs were not good enough anymore," he says. "So [the front office] lobbed that hot potato of an administration burden that they couldn't handle over to the market data teams. That means these related fees would be managed together, centrally, which makes sense—but, it means an added administration burden, so those market data staff needed a purpose-built tool with the functionality to manage index commissions, and to upload fund structures and other expenses."

Managing both index licenses and index data licensing within FITS means a firm can transfer ownership of that process "with little overhead for the market data team, and with little risk for the front office," he says. In addition, managing both sets of costs from the same vendors together potentially puts clients in a more powerful position when negotiating global spend with those vendors.

Some of those early adopters were part of that initial "groundswell" of demand, which meant TRG pursued a "collaborative" approach to the development, holding conference calls with between 15 and 20 firms at a time to determine common requirements and create proposals. "That meant there was heavy client input and validation… and clients knew what they were going to get from day one, so we had early commitments by clients to use the module," Mundell adds. Most of those interested parties are existing FITS clients, while others simply want to manage their index costs in a more efficient way, and others may not even use a data inventory system but are looking at deploying FITS on a standalone basis for managing index costs, then potentially adding other functions in the future. ■

Data Fee Complainants Buoyed by SEC Appointee

Recent appointments at the US Securities and Exchange Commission have led some firms to believe regulators and policymakers will finally start to address what they believe to be opaque pricing structures for market data at exchanges. Joanne Faulkner investigates whether a recent SEC appointee will take firms' side in their battle against exchange fees.

On December 6, 24 companies including Morgan Stanley, Tower Research Capital, Citigroup, Fidelity and RBC Capital Markets, filed a comment letter calling on the Securities and Exchange Commission (SEC) to review its process for approving new market data fees filed by exchanges. They also called on the SEC to force exchanges to disclose more information about fees, and to scrutinize how these fees are determined.

The global head of market structure and liquidity at a global banking giant says his firm signed the letter because, "There just seems to be no ability for firms to negotiate on market data pricing whatsoever. We legally have to buy market data. We feel compelled to buy whatever we feel is the most accurate, fastest, quality data we can consume. But it seems that as an industry, we are stuck in an arms race where it is not clear what the benefit is."

In the US, the debate around market data is part of a broader discussion about the role of exchanges as self-regulatory organisations and the conflicts of interest they face in performing both as a regulator of their members, and also as a commercial enterprise.

"We're asking the SEC to take incremental steps in advancing the debate over market data—to force the exchanges to disclose more information about how much money they make from data and related fees," says John Ramsay, chief market policy officer at IEX, which also signed the letter. He says the standard response from exchanges when criticized over fee increases is that they compete with each other and are disciplined by market forces and competition. "I think much of the industry believes these assumptions are faulty. But it's very hard to challenge them when you don't have access to the data."

> "We're asking the SEC to take incremental steps in advancing the debate over market data—to force the exchanges to disclose more information about how much money they make from data and related fees."
> John Ramsay, IEX

Forcing exchanges to disclose more granular information on how much revenue is generated by each product, along with related costs, and how these increase over time, "would allow people to test the assumption that this is an open and competitive market, and competition by itself will constrain fees," Ramsay says, adding that since exchanges already collect this information for "business purposes," it would not be burdensome for them to also provide it to the wider market.

Outspoken Critic

Several firms who signed the letter highlight the October appointment of Brett Redfearn as director of the SEC's trading and markets division as significant. Redfearn is expected to play a central role in potential tweaks to market structure rules, such as exchange order types, tick sizes, and how exchanges are regulated.

One source says Redfearn's appointment has already angered exchanges. "He was a pretty outspoken critic of the large exchanges and their market data practices while he was at JP Morgan. He testified several times in front of the equity market structure committee that the SEC set up, including at least once on this particular topic," the source says.

Redfearn has a history of criticizing the Securities Information Processor (SIP) consolidated market data feeds. In 2015, while working at JP Morgan, he submitted comments to the SEC's Equity Structure Advisory Committee on The Regulatory Structure of Trading Venues. In his remarks, Redfearn noted that the regulator model for trading venues and market data dissemination is "one of the most important" topics in the market structure debate.

He also took issue with exchanges

selling proprietary data products that are "far superior" to the product produced by the SIPs. This meant that broker-dealers are left with no choice but to buy these proprietary datafeeds from exchanges to provide competitive trading products for their clients.

He also said National Market System plans—a creation of the 1975 Amendments of the Securities Exchange Act—should be "updated and modified in light of the business realities of today's marketplace," and urged the SEC to take action to ensure a "healthier outcome for our market data infrastructure."

Beyond the appointment of Redfearn, Ramsay says having Jay Clayton as SEC chairman is a plus. "While market equity structure has not been his primary focus, he has shown an interest in looking at potential for reform in this area, and has been shown to be well-versed on those issues—and I think open-minded about it."

A head of investor relations and corporate strategy at one of the firms behind the letter says Redfearn's appointment has given fresh impetus to their battle against rising exchange market data fees and related costs.

"He understands the issues more than most…. People are excited. People that know Brett know his passion for this and his common-sense approach," the IR head says, adding that no specific fee increase provided the tipping point, but that market data, market access and connectivity and co-location costs overall are "becoming such a bear." He says the letter is a response to the feeling that "We've just got to stem the tide of fee hikes. The fact that so many big names signed speaks volumes about how big of an issue this is."

He also says that he hopes the Commission will be moved to take a look at the fee-hike process, and signal to exchanges that it is examining this process. "When you're a protected exchange, people have to buy your product. People can say 'Well you don't have to buy depth of book market data; you're only forced to comply with top of book.' But any sort of broker doing routing for customers needs to demonstrate that they're buying what's available to make sure they have the best information for their customers. So you're in a situation where you really are forced to buy it."

> "[Redfearn] understands the issues more than most…. People are excited. People that know Brett know his passion for this and his common-sense approach…. We've just got to stem the tide of fee hikes." Head of investor relations and corporate strategy at one of the firms behind the comment letter

Jay Clayton
Securities and Exchange Commission

According to IEX's Ramsay, firms are becoming increasingly agitated about the way new market data feeds are constructed and sold by exchanges. "Exchanges are creating very narrowly tailored datafeeds which are designed to benefit a narrow group of traders and by necessity potentially disadvantage other folks, including big asset managers and institutional investors—and I think the buy side has definitely latched onto that as a point of concern, too."

The banking head agrees that data fees are no longer just the concern of the sell side. "This letter is signed by many of the big buy-side firms. Retail brokers are also getting much more involved as well. This tells you it's not an issue that's just impacting one part of the market: it's impacting broader capital markets."

What next?

The IR head says that while they haven't heard any response for the SEC yet "we definitely heard from the exchanges. And everyone else on the street who didn't sign it gave us a nod of appreciation. They were apologetic that they couldn't get approval from legal and compliance in time. We didn't want to sit on this letter for too long."

IEX's Ramsay says that none of the signatories expect immediate action from the SEC, but also do not expect to be dismissed out of hand because it is "hard to argue against more transparency." However, he says that the bind that the SEC finds itself in is that even if it has sympathy and accepts that fees are too high, what would it actually do about the situation? "The SEC doesn't want to be a rate maker because it's not well set up to do that. It's hard for them to decide this is a fair price or not... other than within general boundaries. The question is, what else do you do? The first step in figuring out what you do requires a lot more public information about how much exchanges are actually earning and what it's costing them to produce."

A head of government and regulatory affairs at one of the firms raises another issue. He describes how the Securities Industry and Financial Markets Association has been engaged in litigation with the SEC over market data fees for nearly a decade. "In a nutshell, the Court of Appeals in the district of Columbia has twice agreed that the fees currently being charged by the exchanges are effectively illegal. They violate the 1975 act. One of the things in this letter that is called upon is a plea to the SEC to actually implement those two holdings," this executive says.

He is more skeptical about Redfearn's appointment. "While it is further encouragement that there are people now being brought into the SEC who inherently understand this aspect of the market a bit better—that certainly is helpful. But as long as you have exchanges with monopoly power abusing that monopoly power… it doesn't matter who was being appointed."

The SEC did not respond to request for comment by press time. ■

Association of Investment Companies' Sayers on the Trouble with KIDs Today

From mandated misleading risk indicators to unfair, unbalanced requirements, the head of the Association of Investment Companies talks to Jamie Hyman about the trouble with the rules around Key Information Documents, and why the problems are nearly impossible to solve.

Key Information Documents (KIDs) have been around for about five years, and the general consensus is that the concept is sound: an investment sheet that provides customers with standardized information about each investment product, fund and investment-linked insurance policy—such as description, risks and cost—with the aim of enabling retail customers to easily compare the potential risks and rewards is a solid idea. KIDs became mandatory for Packaged Retail and Insurance-based Investment Products (Priips) after a European regulation went into force January 1, 2018, but the new KIDs requirements create some problems, according to Ian Sayers, chief executive of the Association of Investment Companies (AIC).

Ian Sayers, Association of Investment Companies

The primary issue is mandatory performance figures, which are based on an investment product's performance over the past five years. Sayers says a strong market for the past five years or so mean that for some asset classes, the figures come out extremely strong.

"Although the documents do make it clear that past performance isn't a guide to the future in the usual way that we're used to, the fact is: if you look at it in the table, an investor may think that what is being set out is the kind of performance they might expect in the future, and in some cases, we don't think that those are going to be achievable in the long term," Sayers says.

For example, some asset classes that do very well in good markets but not as well in tougher markets have recently been through a strong run, which could give the wrong impression about the product's performance potential.

Sayers says there's a similar difficulty with the risk indicator, which is scored on a scale of one to seven, but without indication of what those numbers mean. "[The KID] just says the risk indicator is based on the risk of a group of products. It doesn't say what products, so the person reading this document doesn't know," he says, adding that he believes a higher number indicates higher risk.

Right now, the indicators reflect "strong consistent markets versus some asset classes that don't necessarily get revalued that often, so you don't get as much volatility built into the system," Sayers says, which communicates to the customer that some products have below average risk and high returns, which is not necessarily an accurate representation.

He says the requirement to provide these misleading indicators are making his association's member companies "quite uncomfortable."

The third key problem with KIDs concerns Undertakings for Collective Investment in Transferable Securities (Ucits) that already create KIDs using an older, different version, and are not mandated by regulators to use the Priips version until 2020, which Sayers calls a "baffling" decision. He argues that if KIDs are intended to both provide information and allow investors to make comparisons, that intent is destroyed by Ucits using a different version. For example, Priips KIDS require the inclusion of transaction costs in cost calculations, but Ucits do not.

"And so, because we tend to trade less than an open-ended fund, we should be cheaper, but we'll appear more expensive. If somebody is shopping around on the basis of cost, they might be encouraged to go down the Ucits route, even though actually, they're not paying lower costs," Sayers says. "I think that's a real fundamental problem, from a regulatory perspective, because consistency across competing products is very important. The FCA [Financial Conduct Authority, the UK's regulatory body] is very keen on competition, but you can't get those competitive drivers going if people are disclosing costs on two different bases."

Sayers says there is no short-term solution, but basing performance scenarios on a longer cycle—say, 10 to 15 years—might help, as would rethinking the visual way the KIDs information is presented.

"I'm not convinced that trying to set out how asset classes perform in a table of half a dozen numbers is really particularly helpful. I would prefer to start from scratch, but that's not going to happen, because the European rules have been set. So in a sense, we are where we are, and we have to live with it," he says.

Sayers adds that the consequences are not just investor risk. He thinks the way KIDs are set up "almost encourages the 'buy high, sell low' strategy, and that's always been a problem in the retail market. People tend to get enthusiastic when markets are rising, they tend to be put off when they're falling, and it should be the opposite way around." ■

Vanguard Pilots Blockchain for Index Data Management

While blockchain has not quite lived up to its hype as the replacement for almost every part of the trading lifecycle, financial firms are finding it useful in managing some of the "less-sexy" and data-heavy processes that most firms have to carry out every day. Joanne Faulkner reports on one such initiative underway around index data management at Vanguard.

Last month, US asset manager Vanguard revealed it had partnered on a blockchain project with the Center for Research in Security Prices (CRSP) and blockchain technology vendor Symbiont to create a platform which officials say will "enable index data to move instantly between index providers and market participants over one decentralized database."

To manage an index fund, Vanguard needs to capture "timely, accurate index data" that is "constantly ready to go and reflective of what the index provider says the index should be," says Warren Pennington, a principle in Vanguard's investment management group. The asset manager identified this as a "relatively manual and inefficient process long ago"—and a problem that is not unique to Vanguard. "It's across all index providers, and it's manual and somewhat inefficient on both the index provider's side and the subscriber side," he says.

Index data is currently delivered through a "broadcast model" whereby index providers broadcast their index data in different formats to subscribers, Pennington says. If subscribers have questions about a particular index data point or disagree with a particular change to the index, they begin a dialogue with the index provider.

Vanguard looked at technologies currently in the market that might support more streamlined process, and would also help automate "those back-and-forth discussions" between index providers and clients. "When we looked for those sorts of technologies, we saw that blockchain with smart contracts on top is a networked technology that would support this," Pennington says.

Warren Pennington
Vanguard

Using smart contacts means that "Basically, you can put processing, you can put logic into the network, and that helps us automate. If you can automate, you have helped increase efficiencies, and it would then potentially address some of the manual processes that we all have to take care of in order to keep our index data up to date. That's how we chose this, and then we said 'Let's look at a partner who is closely aligned with us, has a lot of information that we use and represents a large chunk of our assets,' and that was how we picked CRSP," he says.

The information that will be updated through the blockchain is company names, prices and the calculations. "The idea for us is that… during trading hours, we're constantly monitoring to make sure we have the most up-to-date version of the index. Currently, there is no good mechanism to do this. We have to monitor multiple different private websites and look for updates that are posted. We then have to read them and interpret them, and then we have to apply them to our index data on our internal systems," Pennington says. "That's the inefficiency that we really were excited about tackling with this project and with blockchain and with smart contracts.... That's what we did, and that's what this constant streaming real-time updates to a blockchain network eliminates. They eliminate the need to monitor those manual updates on a website: We simply get new data directly into our database, which then we can use to feed our systems."

Focus on High-Value Tasks

Monitoring for new updates is a core part of Vanguard's current operations, though making the processes more automated won't affect jobs, but will allow portfolio managers to focus on more "complex" tasks. "If we can eliminate some of these more repetitive, relatively simple processes through automation, then we can keep the same amount of people, but have them be more focused on the more complex, higher-value things that we do—and that would give us the ability to catch up on some other areas that we want to tackle," Pennington says.

Vanguard has been piloting the technology "for several months" with 17 funds in total, and will be expanded to include other market participants in the future, which Pennington says could have a big impact on the marketplace.

"If you think about the use of index data—whether it's a benchmark for an active manager, or an index for a passive manager—it's widespread. The efficiency gains for the entire capital markets are really substantial," he says. "We're excited about that and continue to look at things like this that we can involve the broader marketplace in. We want this to be something that can be open to all participants in the capital markets. We look forward to broadening this out to the wider group." ■

Markets, Regulators Struggle to Handle Early Mifid II Data

Less than a month into Europe's new financial regulatory regime, Joanne Faulkner assess the key challenges that still lie ahead as market participants and regulators alike grapple with the data and reporting requirements of Mifid II.

The European Commission's revamp of the Markets in Financial Instruments Directive—the pan-European capital markets regulatory framework first introduced in 2007—finally arrived on Wednesday, January 3, leaving market participants facing the daunting task of reporting more data to regulators than has ever before, notably around the requirements covering transaction reports.

Under Mifid II, the scope of these reports has expanded from 24 fields under the original rulebook to 65 fields today. These reports are sent to each European country's local regulator—known as National Competent Authorities (NCAs)—either directly or through an Approved Reporting Mechanism (ARM). To be able to consume this data—as well as to perform spot-checks on its accuracy—the local regulators have been tasked with building out their own IT systems. But the mammoth scale of this task has prompted some market participants to question whether regulators themselves will actually be able to ingest and then

> "Clearly there is going to be a big stick at some point to get the NCAs in line. The EC has recognized that NCAs are picking and choosing, and delaying, and making assumptions that it doesn't really apply to them.... You start to question who is taking this seriously and who's not." **Rebecca Healey, Liquidnet**

digest the mountains of data they will now receive, and how much attention they will actually be able to pay to reviewing it.

Turn Down the Volume

"Most of the NCAs and some of the ARMs seem to be having the issue with massive data volumes," says a Mifid II project lead at a global bank. "During the first week, we saw trades queued at the ARMs for days because they could not be submitted to the NCAs, due to issues at the NCAs," including the UK Financial Conduct Authority (FCA), the project lead adds. "Generally, everyone in the industry—the entire value chain—seems to be having reference data and/or eligibility issues one way or another."

Another source tells *Inside Data Management* that software for some of the designated ARMs has simply not been ready, meaning firms have been unable to test their interfaces back to the regulator. "We're not sure whether trades have actually been sent back to the regulator. We might think they are, but then they've got a different status. It's software testing issues—they just haven't been ready in time," the source says. "All the pipes connecting the different systems… there just hasn't been enough time to test it all properly. And the software developers are just releasing, releasing and releasing all the time."

Inside Data Management stablemate Waters recently reported how technical problems with Tradeweb's Approved Publication Arrangement (APA) prevented a number of banks from submitting trade reports in the first days of new transparency rules. Tradeweb is one of six APAs authorized by the FCA.

Naomi Clarke, a data management expert, says this has created an environment that is "a little chaotic" but that this is largely down to software providers not being ready, and final technical specifications only being delivered late last year. "Testing has not been able to happen in a sufficient way, but I think it will settle down," she says.

Despite these early problems, Clarke says that European regulator the European Securities and Markets Authority (Esma), the FCA, French watchdog the Autorité des Marchés Financiers (AMF) and the Dutch regulator Autoreit Financiele Markten (AFM) have all made it clear that "they will be taking a more extensive look at the data we're sending," and have built the required architectures to allow support firms' submissions. At *Inside Data Management*'s European Financial Information Summit last year, a representative at AMF described the efforts undertaken by the regulator to build a new Big Data system to deal with the volumes of data they will now receive. The ICY system will use Big Data technology, pattern recognition and machine learning, which will enable the regulator to exploit large volumes of data to detect market abuse.

So while they may not be ready to begin reviewing data on an ongoing basis from day one, regulators will more likely take a more intensive look at the data sent by firms over the course of the year, Clarke says. "I don't think we can just be complacent and say 'They'll never be able to look at it.' I think it's going to be difficult, but if they've got the resources to build the infrastructure—and it sounds like they do, because it's so crucial to abuse of the market—then I believe over the next year, the regulators will invest sufficient resources into starting to use Big Data techniques on these datasets."

Quality Control

But to achieve this requires a standardized dataset, which Clarke says is why regulators have placed such emphasis on data quality. "The regulators can't really do anything if they've got poor data," she says. "That seems to be the lesson they've learned from Mifid I. It didn't really work because data quality was poor. This time they're not going to have that much tolerance for breaks in data quality." Without guaranteed data quality, regulators won't be able to get the datasets in a standardized format, she adds.

The original implementation of Mifid also predated the widespread adoption of industry-standard identifiers, such as the legal entity identifier (LEI) or universal product identifiers. "The way of matching similar deals

together by product on the over-the-counter (OTC) market didn't exist. You need all these things that uniquely identify things across different counterparties and parties providing trades in order to be able to recognize they're the same thing or similar. Hence, mandating LEIs, mandating that certain attributes have to be on there…. The whole environment is better. So as long as they've got the database environment to do it, they can then apply more Big Data techniques to get at what they need," Clarke says.

Matthew Luff, Mifid II consultant at Henderson Global Investors in London, says regulators will expect some initial teething issues, and in the early stages of Mifid II, will primarily be looking to see that reports are being submitted, and that the basic information—such as execution time, ISIN, quantity, price, LEI—is being reported effectively, he says. "I don't think there is any expectation that there will not be issues in each firm. But they will be looking at the preparedness and documentation as to how each company ran their projects, known issues and a timeline for remediation. Most of the problems will simply be due to new processes, inability to test effectively due to very late builds, and confusion as to who is expected to do what, but these will be solved relatively quickly now we are in a live environment," Luff adds.

When asked their main focus in the run-up to Mifid II at an industry event last month, a head of European execution strategies at a US bank, said their priority was getting their reference data in order. "We've got a dozen people just mucking around with reference data right now in terms of gathering if from clients who themselves are figuring out in many cases what their legal structure is," the exec says, adding that the key difference now is the level of granularity at which firms must understand that data. "We've never really had to worry about it in quite the same way," he said.

As Mifid II can be implemented in different manners across EU member states, this could also create some discrepancies in what firms are expected to provide. The bank exec also said he has no idea of the level of preparedness among regulators to be able to digest the masses of data they will now be receiving. "That's going to be one of the interesting things that comes out in the wash. We're all producing tons of data—around transaction reporting in particular. Who's going do what with it? I think that's where we'll

start to see a little bit of difference in quality and implementation from the regulator side."

Luff agrees that whether regulators will be able to handle their new data demands is "the million dollar question," though he says the FCA at least has been "bullish" about its IT projects and believes it has a handle on the data requirements. "In terms of whether anybody will look at it, I assume that spot checks will be performed on an ongoing basis, but that the real benefit will be unravelling what happened after the fact, so will be remediative rather than preventative."

Matthew Luff
Henderson Global Investors

Missed Opportunity?

The US bank executive described transaction reporting as a "missed opportunity" for the whole industry, adding that documents issued by Esma contain enough "wiggle room" that there can be different interpretations of what the regulators are looking for. "The problem is that no one is wrong. You end up with a very expensive mess for the industry. If there is anyone who can actually ingest all this data, they are going to find that the same type of transactional flow between firm A and firm B will not be represented in the same way as between firm C and firm D. I think that will start to raise some eyebrows for the regulatory community. There are still some major industry questions that need to be answered. Assumptions have to be made," he said, adding that there will likely be rewrites of the directive as "people start to grapple with the results of what has happened—assuming anyone is scheduled to look at the data at all, which is a hell of an assumption."

Luff says that while what is required in terms of the basic information is "pretty self-explanatory [with] little room for misinterpretation," there are "slightly stranger ones such as complex trade ID or OTC flag [that] throw up too many interpretive variations and so are unlikely to be overly helpful. I am not sure what opportunity transaction reporting was supposed to create, but… I feel as though many companies have missed the opportunity to improve internal data storage and transmission, and have just built on top of what they already have."

At the same event in December a director at a French bank said that at least in the UK, the regulator has been giving the impression it will treat reading the data produced as a priority.

"The FCA has said it will be focusing on trade transaction reporting. They have said, 'Whatever you do, get it right. We understand there are numerous fields that need to be added, but focus on the main economics of the trade.' It's the main thing they want to understand.... They want to see this data, so we should assume they want to read this data as a first priority," the head of business development says, adding that local regulators have so far professed a common stance on trade and transaction reports. "I think that this is the number one priority that all regulators are looking towards. Because it's [about] market abuse… [and] market practices, most of them—and definitely the FCA and AMF—are going to be focused on what data is out there, and we can probably expect some reviews by each regulator to review the quality of the data. We have a common feeling of what to expect."

Rebecca Healey, head of EMEA market structure and strategy at Liquidnet, and co-chair of FIX Trading Community's EMEA Regulatory Subcommittee, notes that during Esma's November conference, European Commission officials said they expect Esma to take significant control over National Competent Authorities going forward, with Esma granted greater powers to do so. "Clearly there is going to be a big stick at some point to get the NCAs in line," she says, adding that the EC now realizes that it needs to up the ante. "The EC has recognized that NCAs are picking and choosing, and delaying, and making assumptions that it doesn't really apply to them…. You start to question who is taking this seriously and who's not."

Healey also questions what impact the UK's exit from the European Union will have. "Will Brexit take away resources from Esma to be able to push forward and have the mandate that they want to have for NCAs? There are a whole host of unknowns that we're going to see in Europe that we haven't seen played out yet. But there is definitely a momentum in the EC and Esma to make sure that national competent authorities are brought in line."

Esma has "certainly said that they will bring NCAs into line," Luff says, though he adds that Esma's options for enforcing this may be limited to "a frown and a strongly worded letter."

There is also an issue over how many NCAs have transposed Mifid II into law—itself a lengthy process.

"The real time is spent on the original regulations whereby the European Parliament voted on the wording. If something does need to change, at this point it is very difficult to return to parliament, which means that Esma will tend to 'clarify' parts of the text rather than send them back. In terms of becoming law in each member state, Mifir being a regulation obviously passes into law without any amendments, so things are cleaner and quicker," Luff says. "However, Mifid is interpreted and enacted into law by each member state, and so takes longer and has the ability to be significantly different in each country. Whether it is a regulation or directive, the enforcement of the laws is still up to each NCA. So regardless of the process of how they become laws, each NCA has the ability to concentrate on certain parts and have a more lax approach to other parts."

This means it can be difficult for companies to figure out where they should be putting their resources and deciphering what's going to be correct and what's not going to be correct, Luff adds. ■

Esma's LEI Xmas Extension:

Last-Minute Gift or Lump of Coal?

On December 20, Europe's financial regulator announced a six-month grace period for full LEI implementation, a last-minute about-face that is either a welcome reprieve or an added burden, depending on how prepared market participants were for Mifid II's "No LEI, no trade" clause. Jamie Hyman talks with an LEI issuer, advocate and end user about how the extension will impact day-to-day operations during the first half of 2018.

More than 1 million Legal Entity Identifiers (LEIs) were registered in the lead-up to the January 3, 2018, deadline for compliance with Europe's revised Markets in Financial Information Directive (Mifid II). Yet that number still falls far short of the estimated number of LEIs necessary as mandated under Mifid II's rules, which require nearly every company, charity, trust, or fund to obtain an identifier.

As a result, five days before Christmas and two weeks before Mifid II's deadline, pan-European regulator the European Securities and Markets Authority (Esma) announced a six-month grace period for full LEI implementation, stating that "in the last weeks, Esma and National Competent Authorities (NCAs) learned that not all investment firms will succeed in obtaining LEI codes from all their clients ahead of the entry-into-force of Mifir."

Before getting into the business of how Esma's decision may affect trading during the first half year with Mifid II in force, it is worth unpacking exactly what the extension encompasses.

"Esma put around the extension very strict guidance on what investment firms have to do in order to remain compliant in the first half of the year. For instance, if a counterparty—let's say one that is not located in Europe—doesn't have an LEI yet, and the bank doesn't want to lose the business with this party, the 'No LEI, no trade' rule still applies." **Stephan Wolf, Global Legal Entity Identifier Foundation**

Extension with Limits

"This is not a general grace period of six months, where everybody can come and go whenever they like," says Stephan Wolf, CEO of the Global Legal Entity Identifier Foundation (GLEIF). "Esma put around the extension very strict guidance on what investment firms have to do in order to remain compliant in the first half of the year. For instance, if a counterparty—let's say one that is not located in Europe—doesn't have an LEI yet, and the bank doesn't want to lose the business with this party, the 'No LEI, no trade' rule still applies."

This refers to Esma's Mifid II brief, issued in October 2017, mandating that all entities trading with European counterparties across all asset classes obtain an LEI code. Wolf says in his example above, during the grace period, if a bank can prove the LEI-less counterparty has started the process of obtaining an LEI, then the bank is permitted to report the trade without the identifier.

"Esma's statement doesn't mean that banks can continue to report without LEIs; it means a very strict guidance on how [a trade temporarily missing an LEI] could be achieved," he says.

Data expert Naomi Clarke says she doesn't expect the change to make much of a difference to her day-to-day work, although it may have a bigger impact on the market in general.

Tony Freeman, executive director of industry relations for The Depository Trust & Clearing Corp. (DTCC), the largest issuer of LEIs worldwide, says LEI uptake "is clearly behind schedule," and so Esma's grace period is "sensible," but acknowledges that it did cause "some operational issues for some of our clients who were ready and had coded the 'No LEI, no trade' rule into their systems."

Wolf says these are minor corrections. "Some people say that they have programmed their system in a way that everybody has to have an LEI and they're now in the process of looking at what Esma's December 20 statement means to them. Others were more relaxed about it from the beginning," he says, noting that for banks, the Mifid II task list is quite long. "I think the LEI piece in itself, this grace period, is just a minor thing."

Clarke says the LEI mandate was an opportunity to clean up inconsistent data—such as the same counterparty being called different things on older systems—and to develop more robust processes. She describes the grace period as a "breathing space," and says that now, the focus is on proper maintenance, keeping on top of any changes, and continuing to ensure that any information being exchanged with brokers is correct.

Esma's publication outlines a second option for missing LEIs during the grace period: investment firms may apply for LEI codes on behalf of non-EU venues who have not obtained their own identifier. Freeman says while this is a workable concept, there are issues around industry coordination. For example, if a buy-side firm in Asia that doesn't have an LEI trades with more than a dozen different European brokers, which of those broker dealers is responsible for registering the LEI? If a code is registered, who disseminates that information to the other counterparties? And if an investment bank registers a code on behalf of a client, are they then responsible for maintenance of that LEI? Freeman says that's a tough sell.

"[Firms] don't want to be third-party agents for their clients. They think clients should manage their own LEI processes," he says. "The third-party role thing is not new; it's been around for some time, but it's not been very widely used because it does have its own operational issues that need to be resolved. Using a third party to create the LEI is a fairly simple process, but distribution is best done by the client."

Data Quality

Regardless of their reaction to the LEI grace period, parties involved with all aspects of LEI implementation are keeping a close watch on what mandating the identifiers, and Esma's extension, will mean for data quality.

"The trouble is, what happens to data quality during the breathing space," Clarke says. "The regulators will not have the whole picture until everything's in place. In order for the regulators to start to use this data, all the standard identifiers must be in place so that the regulators can analyze it. They need everything to be there, including the LEIs. But if you look at the readiness of the market—and that includes software suppliers, Approved Reporting Mechanisms (ARMs) and Approved Publication Arrangements (APAs)—and the fact that there's such a backlog of LEIs needing to be issued, I don't think they're going to get to that point in data quality where they can do as much as necessary with the underlying data."

Specifically, Clarke cites concerns with the increasing number of Local Operating Units (LOUs), which issue the identifiers, and the subsequent increase in volume of LEIs. "I hope that GLEIF will keep up pressure on making sure that there's quality there," she says.

Wolf confirms that "providing the services that ensure open access to the LEI data pool and high data quality," are a key priority for GLEIF. "We're very committed to keeping high data quality marks, and [are] heavily under review by regulators on that also, so this goes hand in hand," he says. In addition, each accredited LOU is inspected annually.

Clogged LOUs?

Clarke says there is a backlog of LEIs waiting to be issued, but Freeman says the DTCC is on top of their requests, and Wolf says reports of an LEI backlog do not hold water.

"There were constant rumors about a backlog of applications for LEIs, but our analysis has not shown any evidence of one," Wolf says, noting that the process of issuing LEIs includes some steps that must be handled manually, such as validation of information, which

requires a physical read-through of documents provided by the registrant.

"Depending on whether the registrant provided all documents on time and in good shape, and whether the LOU was able to outreach to third-party authorities for validation, that could take a few days," Wolf says, adding that backlog rumors may stem from frustration that the process is not faster. "People had the expectation that they subscribe to something and within the next mouse click, they get an LEI."

He says that, to his knowledge, the LOUs performed well, with a peak of more than 8,000 LEIs per day. "I think that's very good proof that basically everybody who wanted to have an LEI should have one by now," Wolf says.

The increase in the demand for LEIs placed on LOUs is undeniable, of course, with a surge in November that Freeman says did create backlogs, because it was not possible to predict precisely when that surge would happen. He says the DTCC took on contingent resources in preparation for this, adding that while these are in place now, they could not be implemented overnight.

"The operational processes are now back to the normal two- or three-day service-level agreement standards," he says, adding that the number of requests remain high, but is neither as high as they anticipated, nor as high as some predictions, which estimated that up to 3 million new LEIs would be registered in anticipation of the Mifid II deadline.

"The Mifid effect is easy to determine here," Wolf says. "There are a few other regulations around the world, but I think Mifid/Mifir, and the EU Prospectus regulation are the major drivers for the recent growth."

Clarke concurs, saying it is "good practice in reference data to have a market identifier for all

Tony Freeman
DTCC

instruments, and it's the same for parties, which is where the LEI comes in. For every party on the data hierarchy, it is important to make sure they have an LEI where one exists."

At press time, the total number of LEIs in circulation is 1.03 million—more than double that of six months ago.

To meet that demand, Wolf says the list of accredited LOUs will keep getting longer. "We see continued interest by organizations that want to become an LOU, so don't be surprised if you see 45-plus new LOUs in a short timeframe," he says, adding that GLIEF is in the process of reviewing applications, and will issue accreditation certificates as those reviews are completed.

Looking Ahead

In addition to making sure LEIs are integrated smoothly into the process, and allowing market participants to keep a close eye on data quality, the six-month grace period will also allow firms to ensure their counterparties all have the identifiers necessary to continue trading once Esma's extension expires.

According to Freeman, there is variety in how DTCC's clients have approached LEIs, but the ones that have embraced it have benefited from that decision.

"Having one identifier for each entity, able to be spread across all of those different platforms, is a huge advantage—that's what they've found," he says. "That might sound entirely obvious, but it wasn't something that people seemed to think would be a benefit of the overall issuance of LEIs. The firms that have embraced it have significant onboarding, Know Your Customer (KYC) and Anti-Money Laundering (AML) benefits because they know exactly who they're talking about at all times and it's independently verified."

But some firms remain unconvinced that LEIs are worth buying into.

"There are firms, most likely in Asia, that are trying to avoid using the LEIs because they have a reluctance to have all their trading position data disclosed to a regulator to whom they have no reporting obligation," Freeman says. "On the fourth of January, I spoke to a client in Asia who had only found out about the Mifid II requirements the day before. There clearly are some firms… that were taken by surprise by Mifid II on the third of January, but that have dealt with the changes by making quick manual adjustments to their systems that are based on people and manual processes."

For example, Freeman says the client that was surprised by the LEI requirement is maintaining its automated process of trade confirmation with institutional clients in Europe, but manually modifying the trades via a graphical user interface (GUI).

"No broker wants to lose a client because they can't process the transactions, and they will throw resources at it, but the real work is much longer-term, particularly where those entities have fragmented IT architectures with client data in lots of different forms in lots of different systems," Freeman says. "It may take all this year to resolve—and actually, from an IT architecture perspective, it may take quite a lot longer."

He says the European brokerage and custodian industries will spend the grace period educating clients about what they need to do if they're not yet ready, and adds that those efforts are under way.

"Another surge in demand at the end of the six-month period is unlikely," he says, predicting smooth implementation throughout the grace period, with demand returning to pre-Mifid II levels toward halfway through 2018. ■

Cryptocurrencies Come of Age, But Is Crypto Data Ready?

Once used as payment for shady deals and even hitmen on Silk Road, digital currencies have long been strictly the domain of speculators and retail investors willing to take a chance. The orders-of-magnitude price increases experienced over the past year have led once-shy institutional investors to sniff excitedly at the loins of the cryptocurrency movement. Max Bowie investigates to what extent the data and tools that firms have come to expect as standard in other markets exist in the crypto markets.

It's often said that market data is the lifeblood of capital markets, with market infrastructure connecting the various limbs of the living, breathing body that is the financial industry. When that blood flows smoothly, the body functions healthily. But when data is lacking or intermittent, or unreliable, the body becomes volatile. Arguably, the cryptocurrency market is a body with questionable bloodflow, possessing many of the same basic characteristics as the financial markets body, yet subject to wild price swings, and with a different base of participants.

The mainstream financial markets have recently warmed to crypto, wanting to enjoy those upswings, but cautious about the lack of regulatory oversight and the potential downside of investing in an asset with no underlying, or a currency with no central bank to back it up.

And one of the challenges is so basic yet so elusive: What exactly are digital currencies, how should they be regulated, and by whom? Are they currencies, securities, or—as current Commodity Futures Trading Commission (CFTC) thinking would have us believe—commodities? The CFTC's position may soon change: On January 23, a meeting of its CFTC Technology Advisory Committee will discuss digital currencies. Then on January 31, its Market Risk Advisory committee will consider the risks and opportunities associated with them.

In a January 4 statement, CFTC chairman Christopher Giancarlo warned that "ignoring virtual currency trading will not make it go away. Nor

is it a responsible regulatory strategy," highlighting CFTC's "important role" in protecting derivatives markets, and noting instances where the CFTC has taken action against unregistered Bitcoin exchanges, proposed guidance on the definition of markets, and tackled a crypto Ponzi scheme. Then on January 19, the US Securities and Exchange Commission (SEC) released a brief statement that it would work with the CFTC to combat cryptocurrency-related fraud.

John Greenan, CEO of consulting firm Alignment Systems, says the lack of regulation to date has left crypto markets open to manipulation. "How many crypto exchanges have market surveillance? How many can look like a 'grownup' exchange with a full regulatory infrastructure? And so big investors are tending to avoid the space," he says. However, he adds that institutional interest in crypto markets is growing, though "to a large degree, this area is still the Wild West."

Dr. Timo Schlaeffer, co-founder and CEO of Bitcoin trading and pricing platform Crypto Facilities, agrees that institutional interest in cryptocurrencies was "pretty limited" until around 10 months ago, and that the new-found interest is probably simply a result of the massive price increases of Bitcoin and other cryptocurrencies. "There is actually a lot of data available for free. I think the markets are really transparent. But in terms of tools, data aggregation and services on top of this data—that's still at a very early stage. And on the trading infrastructure side, that's at an even earlier stage…. The only way to get prices from all exchanges is to integrate with and post funds at all of them," he says, adding that exchanges have already made significant progress over recent years and will put other support mechanisms—such as custody and brokerage services—in place as they mature further.

Because of their different origins, there are many differences to be overcome. Alignment Systems' Greenan is currently working on a project with an unnamed client to "industrialize" data and analytics for the crypto space. "Most cryptocurrency guys don't come from a traditional market data background. They don't live in that world, so they just build RESTful APIs—their world is not compatible with traditional market data models and infrastructures," he says. "The market as it stands is in a state of immaturity. There isn't the level of data, analytics, and supporting trading ecosystem."

But demand is growing. "There are a lot of amateur speculators, but also now a lot of smart money. I recently signed an agreement with an elite hedge fund that has just started trading cryptocurrencies, and is really looking for data. So news and news sentiment is critical. Obviously these are short-term indicators… but quants can aggregate short-term indicators like that—say at five-minute, hourly, weekly or three-monthly intervals—so they can create sliding trends," says Richard Chmiel, chief revenue officer at news analytics provider Accern, who argues that news has a greater impact on cryptocurrencies than other asset classes that have more fundamental factors driving price movements. "Cryptocurrencies are not like other currencies. Currencies are affected by interest rates, economic factors, even other currencies…. But what else drives cryptos? There are no earnings to model, no central banks to meddle…. It's all news-driven and confidence-driven. It's about supply and demand—what price is someone willing to pay—and Bitcoin's run-up from $1,500 to $20,000 was all demand-driven."

Accern added news analytics for 20 cryptocurrencies in the latest release of its platform in November, and delivers its analytics in the same format as it does for equities data and currency markets news. Adding the new data was more a case of relaxing its controls to include crypto news, rather than building something new from scratch. "We see every news story on the public web. And we discard about 90 percent of all news. We only keep those that mention a public company, a currency, or—now—a cryptocurrency. So we amended our filters to not exclude news that mentioned Bitcoin and other cryptocurrencies in the headline or text," Chmiel says.

John Greenan
Alignment Systems

This new institutional interest is starting to drive change—potentially at speeds that are outpacing regulators' ability to get ahead of it and potentially step on the brakes. And those responsible for much of this are seasoned financial markets and data professionals who know the data challenges that their own markets have encountered, what to expect when creating new markets, and how good data management can solve issues before they arise.

There are two distinct strategies under way to make cryptocurrencies more appealing and approachable to institutional investors who may be restricted from dabbling directly in this new market, or who may be constrained by internal requirements that they obtain a reasonable minimum level of data on any instrument before wading into it without a full view of market activity. The first is creating instruments that deliver exposure to cryptocurrencies without directly having to hold them, while the second is to expand the amount of data available to make these markets more transparent.

In the first group, perhaps the largest initiative so far is CME Group's decision to list Bitcoin futures, creating a regulated derivative that offers exposure to the unregulated cash Bitcoin market. The futures are cash-settled based on the CME CF Bitcoin Reference Rate, a benchmark designed around Iosco principles for financial benchmarks and developed with Crypto Facilities. To provide additional transparency around the asset class, the pair also publish the CME CF Bitcoin Real Time Index, which

Richard Chmiel
Accern

reflects the spot Bitcoin market, and can be used for marking portfolios, pricing intra-day trades, and risk management.

An advantage for CME is its existing client base. "Many investors already trade on CME, so if CME lists Bitcoin futures, it's easier for investors to start trading them there than to plug into a lot of other different markets," Schlaeffer says. "These futures allow you to trade Bitcoin without touching or holding Bitcoin itself."

Another way to gain exposure without needing to handle cryptocurrencies themselves is to use a synthetic alternative, such as the "Delph" instrument created by credit default swap (CDS) trading platform DelphX to boost CDS liquidity and increase hedging opportunities. DelphX uses a central counterparty and issues Delphs as "alternative, regulated OTC" securities that could contain CDSs, equities, or even initial coin offerings, meaning that investors could trade a regulated security that acts as a proxy for an unregulated cryptocurrency that might deter some investors, says DelphX president and CEO Larry Fondren.

A security that responds more traditionally to fundamental factors may also help curb volatility. Cboe Global Markets was actually the first exchange to launch Bitcoin futures trading, a week ahead of CME. For its part, Cboe partnered with Frankfurt-based specialist index provider Solactive, which created the Solactive Bitcoin Front Month Rolling Futures 5D Index, which tracks the performance of the futures on Cboe, and enables investors to gain exposure to the futures via the index, which can be licensed to create investment vehicles such as structured products and exchange-traded funds (ETF) that could attract a broader base of investors—including institutional investors—and to hedge risks of directly trading the futures, which would still be subject to Bitcoin's voltaility.

"An index or ETF on top of the future is just creating a wrapper around it. The underlying issues, such as volatility, don't go away—and those wrappers will still reflect that," says Timo Pfeiffer, head of research at Solactive. "You might get more liquidity from new investors, and while a larger audience and more liquidity should in theory lead to less volatility, that won't eliminate volatility in the underlying… so you need to have a process for evaluating the underlying assets."

Defying Data

This presents a challenge: Cryptocurrencies defy established methods of valuation used by other markets. They have no underlying assets, they aren't closely linked to a peer group, they aren't backed by any standard or government, and they don't have a long track record of historical data for fundamental analysis.

As Greenan puts it, "Trying to price cryptocurrencies is like trying to price a perpetual bond from an issuer rated as junk—do you just look at the last price?"

However, those traditional factors are not necessarily needed in the crypto markets, Pfeiffer says. "It's more important to have a consistent model for evaluations, rather than having historical data. What's more important is having the price today and a fundamental valuation model looking into the future," he says.

And the data vendors best associated with providing evaluations are still coming to grips with crypto data themselves. Intercontinental Exchange's ICE Data Services division (formerly Interactive Data) has just unveiled a consolidated feed of data from 15 cryptocurrency exchanges, in partnership with blockchain technology vendor Blockstream, while Bloomberg carries limited content and is taking a very conservative approach to crypto data, and Thomson Reuters provides prices for Bitcoin, Ethereum and Bitcoin Cash, MVIS indexes contributed by Cryptocompare and Cboe and CME Group's Bitcoin futures.

Timo Pfeiffer
Solactive

Sam Chadwick
Thomson Reuters

In contrast, low-cost data terminal provider Money.Net says it now carries prices and descriptive data for 550 digital currencies and tokens, along with supplemental data such as a market capitalization module, cryptocurrency-specific ratings, an initial coin offering (ICO) calendar, and cryptocurrency-specific news created by filtering news from existing its providers.

"From no interest six months ago, this has become the number one dataset that clients are requesting over the past three or four months," says Money.Net CEO Morgan Downey. "Demand is coming from foreign exchange (FX) traders and equity traders. A lot of it is purely for informational purposes—they aren't necessarily trading cryptocurrencies, but with so much money in the space, they want to be aware of those trades. Even if you don't trade them, being aware of those markets in real time… is essential for a trader across any asset class."

"As crypto assets are a growing segment in the market, we recognize the need to provide transparency and a way to monitor their developments for our customers," says Sam Chadwick, director of strategy for innovation and blockchain at Thomson Reuters. "Building on that, we are looking into other value-add data—for example, volume analytics, volatility curves, indexes, benchmarks and other analyses similar to those offered within the traditional foreign exchange markets, but [we] have not made any commitments yet because these new assets pose some interesting new problems currently. For example, if Kraken's prices contribute meaningfully to an index but it goes offline for several days, how do we want to handle such events?"

One way is to price such events into one's valuation of an asset. Since cryptocurrencies defy traditional factors in pricing, they may require new datasets. For example, behavioral analytics provider MarketPsych has released a series

of sentiment "indexes" that deliver an overall evaluation of the top 100 cryptocurrencies across 43 different types of sentiment, based on the perceptions of people talking about them online. These factors range from general sentiment and factors such as optimism, fear, uncertainty, price direction and volatility to cryptocurrency-specific factors such as adoption and adoption forecast, criminal activity, innovation, sentiment relating to a cryptocurrency's code or development team, transaction speed, whether a currency is likely a scam or a potential target for a crackdown by regulators, and even one called "noobs," which monitors the level of "newbie" or naïve investor activity.

"We have developed analytics to look at how people are discussing these currencies in the online communities and chatrooms that cover them. We monitor all types of references, from vulnerabilities in code to hack attacks… for people who can't monitor the hundreds of chat rooms that are talking about them," says MarketPsych CEO Richard Peterson.

And like their other characteristics, sentiment for cryptocurrencies works differently from traditional financial markets and their taxonomies. " Obviously there are negative words, like 'bad,' but there are also more sophisticated terms, like 'vulnerable' code or 'compromised' code or 'wallet,' or phrases like 'can't be used as payment' or 'slow transaction speeds,'" Peterson adds.

In addition to new datasets, this emerging space is also providing the impetus for the creation of completely new data providers specializing in crypto data.

One such provider is Seigniorage, a new company providing market data, reference data and analytics for the cryptocurrency markets co-founded by former traders Sean Kruzel and Steve Harrington and financial technology business development executive John O'Connell.

EdJohn O'Connell
Seigniorage

Mitch Naumann
Cryptoquote

"Steve and I were both around at the start of electronic trading. And now, we realized there are a number of similarities between that time and this cryptocurrency market, and the tools required—and first and foremost among these is data and reference data," O'Connell says. "Our main focus right now is talking to crypto funds… and the feedback we hear consistently is that the data currently out there is very poor, is not aggregated, and that people struggle with accuracy."

Seigniorage provides three core offerings: an institutional-quality token masterfile of more than 4,000 coins and tokens with 50 reference data fields per token—such as symbol, description, and market capitalization—and a proprietary industry and sector classification system; intraday time-series market data sourced directly from cryptocurrency exchanges, which the vendor scrubs to remove any errors in the data; and analytics ranging from token risk and factor analysis to sentiment derived from following around 2,100 entities on Twitter.

Another new entrant is Cryptoquote, which collects and aggregates real-time data from initially eight crypto exchanges using Websocket APIs, and aims to supply the data to proprietary trading firms seeking to back-test their strategies and decide whether they want to participate in crypto markets, and to software vendors wanting to incorporate real-time crypto data into their trading systems and back-fill them with historical data.

"This market seems to be getting more mature, and people who are used to trading currencies, for example, are now looking at how they could also trade cryptocurrencies. Right now, there are still a lot of arbitrage opportunities between exchanges around the world—and I think that's what professionals want to take advantage of. A lot of trading groups are forming separate entities to explore cryptocurrencies," says Mitch Naumann, founder and CEO of Cryptoquote, and director of North America for European data and technology provider Web Financial Group.

Naumann says he set up Cryptoquote as a side project after Web Financial found it challenging obtaining crypto data for some client websites it was building last year. He says a developer was able to code to the crypto exchanges' streaming APIs using an old ticker plant, and had data up and running in a matter of hours. "What I intend to do is standardize and commercialize feeds for the cryptocurrency market," Naumann says.

He adds that the crypto exchanges have thus far been more intent on ensuring uptime than on licensing policies and viewing data as intellectual property. "I haven't seen any of the exchanges interested in protecting or commercializing their data with prohibitive license policies. They're more focused on reliability—they go down, and it can be like the Wild West," he says. "Right now, the cryptocurrency exchanges are similar to how FX operators would look in the sense that they want to offer as many tools as possible for free to the end user to encourage them to open and fund accounts. But there is definitely room for seasoned professionals to commercialize that data."

And perhaps the Wild West is still a good analogy for today's cryptocurrency markets. Yes, the Wild West was a lawless frontier rife with land-grabs, murders and poverty, but it also established the settlements that became major cities today, connected the country with railroads, and turned panhandlers and goldminers into millionaires. The crypto markets offer similar opportunities—at least they will once more complete data becomes the norm and larger consumers and providers all enter the space. ■

Industry Fears Neutered CAT in 2018

The Securities and Exchange Commission's Consolidated Audit Trail (CAT) of US equities trade data hit a fresh snag in late 2017, missing a major deadline for reporting, blaming insufficient cyber defenses. As it marches into another crucial year, Tim Bourgaize Murray reports on the project's latest rumblings, finding that while cyber remains a legitimate concern, it may have been a sleight of hand to disguise greater data puzzles.

Part debate society and part cabaret, Paris's Le Chat Noir enjoyed a surprisingly short existence in the late 1800s, awash with radicals, rowdiness and pandemonium. The idea of combining performance and politics was alluring: something here, something there—a show off to the side as much as the one on stage. But it took a lot of collective energy to maintain that cacophony—eventually, too much.

The US Securities and Exchange Commission (SEC)-mandated Consolidated Audit Trail (CAT) project has come to share many of those traits: it has attracted a level of interest and diversity of participants that few collective FinTech undertakings ever have, and has already seen unexpected and even dramatic twists and turns. To some, it still has a kind of radical appeal and a sweeping ambition—a rare opening to reshape US equities trade surveillance, regulatory relationships, and data availability all at once. Most of all, it is called a "CAT Plan," yet often seems anything but planned, with the work involved seeming almost as fragmented as the equities market itself. Like Le Chat, it is a beautiful mess. But can it sustain that way?

SEC Rule 613, the original CAT mandate, will be six years old this July. The concept is older still, first

"When the SEC finds, after the fact, that some malicious trading entity was messing with one venue from another, and this rich dataset was out there and if used proficiently could have detected it, they stress over being found indirectly responsible, being told 'you let this happen.'" Tom Sporkin, Buckley Sandler

proposed to then-SEC chairman Mary Shapiro in 2009. Yet as the project enters 2018—another critical year of milestones—questions about whether the CAT can be achieved have given way to what it will look like when it is done, and whether it will be worth the billions spent to build and operate it.

Cyber Subterfuge

Drafts, consultations and delays are pro forma when it comes to large-scale regulatory change—nowhere more than the CAT, with its sprawling mix of a "plan processor" operated by Thesys; "participants" that are self-regulatory organizations (SROs), including national securities exchange operators and Finra; "members" who are broker-dealers; various industry bodies; and the SEC. That made last November's exemptive relief request for a year-long reporting delay—presented just a day before the November 15 start date for SRO reporting—somewhat unusual. Such requests are typically telegraphed well in advance, with the regulator's decision fairly predictable, too. The SEC's swift rejection "never happens," as one participant put it behind closed doors at an industry meeting this winter. "This is now a bit of a mess" said another. A third grumbled to a colleague that it could lead to lawsuits in 2018.

Equally interesting was the letter's stated reasoning for relief: cybersecurity. As *IDM*'s sibling magazine *Waters* has reported over several years, protecting the trade information reported into the CAT has gradually risen over time to a topline priority. For firms, it sits equal to the problems posed by the expanded universe of trading activities—including equity options—to be captured, and worries over the potential cost of reporting to "double" systems before they are ultimately replaced and retired. With Edgar and Equifax breaches still fresh in the public mind, cyber concerns weren't coming out of nowhere.

But to read between the lines, sources say, the trouble isn't strictly data security. "We surmise that security and chief information security officer (CISO) concerns drove the exemptive relief request, but progress on the CAT system to support the Participant interface as well as exchange efforts on implementing the Participant interface may have also contributed," says Bill Hebert, managing director at the Financial Information Forum, a data industry group that has represented broker-dealers in the process. And while hughlighting cyber so dramatically—and publicly, including it in Congressional committee testimony—could spotlight the SEC into a broader role for the project that it has thus far avoided, for now the letter has put the CAT show on bizarre hiatus. Two months after the November 15 deadline and rejected relief request, no SROs are reporting to the processor and all remain "in different states of readiness with regard to file formats and testing," Hebert says. That, too, would seem to signal larger questions.

"There has been no official movement since November," says Joshua Beaton, executive director and CAT Program manager at Morgan Stanley. "The ball is currently in the court of the SEC and SROs to propose a new plan for the industry. Within that plan they will likely focus upon first, handling of Personally Identifiable Information (PII), and second, new timelines. Once established, it will then fall to Thesys CAT to implement those plans. Implementation will surely include revisions to the draft specification for industry members which was published last September and to which many industry groups provided feedback in the third and fourth quarters. Also among the feedback was the discussion of messaging formats and data transmission requirements."

'Crazy Aunts and Uncles'

Indeed, improved specifications might be the real key to steering the project back on schedule. And in two critical spots—the SROs' data usage, and the broker-dealers' trade filing—better specs are as much a sociological issue as a technical one.

First, take PII. This data will, indeed, describe broker relationships, client account numbers, and even social security numbers at the individual investor level. That information is valuable in its own right—even more so once you align it with trade execution activity. Therefore, robust protections built into the custody and deployment of that information are of increasing concern in an age of sophisticated cyber-crime. But according to Tom Sporkin, a partner at Buckley Sandler in Washington, DC, and former enforcement officer at the SEC, who also participated in the original CAT rulemaking, solving this problem in the context of the CAT is a little more nuanced.

"The industry-participant technical specification obliges each SRO, within a year of reporting, to provide a plan detailing how they will use that data to enhance their trade surveillance. If you are a surveillance team at one of the SROs, you're less nervous about the collection of that data into Thesys, which is relatively easy and safe, than you are about how that much richer dataset gets used when it is pushed back out to all SRO group members," he says. "Right now they haven't agreed on a standardized set of best practices for the provision of that data: Does it go to a key man? Should it be placed in a skiff, or be more freely available? Should access to certain PII elements be governed with enhanced permissioning? At least one exchange asked early on if that data can go in their sandbox. Those are questions they have to decide before moving forward."

This calculus involves a balance of unpalatable outcomes, and as one source put it, sorting out the situation in the SRO consortium is akin to "having 11 crazy aunts and uncles at a family reunion." On one hand, the security risk (and cost) goes up as more and more of that transaction data is allowed to circulate, and each SRO has its own sense of the level of responsibility they want to assume by possessing it and letting it roam. Many within the group—especially among the smaller exchange operators—don't see it as a "more data is better" scenario. They only see the downside.

On the other hand, Sporkin notes that compliance officers are being squeezed from the opposite end, as well. "They see this as opening up a new possibility of being second-guessed by regulators," he says. "When the SEC finds, after the fact, that some malicious trading entity was messing with one venue from another, and this rich dataset was out there and if used proficiently could have detected it, they stress over being found indirectly responsible, being told 'you let this happen.'"

For his part, Beaton says Morgan Stanley is "confident that we can meet PII requirements, either as initially elaborated or as elaborated more recently in Sifma's alternate PII proposal"—and that many internal tier-one banks' data repositories possess the processing strength to deliver or augment that information as asked. Externally, other major technical issues—the end-of-day cutoff, sequence numbers, complex orders, among others—have been discussed in industry forums and with Thesys, Beaton adds. But like the SRO usage standards, he says it remains to be seen how they will be resolved.

File Under...

The second piece of data intrigue—the file format for trade data submission—is also subtle, and perhaps more curious. Quietly detailed in the latest industry-member draft spec is an instruction that only the JavaScript Object Notation (JSON) messaging format—along with comma-separated value (CSV) files

Hanno Klein
Deutsche Börse

can be consumed by the Thesys platform. While it is a clearer outcome than the SROs' jumbled dynamic, it also raised eyebrows for a number of reasons.

For one, a project that has already suffered from seemingly interminable timelines can use all the flexibility it can get. Constraining participants to just one message format isn't flexible, sources say, and does not take advantage of the significant energy put into the FIX Protocol—an existing messaging format that is already widely used by banks' front offices.

"Firms in the equities space have made significant investments into a FIX infrastructure over the past decades and will want to re-use what they have as much as possible," says Hanno Klein, senior vice president of IT at Deutsche Börse and global technical committee co-chair at FIX Trading Community, the body that oversees the standard. "In the context of over-the-counter (OTC) derivatives regulatory reporting, for instance, the Commodity Futures Trading Commission (CFTC) addressed the issue by permitting both FIXML and FpML (Financial products Markup Language, another industry-developed standard for derivatives) as valid message formats. By contrast, choosing a largely proprietary format and data transmission requires additional implementation work to map formats back and forth to FIX."

The challenge is not so much a technical one as a question of "semantic differences" between a standard such as FIX and a proprietary approach such as JSON, Klein says. But where it becomes a bigger issue is for smaller brokers will now find themselves reporting to the CAT.

"Misunderstandings in terms of the nature of the required data elements are very likely to occur. Apart from the additional cost, it is an issue of additional time needed for imple-

mentation and business-level testing before being able to go live," Klein continues. "Smaller firms have fewer resources and need the ability to use standards such as FIX even more to meet implementation deadlines set by a regulator. Plain vanilla FIX engines are a commodity and available as open-source software. There is also a fairly large number of FIX service providers that can help large and small firms to speed up the process."

Agreeing, Morgan Stanley's Beaton says the level of discomfort experienced will come down to prior planning—though it may also have something to do with the resources of a firm of Morgan Stanley's size. The bank's internal Big Data platform was funded and built prior to CAT, he explains, and its CAT solution is based on an instance of that platform.

"Like any Big Data platform, it was designed to ingest data from a number of sources into its data model, and translating from this data model into a particular messaging format such as FIX or JSON requires some—but not a tremendous amount—of effort. Because we will be using an internal data store that is independent of any particular messaging format, we have no explicit linkage between our internal data model for CAT and the external messaging protocol. But firms that do not have an internal repository for CAT data might be more heavily impacted," he says.

Given those stakes and potential headaches, one source wondered why Thesys, with the technology heritage of Tradeworx, would go with a "less sophisticated, less creative" protocol, given the higher data granularity, clock synchronization, inclusion of equity options, and deeper capture of trade routing across desks and venues implied by the CAT.

But thankfully, the concerns may be short-lived. By the start of this year, Thesys began discussing requirements with the industry and potential gaps to be addressed before opening the door to FIX, and sources say some progress has already been made—though all of that good work "also remains dependent, of course, on the amount of time [made] available and the approval of the regulators," says Thesys CAT chief compliance officer Shane Swanson.

Joshua Beaton
Morgan Stanley

Czars and Zombies

Both of these areas illustrate a collective effort at working to produce a useful outcome from a rocky process that is structurally fraught. The more one looks at the flimsiness of the technical details settled upon—if formalized at all—the more it becomes obvious that the November 15 deadline was a hollow one. The question now, after a couple months of decompression, is where it all goes.

"There is certainly the possibility that, due to continued uncertainty in scope and milestones, the CAT program moves forward in a zombie-like state that delivers little value," Beaton admits. "Were this to happen, the primary impact to broker-dealers would be opportunity costs in terms of IT spend and regulatory subject matter effort, and both are vital to manage efficiently in the current regulatory environment. We do not anticipate this happening, however, and are proceeding full steam ahead. I would think there is more risk in allowing the project to falter and then trying to regain that momentum later, than there would be to execute on the existing plan to deliver what we are confident we'll need to do—which is quite a bit, despite the lack of detailed specifications—in 2018."

As Sporkin at Buckley Sandler sees it, Chairman Jay Clayton and the SEC had similar thoughts on November 15. The implicit message in their decision was clear, he says: "We get the cyber concerns; we won't touch the data until it's hermetically sealed. But don't stop building. Start capturing." He also says the time has come for the Commission to take more of a leadership role, particularly in the SRO data usage puzzle.

"I would argue that regulators should relax the requirement for SROs detailing their surveillance plans, in tandem with appointing a CAT 'Czar' who would oversee the physical access to that data in only a small handful of locations, and have a means-tested approach to resolving requests for the last 10 percent—the most sensitive—of the PII data," he says. "It's one of those rare times where you don't want a democratic process. Someone with no regulatory risk needs to step in and pronounce where the data will be, how to get it, manage the idiosyncrasies of that group, and conduct a conservative push-out of the data. That is the SEC."

Meanwhile, FIF's Hebert and Thesys CCO Swanson have their own to-do lists going for piecemeal progress. It includes allowing the time for brokers to code to a final spec—ideally with the addition of FIX, which almost certainly means a delay on large firms' 2018 reporting date—setting expectations for options reporting, developing a time horizon and strategy for retiring duplicative systems related to Finra's Order Audit Trail System (OATS), and preparing for enhanced security measures like multi-factor authentication for access into the processor platform.

"The delays that have occurred are not unexpected when you consider that Thesys CAT won the bid in January, and was only contracted for the work in April of 2017," Swanson says. "We firmly believe in the value of the CAT, and that has been echoed by many others in both the regulatory community as well as the industry."

Swanson's point is fair enough. But just as 2017 was a year to raise issues, 2018 may be—and in fact, may need to be—the year to solve those issues. ■

GETTING 'CARDED': Current and Future Uses for FPGAs in Finance

With their origins in industries such as defense, aerospace, and medicine, FPGAs have been used by certain aspects of financial markets for about a decade to gain speed. Wei-Shen Wong examines the current uses for this specialized hardware in finance, and what the future holds for them.

For some, the need for speed is a drug—there's never a "fast enough." But there can always be "faster." And field-programmable gate arrays (FPGAs) first became popular in financial markets when it was discovered that these hardware processors' ability to repeat specific tasks incredibly quickly could benefit low-latency trading and market data processing and distribution.

Kevin Covington, CEO of Australian low-latency technology solutions provider Metamako, says that while the race to zero for some in the trading community resulted in firms migrating large parts of their infrastructure as close to trading venues as possible—at huge cost—that was only part of the problem: "People began to realize that the latency was in the computer fabric," he says.

This is where FPGAs—which reduce the response time of the circuits—come into play, as they increase the throughput of systems and decrease data load times, enabling applications to process financial data at a faster pace.

For the Masses

Robert D'Arco, CEO of Chicago-based Rival Systems, a provider of trading and risk management software, says that in the capital markets,

"By having that hybrid approach, you get the best of both worlds. You can get around some of the limitations of the FPGA card by doing the less pertinent work in the software space and really leveraging the card to do what it's made for." Robert D'Arco, Rival Systems

FPGAs have been used to process market data better, but haven't been democratized. "The reality is that they haven't really been adopted by the masses because of the complexity and some limitations to the FPGA cards themselves. The complexity is that it's very difficult to develop logic within a particular card, and [as a result] you're limited to how much memory and how much work you can do on the card," he says.

Earlier last year, Rival teamed up with FPGA ultra-low latency trading solutions provider Algo-Logic Systems to develop an integrated offering combining Algo-Logic's FPGA hardware and Rival's trading and algorithmic strategy development software. The solution—which is geared toward the futures and options markets—enables traders to capture the sub-microsecond latency and deterministic performance previously enjoyed only by those trading firms with the resources to afford expensive internal infrastructures.

From a market data standpoint, firms have begun using FPGAs to build end-to-end trading logic, D'Arco says. This involves capturing market data, performing "basic" calculations, and then sending an order out. However, it isn't as easy as that: A firm must first have an infrastructure appropriate to handle this kind of traffic, and a team of highly skilled developers to do the work. And typically only the firms with the biggest budgets are able to take on such talent.

Rival aims to bring FPGAs to the masses by employing a hybrid approach. In this instance, the FPGA kicks in when there are latency-sensitive processes to run, but doesn't interfere with the software for the majority of work, letting those programs run on their own.

"By having that hybrid approach, you get the best of both worlds," D'Arco says. "You can get around some of the limitations of the FPGA card by doing the less pertinent work in the software space and really leveraging the card to do what it's made for."

An example of this is when orders and quotes are being sent out using software and suddenly a specific event happens and those quotes need to be cancelled as fast as possible. "The logic of detecting that event in the market and then sending the message to the exchange to get it out as soon as possible is all happening on the FPGA card. That sort of really critical, extremely low-latency piece is all happening on the FPGA card, but all the other logic is still happening in the software space. The beauty of that solution is that it's completely seamless to the end user, so that they don't have to do anything or write any code. It just works," D'Arco says.

Not Just About Speed

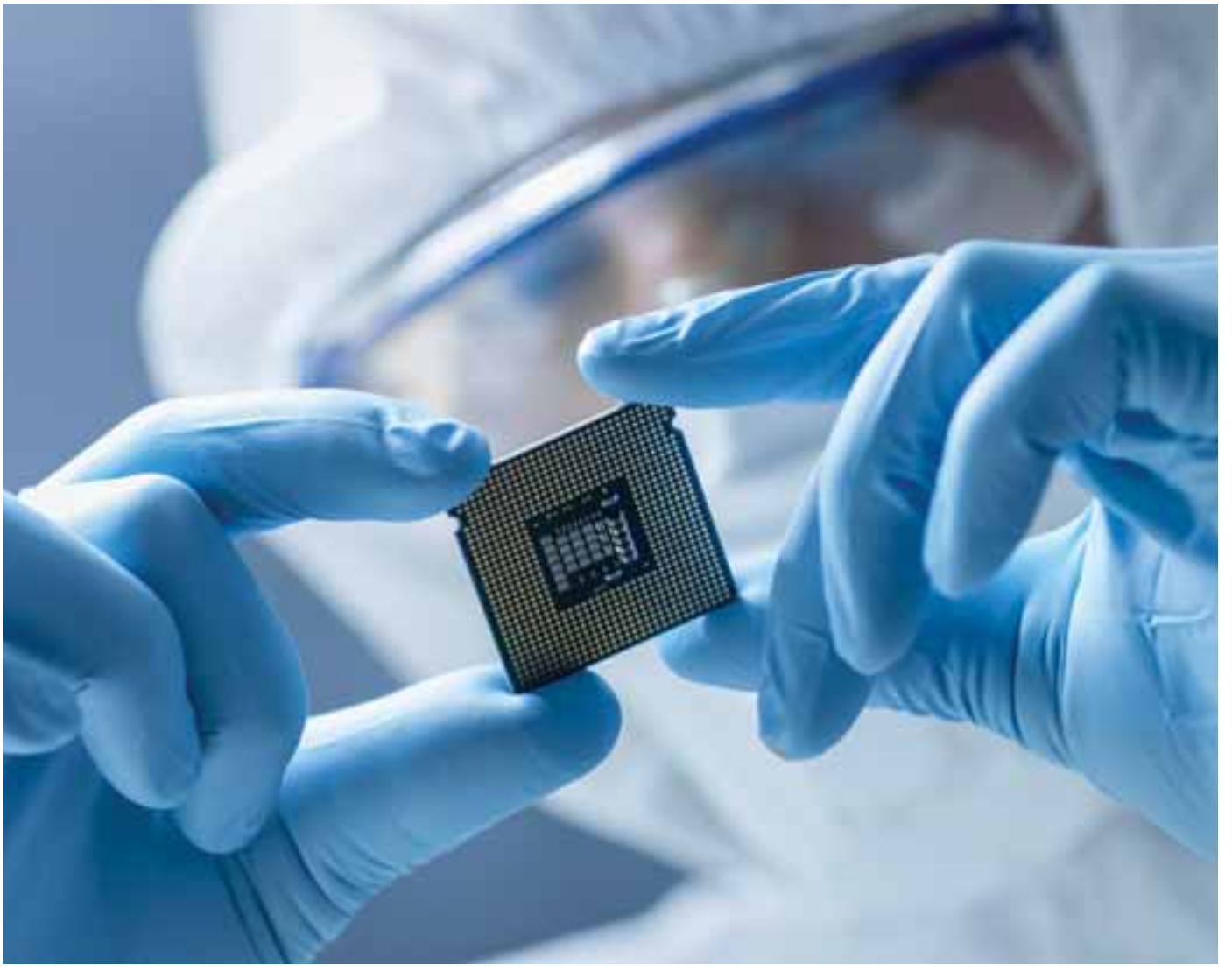
While FPGAs have been used by many different market participants, such as high-frequency trading (HFT) shops for hardware acceleration and pure speed, data giant Thomson Reuters uses it for something else—throughput and capacity.

"We aren't using this great technology for what it was originally designed for, but we are using it for throughput, cost control, and performance in terms of capacity and throughput," says Douglas Munn, head of Elektron Real Time at Thomson Reuters.

Last October, Thomson Reuters launched a direct feed for the voluminous feed of US options quote and trade data from the Options Price Reporting Authority (Opra) via its Elektron Real Time consolidated feed of historical and reference data sourced from exchanges and over-the-counter (OTC) markets, which gives clients access to Opra data without needing additional server capacity to handle the high-volume feed.

To do this, Thomson Reuters partnered with UK-based Celoxica, which provides hardware-accelerated products using FPGA-based architectures. Through the pairing, Thomson Reuters leverages the UK-based vendor's FPGA technology to deliver data on an exchange-by-exchange basis at minimal latency.

Munn says Opra's feed carries data on 10 million instruments, and 31 million updates per second that the vendor must normalize and distribute. "The update rate is high, and because of that we've had to continually upgrade and change our technology to ensure we are putting together something



that is reliable, fast, efficient and cost-effective," he says.

Prior to its partnership with Celoxica, running the platform required a lot of hardware. "When we moved over to the new hardware, we dropped our hardware usage by 70 percent by using the FPGA technology," Munn says.

The more efficient firms can be with their hardware footprint, the better it is for their business as a whole, he adds, as they can free up that excess hardware to run other operations, or can retire unused hardware to save power and money.

But there are still more use-cases for FPGAs beyond speed and throughput, adds Rival's D'Arco—for example, pre-trade risk checks, where FPGAs can be used to quickly perform checks on trade orders and ensure they are within a certain size or limit. If they comply with the firm's limits, they continue on their way to market with virtually no delay. If they are outside of those parameters, FPGAs can be set to reject those trades.

"From a pure trading perspective, the easiest case is a future spread. If you're looking at a small number of instruments, you're looking at, let's say, two futures. If I get billed on this one order I automatically want to shoot out the second leg of that order. FPGAs are very effective at doing that basic logic," he says.

Apart from specific trading applications, Metamako's Covington says the biggest growth area for FPGAs is in being able to timestamp data with high precision. This is useful when it comes to complying with new regulations such as the revised Markets in Financial Instruments Directive (Mifid II), which imposes

strict timekeeping and time synchronization requirements on trading and reporting activities, as well as for post-trade analysis that requires granular review of trading activity.

Fuelling AI

Due to their ability to process large datasets quickly, another potential use-case for FPGAs is accelerating artificial intelligence (AI) and machine learning capabilities. For example, last August, Microsoft unveiled Brainwave, an FPGA-based system for ultra-low latency deep learning in the cloud, developed in collaboration with microprocessor manufacturer Intel. The system is designed for real-time AI, which allows it to process requests with ultra-low latency responses. Microsoft sees real-time AI becoming more important as cloud infrastructures process live data streams.

Metamako's Covington says this represents one of the more intriguing future use cases for FPGA technology. "An interesting use-case is where people are doing work around AI and machine learning to stream analytics. FPGAs can help an immense amount here. With FPGAs, you can cope with the volume of data."

Meanwhile, Rival's D'Arco adds that people need to be smarter about how they analyze data to come up with better trading ideas. "It's hard to take all that data, process it, calculate it very quickly, and react in real time," he says. "FPGAs will help in that, but you have to think about what problem you're trying to solve. Can the FPGA solve it, or does it overcomplicate it?"

Buy vs. Build

D'Arco says some of Rival's clients have previously tried to build their own FPGA solutions, but found it took a lot of time and effort. This is due to the complexity of FPGA cards, which require developers to hard-code tasks into hardware, rather than writing code in software. And while software developers are plentiful, many firms overlook the cost of talent required to build FPGAs, he adds.

Kevin Covington
Metamako

Douglas Munn
Thomson Reuters

"There are definitely firms that are trying to do end-to-end trading systems taking market data, logic and sending orders all on FPGA cards. I think what they realize is that it's a big effort from a cost perspective. Hiring an FPGA developer costs two to three times more than a developer doing C# or C++ development. It's just pure labor cost of getting into that space," he says.

On top of that, how a solution is built and designed is complex, as one might expect when dealing with such low latencies. One of the limitations of taking the build route is firms can lose a lot of flexibility.

"If you can build a strategy that does one very specific thing and if you can make enough money to do that one very specific thing that justifies the cost of FPGAs, then great. But if not, that is where the model falls apart. You realize after taking a year to get it up and running doing one basic thing, you then spend another six months doing the next thing. The cost-benefit analysis becomes a challenge because you are taking six months to get strategies up and running," D'Arco adds.

Munn says Thomson Reuters definitely considered building its solution in-house, but then thought twice. "There are times to partner and there are times to build it yourself," he says. "In this case, [partnering] looked like a better solution. Our partner, Celoxica, had the technology, capabilities, and expertise there, and what we did was adapt their technology to then publish out our Thomson Reuters APIs and the whole point there is they bring some skillset to the team. By publishing out a Thomson Reuters API with all our symbology, it makes it easy for our customers to upgrade. That's our overall goal."

Looking Ahead

Technology is constantly evolving, though whether a new technology will evolve that can replace the use of FPGAs is, at this point in time, anyone's guess. "The bottom line is that it is [a piece of] technology. It's going to change. That's the one thing we know," Munn says.

For example, Covington says new technologies such as quantum computing could impact the FPGA market. "People are paying attention to quantum encryption, and FPGAs will play a part in that happening," he says.

Energias Market Research predicts that the value of the global FPGA market will rise to almost $13 billion in 2023, up from $7.1 billion in 2016, driven by increasing demand for smartphones and hand-held devices, bandwidth in wireless networks, and continuous demand for electronics components. Most of those will be evolutions outside of trading. But D'Arco says he believes FPGAs will evolve to be more integrated into trading systems.

"There's stuff happening that's going to make development of FPGA cards easier. As that progresses and becomes more mature, then I think the complexity of FPGA cards is going to be reduced. And if you do that, there will be more adoption," he says.

But this is not a silver bullet, either. It is important to determine what problem needs to be solved, and how and where technology like FPGAs can help.

"People don't really understand what their actual latency is, and they assume if they use FPGA cards they'll be better off, when sometimes just using pure software may actually solve the problem," he says. "The key is to figure out where the real issue is, and how you can solve it." ■

Human Capital

AxiomSL Charters Chopra

AxiomSL, a regulatory reporting, risk, and data management solutions provider, has hired Harry Chopra as chief client officer, responsible for overseeing the company's global business development, implementing market strategies and building client-driven growth.

Chopra, who has more than three decades' global sales and financial services experience, was most recently chief commercial officer at Credit Benchmark, where he developed consensus credit estimates alongside the chief risk officer and chief credit officer community.

His previous roles include head of sales and client services at S&P Capital IQ and leadership positions at Citigroup Asset Management, where he headed retail distribution and institutional marketing.

Sebastien Rousotte

"Harry comes with a remarkable financial services background and will oversee an important client-facing role globally. Along with his proven leadership skills and track record of financial success, Harry will play a fundamental role in achieving our growth targets and implementing AxiomSL's go-to-market strategies," says Alex Tsigutkin, AxiomSL founder and CEO, in a statement.

Harry Chopra

RegTech Association Appoints Richmond CEO

The board of directors of the International RegTech Association (IRTA) has named the organization's president for the UK and Ireland, Ben Richmond, as its first CEO.

Richmond played a key part in launching the IRTA in May 2017 and is currently a regular speaker at fintech and regtech industry events.

"Appointing a management team is key to the evolution of the IRTA, and to the execution of our mission and purpose. As chief executive, Ben is committed to executing the IRTA strategy internationally during its next stage of growth," says Subas Roy, global chair of the IRTA, in a statement.

"RegTech experts, practitioners, academics, regulated firms and regulators are eagerly supporting our proposition," Richmond says, referring to the IRTA Innovation Advisory Council's RegTech Open Innovation Manifesto, which was published in 2017 and is currently underway. "The IRTA is the only non-profit membership association with a mandate to build a truly global regtech ecosystem, which will benefit extensively from shared knowledge and experience. I am excited to be leading the team that will make this happen, and looking forward to working with individuals and established regional regtech groups to achieve common goals."

Ben Richmond

Richmond is the founder and CEO of global regtech provider, Cube.

Pendo Systems Hires Filleul as Sales Engineer

NJ-based Pendo Systems, the vendor behind the Pendo Learning Machine Platform (PLMP), has appointed Philip Filleul as sales engineer. Filleul has more than two decades' industry experience and will drive new business sales in the banking and capital markets segments.

Previously, Filleul was global director of Cray's financial services group. He has also held various roles at Sun Microsystems, including head of Mifid, and was head of reference data business for iGate Patni.

Pam Pecs Cytron, Pendo's founder and CEO, says, "[Filleul's] knowledge and experience in reference data, data management, data governance, risk and regulatory compliance will be invaluable as we develop deeper relationships with our growing customer base."

Pendo's PMLP is a data manage-

ment and intelligence platform that spans disparate sources of unstructured data and transforms unstructured data into AI-ready datasets.

Data, Research Vet Ross Moves to Greenwich

Michael Ross has joined Stamford, Conn.-based capital markets research firm Greenwich Associates as executive director, a business development role providing clients with access to the firm's market research and data, and helping them develop strategies from idea generation to implementation.

Ross was most recently managing director at Boston-based capital markets consultancy Finadium, prior to which he spent two years as president of Paragon Public Relations in New York and ten years as a partner at strategic advisory and research firm Tabb Group.

Before joining Tabb in 2005, Ross ran his own business strategy advisory and sales outsourcing firm for software and data companies, prior to which he was executive vice president of capital markets at Thomson Financial, and spent three years at PFN as EVP of sales and marketing, preceded by a stint at Thomson Financial as director of sales and marketing for its technical data division.

At Greenwich Associates, Ross reports to managing director Dan Connell.

Style Names Fintech Vet Rousotte CEO

London-based investment research and portfolio analysis application provider Style Research has appointed Sebastien Rousotte as CEO, replacing Kirsten English, who becomes a non-executive director, responsible for exploring partnership, and merger and acquisition opportunities.

Brian Sentance

Michael Ross

Roussotte was most recently general manager of the investment management division at Misys, where he also served as MD of global and strategic accounts after joining the vendor in 2011 as a result of its acquisition of Sophis, where he was COO.

Before joining Sophis in 2006, Rousotte was a managing director at Reuters in Paris, and was also director of product management for its Kondor+ risk management tool, having previously served as product manager for Kondor+ at French trading floor technology vendor Effix, which Reuters acquired in 1993.

"Sebastien will build on the excellent foundational work Kirsten completed in the first phase of our growth strategy," which included implementing a significant investment program and doubling staff numbers to more than 60 since English became CEO in 2015, says Style Research chairman Sally Tennant. "As a result of these efforts, he's in a strong position to help us capitalize from the macro trends that are providing a tailwind to the business."

Xenomorph Founder and CEO Sentance Departs

Brian Sentance has left his role as CEO of Xenomorph after more than 20 years, following the closing of a successful funding round.

Sentance, who started the company alongside Chris Budgen and Mark Woodgate in 1995, left his role in late December. He says the opportunity to exit the company arose during the vendor's latest fundraising process, adding that he is not actively seeking other opportunities but will take up non-executive director positions.

Prior to co-founding Xenomorph, Sentance spent two years at JP Morgan, where he was head of the

Lind Touches Down at DTCC to Lead Data Services

Tim Lind

The Depository Trust & Clearing Corporation (DTCC), a post-trade market infrastructure provider, has named Timothy Lind managing director of data services. Lind joins from Thomson Reuters, where he was global head of financial regulatory solutions, and will be responsible for guiding DTCC's data businesses, including risk management and regulatory compliance.

Lind has more than 25 years of capital markets experience and has previously held roles at Omgeo, which is now a part of DTCC, as well as GoldenSource, CEB TowerGroup, SWIFT, and Brown Brothers Harriman. He has also partnered with financial services industry associations to promote data standards.

In December 2017, Ron Jordan stepped down from his role as data head at DTCC, which he had held since early 2011 following a 26-year career at the New York Stock Exchange and NYSE Euronext, including stints as executive vice president of global market data administration and EVP of market data, managing director of equity business development, and director of market surveillance.


Philip Filleul

EQD pricing models team, responsible for designing equity derivatives pricing models for use in trading applications and risk management systems. Before that he was a treasury analyst at BT Group.

FTSE Russell Hires Japan MD

London Stock Exchange-owned index provider FTSE Russell has hired Seiji Ishii as managing director in Japan. Ishii joined the vendor on January 1, with responsibility for managing client relationships and leading business development in the country. He will also lead local integration between FTSE Russell and its acquisitions of Citi's Bond Index/Yield Book team and company data provider Mergent from Moody's.

Prior to joining FTSE Russell, Ishii spent three years at Acadian Asset Management as managing director and the firm's representative in Japan. Before that, he was Asia-Pacific region co-head and representative in Japan at Millburn International. He has also held roles at GAM, where he was managing director and Japan CEO, and Merrill Lynch, where he was Japan head of consultant marketing and product management, as well as Sakura Asset Management and Mitsui Bank.

Jessie Pak, managing director for Asia at FTSE Russell, says Ishii's appointment will help drive the company's development in Asia Pacific.

Apcela Adds COO, Funding

Low-latency network and cloud application hosting provider Apcela (formerly CFN Services) has appointed technology industry veteran Jack Dziak president and COO, taking over president duties from Mark Casey, who remains CEO.

Dziak joined Apcela last July as a board member, and also runs his own advisory firm, Dziak Advisory Services, which he founded in January 2017 after leaving SunGard Availability Services, where he spent over five years in various roles, including executive vice president of global products, general manager of managed services, and SVP of corporate strategy and business development.

Before joining SunGard, Dziak was chief strategy officer at information services provider NeuStar, and also served as SVP of corporate strategy at Sprint Nextel, SVP of services and distribution at Mobile Satellite Ventures, SVP of corporate strategy and business development at MCI Communications, and a partner at Accenture.

SIX Refreshes Executive Board

SIX Group, the parent group of SIX Financial Information and the SIX Swiss Exchange, is undergoing a restructure, and as of April 1 will be led by a new executive board.

Thomas Zeeb, who managed securities services for the SIX executive board, becomes head of securities and exchanges. Marco Menotti will head payments when he joins SIX on March 1 from UBS, where he was managing director and head of banking products. SIX is reorganizing its entire payments services infrastructure.


Jack Dziak


Joss Dijsselhof

Robert Jeanbart will remain head of financial information, a role he has held since 2014. Marc Schluep, who previously ran payment services for SIX, will now head the cards business unit, which will be separated from the core organization with the goal of creating a leading European provider.

Christoph Landis, who has worked at SIX since 1992 and most recently managed Swiss Exchange, becomes head of IT. Rounding out the executive board are CFO Daniel Schmucki, and chief risk officer Jochen Dürr. All executive board members will report to Joss Dijsselhof, who became CEO on January 1.

In addition, SIX is consolidating its innovation activities into a new innovation and digital business unit, which will be run by Daniel Dahinden.

SIX also announced the departure of Robert Bornträger, the division CEO of Global IT, who will leave the company at the end of February. Bornträgerhas developed and operated SIX's entire IT infrastructure since 2008.

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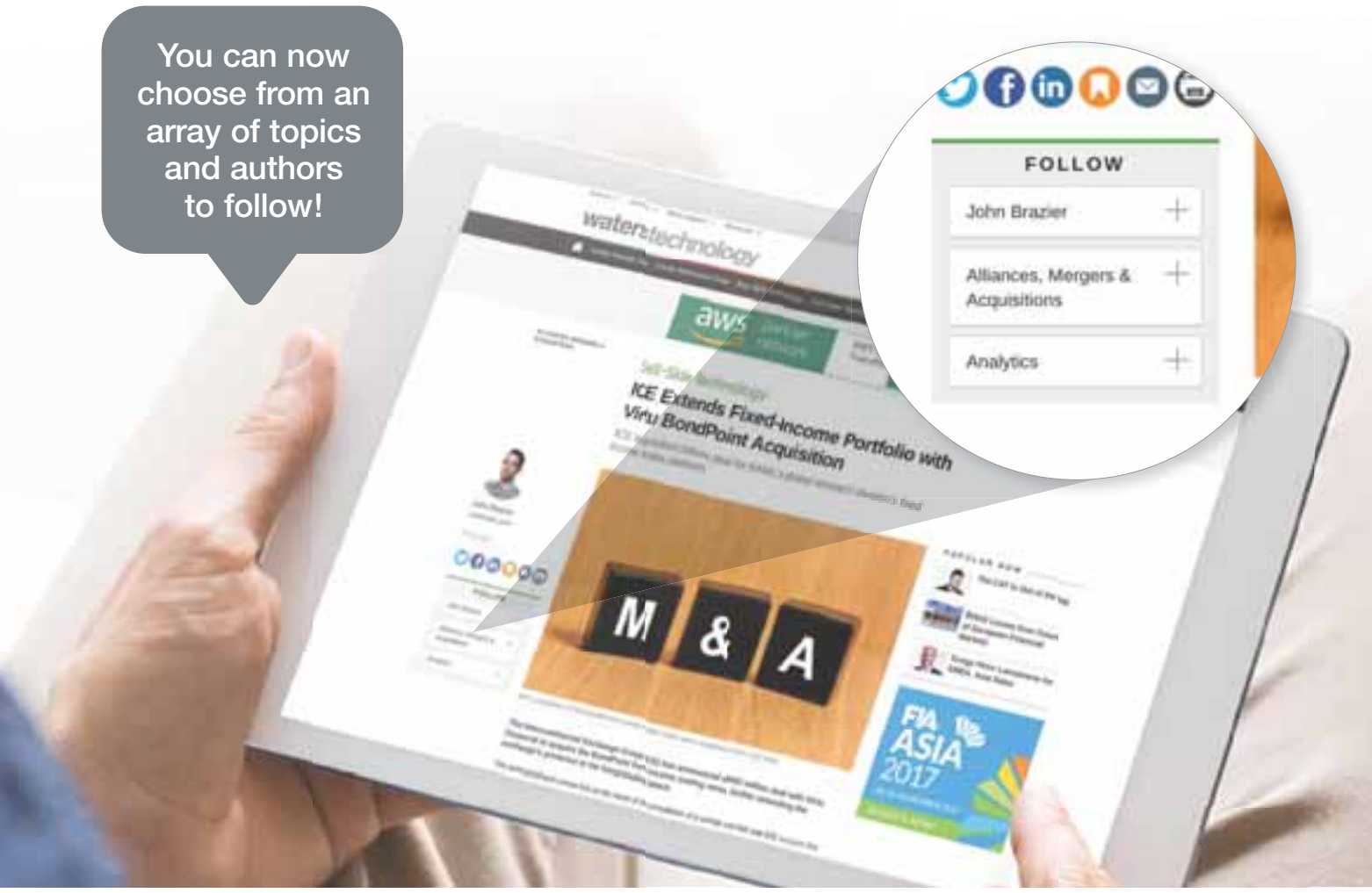

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