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RPA Success: Keep It Simple

I remember a conversation I had with a capital markets CEO back in 2002 where we discussed the carnage that unfolded during the bursting of the dot-com bubble. While it would be unfair to generalize and describe the large numbers of firms that went to the wall from the late 1990s to 2001 as possessing questionable business models cloaked in a thin veneer of credibility by way of eye-catching websites, what isn't up for debate is the fact that for the first time in history the automation of business processes made possible by the advent of the internet meant that firms were, if anything, more vulnerable than ever before. The upshot was that the automation of bad business processes simply meant that they went out of business faster than they might have in the past.

To a Lean evangelist, that scenario would be welcomed and filed under the "fail fast" mantra, although it's unlikely that anyone who lost their business or their job during that time would be quite so sanguine and philosophical.

The bursting of the dot-com bubble didn't bring to an end firms looking to automate certain parts of the business by way of the internet. In fact, that was pretty much the starting point in what has turned out to be an incremental, inexorable push. But it continues to serve as a reminder of what can go wrong—and especially how quickly things can go wrong—if the fundamentals of the business aren't sound.

Which brings me to Hamad Ali's robotic process automation (RPA) feature on page 28. There is little doubt that RPA holds the key to automating large numbers of business processes across the capital markets, the primary benefits being the two measurables that all firms look to manage: saving time and cutting costs. But when it comes to the practicalities of RPA, the old adage "junk in, junk out" is especially pertinent. As with the dot-com fiasco, automating bad processes, no matter how sophisticated the automating technology might be, will almost certainly lead to failure.

The key to successfully applying RPA to enhance existing parts of the business is simplicity. Processes need to be well defined, intimately understood and relatively simple to automate. That said, there are still some in the industry underwhelmed by their RPA experiences to date. Matthew Davey, a managing director at Societe Generale Securities Services, is one such dissenting voice. "We've been a bit disillusioned with that experience," he said, referring to the bank's use of RPA technology, speaking at last year's Sibos conference held in October 2017 in Toronto. According to Davey, SocGen uses RPA to underpin its reconciliation and report-generation processes, which he says are relatively simple functions, and therefore well-suited to the application of RPA technology. "If you try and apply it to a complex process then that becomes very difficult," he warns. W

Victor Anderson
Editor-in-Chief

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Senior SEC Staffer Says Bitcoin, Ether Are Not Securities

Digital currencies themselves do not qualify as investment contracts, regulator says, but could when packaged. By James Rundle

When is a cryptocurrency not a security? When it's ether, according to the largest US regulatory agency.

Speaking at a conference organized by Yahoo in San Francisco on June 14, a senior figure from the US Securities and Exchange Commission (SEC) said that the regulator would not be classifying ether or bitcoin, two of the most popular cryptocurrencies, as securities. The statement, made by William Hinman, director of the division of corporation finance at the SEC, put to bed one of the most pressing questions in cryptocurrencies.

"Putting aside the fundraising that accompanied the creation of ether, based on my understanding of the present state of ether, the ethereum network and its decentralized structure, current offers and sales of ether are not securities transactions," he said. "And, as with bitcoin, applying the disclosure regime of the federal securities laws to current transactions in ether would seem to add little value."

Hinman did hedge his statement, which drew on the classic SEC v. Howey court case that set precedent for the definition of an investment contract, an important determinant for the applicability of federal securities laws. The analysis of bitcoin and ether's status, he said, "is not static," and packaging bitcoin and ether into a fund or trust to sell interests would create a security. He also added that initial coin offerings (ICOs) which clearly pass the Howey test, would be pursued.

"Let me emphasize an earlier point: Simply labeling a digital asset a 'utility token' does not turn the asset into something that is not a security," he said. "I recognize that the Supreme Court has acknowledged that if someone is purchasing an asset for consumption only, it is likely not a security. But, the economic substance of the transaction always determines the legal analysis, not the labels."

William Hinman
SEC

News of Hinman's analysis was widely welcomed in crypto markets, sending the value of ether spiking up by nearly 9 percent, a bright point in an otherwise difficult year so far for the cryptocurrency, which has fallen in value by 35 percent since January.

Chris Concannon, president and COO at Cboe Global Markets, says the decision "clears a key stumbling block for ether futures, the case for which we've been considering since we launched the first bitcoin futures in December 2017."

Jim Dowd, founder and CEO of broker-dealer North Capital, which supports exempt ICOs, said this decision should benefit investors.

"These comments provide a pathway for other decentralized cryptocurrencies or crypto utility tokens, whose attributes are like bitcoin or ether, to establish that they are not securities, based on the facts and circumstances. The SEC has always said that whether a digital asset is a security depends on the facts and circumstances, but there has never been a dispositive set of facts and circumstances to reference." W

Bank Execs Call for Regulatory Harmonization, Cross-Border Clarity

Panelists discuss operational issues involved in cross-border compliance with Mifid II. By Josephine Gallagher

Nearly six months on from the implementation of the revised Markets in Financial Instruments Directive II (Mifid II), banking experts remain concerned about cross-border implementation, regulatory ambiguity and the lack of convergence among international policymakers.

European Union (EU) regulatory reform has dominated the airwaves and agendas since January and nearly half a year later, firms are still adjusting to the new age of compliance. During a panel discussion on the extraterritorial impacts of Mifid II at the AFME conference on June 11, executives from major international banks said many are still scratching their heads when it comes to the legislation. Mifid II was drafted with the intention to foster greater transparency and stability within in the EU markets, but some firms operating across multiple regions are still struggling to understand the scope of the law, on top of existing complex cross-border relationships.

"Mifid II is not well-written for cross-border business," said Andrew Bowley, managing director, head of regulatory response and market structure strategy, EMEA at Nomura, during the panel discussion. "So as we have gone through implementation, we have had to deal with understanding and trying to define what the nexus is, what the scope is, what the touchpoint is for a European regulation and that has been very unclear and it remains unclear."

Some of the concerns regarding the scope of Mifid II involve trading and best-execution obligations.

"Mifid II is not well-written for cross-border business. So as we have gone through implementation, we have had to deal with understanding and trying to define what the nexus is, what the scope is, what the touchpoint is for a European regulation and that has been very unclear and it remains unclear." **Andrew Bowley, Nomura**

Global firms remain unclear about the implications of communicating and booking orders across international jurisdictions and understanding the extent to which EU regulatory compliance is required. Simon Andrews, executive director, global regulatory reform at Standard Chartered Bank, says that although firms are in a better position than they were six months ago, policymakers need to provide more explicit clarification in the drafting of legal instruments and that enhanced alignment among international legislators would allow the industry to flourish.

"I think the message to the European Securities and Markets Authority (Esma) and other European policy bodies is to speak more to regulators in other jurisdictions to understand something that is explicitly extraterritorial, such as the Legal Entity Identifier (LEI) obligation," Andrews said during the panel discussion. "Where there is the possibility, speak to regulators and policymakers in impacted jurisdictions to see if there is some kind of global interest or global alignment."

Andrews said regulators need to consider the operational challenges of implementing regulations such as Mifid II, and that more awareness is required in terms of the variety of banking structures. In other words, no one size fits all. Additionally, he emphasized that regulators should consider the time pressures of meeting regulatory deadlines and applying last minute updates from Esma Q&As.

Penny Fabien, executive director and assistant general counsel at JPMorgan, echoed these views during the panel discussion, where she outlined that firms were rushing to put the final touches on their compliance systems in the lead-up to the January 3 deadline when Esma published the last updated guidelines in November.

"That was really tough on firms," she said. "Generally for implementation programs, the systems had been designed and built, and we were really in the 11th hour of testing, ready to go into production, and if you imagine a significant amount of activity coming in or out of scope then, it was really challenging timing for firms." W

Bitcoin Regulation on the Agenda for Global Policymakers

Expert panel struck a positive tone on the future of crypto assets and indicated that it was only a matter time until regulation caught up with the digital age. By Josephine Gallagher

The emergence of cryptocurrencies as an asset class has divided opinions across the financial markets, but panelists at a recent FIA conference showed that there is emerging consensus on the recognition of virtual assets.

Concerns pertaining to the lack of regulation in crypto markets have largely hindered wide-scale engagement from established financial-market participants, in particular thanks to skittishness over security risks, such as know-your-customer (KYC) and anti-money laundering (AML) compliance. However, during the FIA International Derivatives Expo (IDX), held in London on June 6, industry experts argued that every new technology requires the necessary controls to overcome associated challenges and develop confidence in its use.

"The point I want to make about AML and the KYC issues is that it's clearly a huge issue—but in the minds of some institutions, it's a little bit overblown because its risks can be managed. The tools are there to do that," said Mark Wetjen, managing director and head of global policy at the Depository Trust & Clearing Corp. (DTCC), and a former commissioner at the US Commodity Futures Trading Commission (CFTC), speaking on a panel dedicated to cryptocurrencies.

Wetjen said the traditional currency space is also subject to risks and illicit activity, such as money laundering, and suggested that there is almost a myth that it is more difficult

Mark Wetjen
DTCC

to protect and secure crypto assets than it really is. In recent months, major international institutions have demonstrated their support for the crypto space, with Goldman Sachs launching a bitcoin trading desk in May, and Nasdaq earlier this year floating the possibility of opening a crypto exchange. The popularity of cryptocurrencies and their associated technologies, such as blockchain, has grown to the point where leaders at the very highest levels of fiscal policy are taking an active interest.

"It's going to be back in the Group-of-20 agenda in July and the regulators will be talking about AML, KYC, and the need for shared understanding or taxonomy to define what these terms are," says Jeff Bandman, founder and principal at Bandman Advisors, and the former head of the CFTC's fintech initiative, LabCFTC. "And are there impacts on financial stability, is consumer protection potentially vulnerable and are investors at risk of being defrauded? But at the same time, regulators do see the benefits of the innovation. So I think there is consensus being developed."

As regulators give cryptocurrencies their full attention, the next question is whether policymakers will officially recognize cryptocurrencies as an asset class, and draft regulation specifically to clamp down on illicit activity. A shared perspective among many of the panelists at the IDX event was that although crypto assets are a global product, it is unlikely that individual regulators will form a consistent position or a harmonized international approach.

"There probably won't be regulatory consistency because this market is global," says Mark Lamb, co-founder and head of liquidity relationships at digital currency exchange Coinfloor. "Every sign points to it staying fairly global, and the regulators in different countries already have diverged paths; that is probably not going to converge."

Solution

One alternative solution to a perceived lack of collaboration between regulators is for global institutions to form a self-regulatory organization (SRO), which would oversee crypto-trading practices and clamp down on criminals. This idea was recently suggested in a speech given by CFTC commissioner Brian Quintenz in March.

Speaking on the sidelines at the conference, Andy Lowenthal, executive vice president and the co-head of the markets division at Cboe Global Markets, said existing venues can play a crucial role in paving the way for regulating the digital assets and creating investor confidence in the space. "I think industry groups have proven to be a great venue for regulators to rely on in this [crypto] space," he said. "Commissioner Quintenz talked about creating an SRO that would be made up of members from the industry, funded by the industry, and have a voice in the industry to be a sounding board for the regulator." W

Auction System Glitch Led To LSE's Morning Blackout

London bourse's trading delay was the first such disruption in years. By James Rundle and Hamad Ali

The London Stock Exchange (LSE) opened an hour late on June 7 due to a technical issue with its auction system that prevented traders from entering orders, the exchange's first significant halt of this kind in years.

Trading began at 9 am local time, and the system has remained stable since then. The exchange's operator, the London Stock Exchange Group (LSEG), cited a technical issue with its pre-open auction system as the cause of the delay.

"London Stock Exchange identified a technical software issue that was preventing some members from entering orders into the pre-open auction system prior to the standard market opening time of 8 am. To preserve the integrity of the market and to ensure orderly trading, London Stock Exchange decided to delay the market open while the matter was investigated and informed market participants accordingly," an LSEG spokesperson tells *Waters*. "Following resolution of the issue, members were notified at 8:40 that trading would commence at 9. Trading across our markets has been operating normally since this time."

While many exchanges suffer outages on a regular basis, this is the first time in seven years that the LSE has experienced a technical malfunction to this degree. The last comparable delay occurred in 2011, when the exchange switched to a new system, which triggered a four-hour delay.

Technology glitches at major exchanges are not uncommon and can have severe ramifications. In March, the New York Stock Exchange

(NYSE) became the first venue to be penalized under US rules governing the integrity of critical systems in the financial markets, following a 2015 outage.

The Securities and Exchange Commission fined NYSE $14 million. Nasdaq also suffered a massive technical glitch that shut down markets for hours in August 2013, when its primary and backup systems that disseminate market data failed, an incident that was reportedly being watched closely by the White House.

On April 18, Nasdaq's Nordic exchanges did not open during the morning due to a fault with a fire suppression system at the firm's datacenter. On March 16, Deutsche Börse's Xetra and Eurex venues faced what the operator described as "serious issues" that delayed the market open until 9:30 am local time. Meanwhile, Euronext suffered a technical hitch on April 16 that caused a delay in the opening print for several indices.

An equities trader at a London-based bank says the glitch at the LSE was "inconvenient and irritating," but not as bad as it could have been.

"Frankly, some of the other exchanges have had bigger problems, and [the LSE's] systems are generally reliable," the trader says. "I'm more worried about our own systems going down, or my terminal—something that leaves us exposed when everyone else is ticking along just fine—than something that affects the whole market."

"It happens," a portfolio manager at a London-based asset manager tells *Waters*, shrugging off the error.

Software specialists say such errors are a natural result of the increasing sophistication and complexity of both technology and the markets.

"All of these exchanges have dozens of order types that they didn't have before, which makes the systems much more complex. All the [co-location capabilities] they have to build, the special interfaces for high-speed trading—these are all new interfaces, new layers, on top of existing systems," says Lev Lesokhin, vice president of strategy at software analytics vendor Cast. "And we see this in financial services in general, with the speed-up in complexity and additional products that financial services companies of all types are trying to put out in the market. Typically when you put these products on top of legacy technologies … it introduces all sorts of risk and complexity that is really difficult to deal with." W

Clearing Executives Remain Skeptical on Blockchain

Senior CCP specialists say some emerging technologies have promise, but significant hurdles remain.

By Hamad Ali

While most of the financial industry barrels headlong into emerging technologies, at least one part is holding them at arm's length—and it's the very sector that proponents say might be helped the most.

Executives from major central counterparty (CCP) clearinghouses say they are investigating the applications of emerging technologies such as artificial intelligence (AI), the cloud and distributed-ledger technology (DLT), but some remain unconvinced that they're the silver bullet for process inefficiencies that many often claim.

"We have various projects going on in terms of concepts like distributed ledger, but that is not the center of what we do," said Michael Davie, global head of rates at LCH, speaking on the sidelines of the IDX Derivatives Expo, held in London on June 6. "Just turning these markets over is complicated—the sheer volume, the certainty that you need. We have to be fully reconciled. All of that has to be straight-through processing (STP), full STP—ideally, with no human fingers touching it, calculating margins, calling for collateral, replacing collateral."

Michael Davie
LCH

Since the financial crisis, CCPs have emerged as the key arbiters of risk in the derivatives markets, thanks to global reforms instituted through a 2009 Group-of-20 agreement signed in Pittsburgh that said all standardized derivatives trades should be cleared. They stand between buyers and sellers of instruments by novating contracts and becoming, as their name suggests, the counterparty to each.

The key function they provide in guaranteeing settlement has also been a major target of new developments in technology, which advocates insist can streamline the process of clearing and the entire securities settlement cycle through the use of smart contracts, machine intelligence and expanded compute power. DLT, in particular, has been cited as potential architecture for the future of clearing technology.

However, some of the more vocal claims of disruption have often been met with skepticism. Experts say that a narrow focus on the technology often ignores the wider mechanism of clearing, which tends to be a function of capital, rather than technology.

CCPs manage the default risk associated with derivatives trades by collecting insurance on those trades, known as initial margin, and collecting additional collateral as required on an intraday basis (in some instances) by measuring the risk of the portfolio, a process known as variation margin. While technology plays a part in how this is accomplished, it is not a fait accompli unto itself.

"I have heard a lot of things—it will disintermediate clearing, or even that it will cure cancer. I heard that, which is crazy," said Sunil Cutinho, president of CME Clearing, during a panel session at the conference. "So that tells me there is a lot of exuberance when it comes to DLT. When it comes to clearing, I don't know if just having a distributed technology that creates a universal ledger gives everybody an immutable account instantaneously, where everybody stands, solves for creditors over a time horizon. I am still not sold on that," he said.

Others on the panel were less impressed by some of the purported strengths of DLT. Finbarr Hutcheson, president of the Intercontinental Exchange Group's Clear Europe CCP, said he considers claims that blockchain's encryption can never be broken to be "the most stupid statement I have ever heard in my life."

"That reassurance—'don't you worry, it is really complex and clever'—immediately gets my cynical antenna raising," he said. "So there is still a lot of proving that has to happen in this."

Despite a general sense that clearing executives are holding DLT at arm's length, there were green shoots of hope for true believers. Adrian Farnham, CEO of the London Metal Exchange's CCP, LME Clear, said there were applications of AI and blockchain that "make sense" for the industry.

Fredrik Ekström, chairman of Nasdaq Clearing, also pointed to the fact that cloud could "lower the cost of data and infrastructure for all participants," and pointed out that AI is already being implemented in market surveillance processes, a reference to Nasdaq's 2017 rollout of machine learning on its Nordic exchanges.

Yet much of this rests on the ability of DLT and other emerging technologies to mature to a point where they can be used by institutions such as CCPs, which act as the nervous system of derivatives markets, and therefore can't afford to take risks with the risk they manage.

"All of the functions that we do, really have to be systematized, and to a much greater degree than before. So we test all of that," says LCH's Davie. "Technology is at the absolute heart of what we do." W

Nasdaq Sees Bright Future as Technology Provider

Nasdaq CEO Adena Friedman said the exchange's competitive advantage lies in the technology it provides to other markets. By Emilia David

Nasdaq's CEO has said that the exchange operator wants to orient itself toward its technology assets, as the capital markets head toward a future where the foundation of trading is enabled by technology.

"We really have geared the company and make sure that we are really highlighting the technology elements of our business and the data analytics elements of our business so that we can help grow and expand the capital markets in a new way and that has been the biggest area of focus for us," said Adena Friedman, CEO and president of Nasdaq, speaking at the Bloomberg Invest summit, held in New York on June 5.

While most exchanges offer technology or data services, the exchange-as-a-vendor model pioneered during the early 2000s has largely fallen out of favor. The Intercontinental Exchange Group, for instance, dismantled NYSE Technologies after it acquired NYSE Euronext in 2012, though it continues to acquire technology assets. The London Stock Exchange Group bought MillenniumIT in 2009 but has integrated many of the group's current technology functions into its own corporate structure, rather than externalizing them in a public-facing vendor arm. Other exchanges, such as CME Group, were also once-dominant providers of technology but have emphasized other business priorities in recent years.

Meanwhile, Nasdaq's Smarts surveillance platform is widely used in the market, being in place at over 100 regulators, trading firms, and venues, while its matching-engine technology is used by exchanges across the world.

Adena Friedman
Nasdaq

In 2016, the firm debuted its Financial Framework program, which aims to run its technology and services from a common core platform.

Friedman singled out three specific emerging technologies that Nasdaq is keeping an eye on—the cloud, artificial intelligence, and blockchain. The exchange already has a hand in all three, with products out in the market and deployed to clients, or, in the case of blockchain, several proofs-of-concept and pilot projects. The company has been focusing on is its surveillance technology, where it uses machine learning and data analytics to determine behavioral patterns in the market—something it initially trialed on its own exchanges before deploying as a commercial solution, winning a contract with Hong Kong Exchanges and Clearing in May 2018.

"The cloud for the financial services industry has really become a part of the infrastructure so what we've been building allows exchanges to think about how to rethink the markets in the cloud," Friedman said. "The second thing we're doing is thinking about all the data that we and clients gather so what we do in terms of machine intelligence and learning off of that. And the third thing is blockchain. I do think that it continues to be a fascinating technology that is harder to implement but I think over time it will be an interesting force in our business."

Nasdaq will continue to promote its primary listings business, Friedman said, calling the pipeline for public offerings "very healthy." This year has so far been "the busiest year of meetings, pitches, conversations that we've had in the last three years," she said.

When it comes to cryptocurrencies, however, Friedman showed more caution. Nasdaq provides technology to crypto exchanges—it was recently contracted by Gemini to provide surveillance technology, for instance, and a crypto exchange launched by SBI Japannext in June uses Nasdaq's matching engine—but Friedman was concerned cryptocurrencies themselves are still too speculative as a market.

Nasdaq had previously said that it was investigating the possibility of listing bitcoin futures, after rivals Cboe and CME Group became the first exchanges to list futures on the virtual currency in late 2017, but there appears to be little forward motion on these plans.

"We've been taking a more research-oriented approach in terms of where do we see ourselves being involved and when might we want to be involved," she says. "What we're seeing, though, is that a lot of exchanges are becoming more self-regulated and that's the first thing that we want to do. We are a technology provider to the crypto exchanges and we continue to see an opportunity for us to provide our surveillance technology and our market technology."

Friedman did not totally discount crypto assets, noting the company continues to engage with clients but added it will only offer an instrument "where you can rely on price formation and the availability of pricing information" and will wait to see if it becomes more regulated and acceptable to the mainstream. W

Commissions Slump as Mifid II, Algo Trading Take Bites Out of Brokers

Data shows drop in commission costs as unbundling rules take hold, furthering decline caused by electronic execution. By James Rundle

For many brokers in Europe and the US, the heady days of pre-crisis reform are starting to seem like a daydream. The commissions that brokers take from trade executions dropped sharply in the first quarter after the enactment of new European rules on research unbundling, increasing downward pressure on an area that has already felt the effects of moves away from high-touch strategies, according to new research.

Andre Nogueira
ITG

Agency broker ITG released the latest update to its Global Cost Review report on June 4, highlighting the fall in explicit costs for trade executions in the UK following the implementation of the revised Markets in Financial Instruments Directive (Mifid II), which went into force on January 3, 2018.

Commissions for the UK fell, on average, by 1.2 basis points in the first quarter of 2018 from 7.0 in the previous quarter, as brokers felt the bite from the new rules. "From an explicit costs perspective, everyone saw that coming," says Andre Nogueira, director of trading analytics at ITG. "Unbundling, from now on, means that the commission you pay is only the execution rate, and you can't really pad the cost of research into commissions anymore. If you look four years ago, people were paying 10.1 basis points average commission in the UK, which included payment for research and was bundled with a bunch of other stuff, but that's not the case anymore—5.8 basis points is a pretty transparent commission to pay for execution and nothing else."

While the fall in commissions may have been expected, however, an interesting effect of Mifid II has been the impact on implicit costs as highlighted in the ITG data. Part of the Mifid II package entailed a separation of research costs from execution commissions, along with a fragmentation of liquidity across lit venues, systematic internalizers, periodic auctions and other areas due to new limits on trading equities in dark venues, a mechanism known as the double volume cap.

"This has been a reaction to, and people have had to get creative because of, Mifid II," Nogueira says. "You can't do dark trading like you used to because you have the double volume cap, broker crossing networks have been banned, so new market structures for trading have started to spring up. People are having to look at new places to do what they were doing last year, so that increases complexity."

In addition, the impact of rules such as the double volume cap has not just been limited to the very largest names. Instead, he suggests, the firm has noticed a knock-on effect across the whole market, and that while, in theory, "nothing should have changed" for those not directly impacted, he says ITG has "noticed that it's been a bit harder to trade those securities."

While the drop in commissions is pronounced in Europe following the implementation of Mifid II, however, it's part of a downward trend that has been in effect for some time, on a global basis. Part of the reason for this has been a shift from hands-on, manually-driven execution methods to a preference for electronic means of execution on the part of the buy side.

"Commissions have reduced because of unbundling, but, and this is very important, is that there has been a trend from the buy side to move from high-touch-style execution, which commands a higher commission rate, to low-touch, algorithmic execution, which commands a much lower rate," says Nogueira. "That trend has existed since before Mifid II, and it's not exclusive to Europe—it happens in the US and the rest of the world. There's a trend towards the electronification of execution, which means the full-service rates are becoming a thing of the past."

The movements, as represented by ITG's data, can make for uncomfortable viewing for brokers. In the UK, from a high point of 11.1 basis points for an average commission cost in the fourth quarter of 2012, the number has fallen steadily to its current total of 5.8 basis points. In the US, costs have steadily declined since the fourth quarter of 2009, at 9.8 basis points, to 3.5 basis points in the first quarter of 2018.

While this might be good news for the end-investor, in that basis points saved on commissions paid to brokers should, in theory, mean more dollars in their pockets, it is having a pronounced effect on the sector. "Overall, there's been less of a spend on commissions by asset managers. The less they spend, the more they keep for investors—every penny saved on a commission is one in the pocket of the end investor. That's pretty simple arithmetic, in that the net effect for the end-investor is positive. But there's a lot of cost pressure on brokers, and not every broker will be able to cope with this," Nogueira suggests.

The most likely to survive, he argues, are those who have long moved away from a reliance on high-touch models, and instead have invested in technology, through connectivity, platforms, and best-execution methods. W

IBM Rolls Out Upgrades for Watson Financial Services Portfolio

IBM has enhanced its regtech suite of services, including the integration of Armanta's platform after the May acquisition. By Anthony Malakian

IBM has announced improvements to several of its services that fall underneath the Watson Financial Services regtech umbrella.

Michael Curry, vice president of engineering for Watson Financial Services, tells *Waters*, that the thrust of these upgrades is centered on making it easier for users to both monitor risk and compliance across the enterprise, but also to be able to drill into that information without having to be a risk or compliance expert.

"You really want to manage risk and compliance everywhere in the company at all times. So one of the key elements of what we're doing is trying to lower the bar so that it's not just risk and compliance people, with those risk and compliance skills, who are continually tracking and monitoring their risk positions and things that might constitute a risk conduct or compliance issue, but it's everybody in the company," he says. "The only way to do that is by making the technology so simple and so approachable that [anyone] can use it."

One of the key pieces of this rollout is the integration of Armanta's technology, which IBM acquired last month. The Armanta platform is a big-data analytics engine that pulls in live feeds of data and information from historical databases, as well as from open-source platforms. With the integration, users can aggregate data across multiple systems for their risk and compliance needs, and couple that with reporting processes to streamline their regulatory reporting environment.

Curry says that, through this integration, they have the ability to pull together a real-time view of risk across multiple different risk factors, in order to better monitor market, credit and liquidity risks against a portfolio.

Michael Curry
IBM

"What we're able to do with that technology that was difficult to do in the past is to integrate the views of risk across multiple different dimensions and across multiple different product lines and be able to slice and dice that view of risk," he says. "This allows people to manage risk much more precisely."

OpenPages Upgrade

IBM has also released the latest version of OpenPages, which IBM acquired in 2010 and which serves as a governance, risk and compliance engine for banks. Through the release, users will be able to interpret complex issues and match them automatically to controls and obligations, as well as analyze losses, emerging risks and failed controls.

As new regulations come down the pike—whether upgrades to Mifid II's conduct requirements or brand new regulations taking effect, such as the General Data Protection Regulation (GDPR)—that content is fed into IBM's regulatory framework and is automatically broken down into obligations, then it's tied to policies and controls and tracked through issues within the OpenPages environment. This also includes public sources of information from speeches or opinion pieces given by government officials.

The aim of the solution is to automate some of the processes between digesting the laws and how those rules connect to internal policies, thus freeing up lawyers and compliance teams to better focus on specific needs in order to make better decisions.

"That's all stuff that has to be done manually and it requires fairly skilled people to do that work," Curry says. "Our goal is to provide cognitive assistance for that and to make it a much simpler process while providing recommendations from Watson on what makes the most sense as far as those mappings that might already apply to a new regulatory obligation."

In a release, it was noted that HSBC—an early beta adopter of IBM's new GRC technologies—used OpenPages 8.0 with Watson to scale up their users on the system to 15,000 employees across 70 countries, with over 400 unique users every 24 hours using the platform.

Finally, IBM also announced improvements for its Financial Crimes Insight with Watson platform, which features an updated user interface, tighter integration of due diligence data, and more advanced analytics and visualizations. This mainly focuses on banks anti-money-laundering (AML) and know-your-customer (KYC) needs.

"We're trying to make it easier to find the patterns of bad behavior, such as internal-conduct issues, payments fraud or insurance-claims fraud, or money laundering activity for human trafficking or organized crime," Curry says. "We take a machine-learning-based approach to solving those problems. We take a look at the transaction patterns and we look at external pieces of information and based on learning the patterns that represent fraud or crime, over time, we can get very accurate in being able to find new incidents of crime as they come in." W

Young Datasets, Inexperienced Talent Make Alt Data Challenging

The relatively nascent alternative data industry is creating challenges for asset managers, specifically when it comes to a lack of historical data and a lack of talent that can interrogate the data. By Anthony Malakian

Long before there were vendors selling satellite imagery and cellphone geolocation data to see how many potential shoppers were inside a store at a given time, interns were being sent to mall parking lots to count cars by hand. The hunt for outside information beyond ticker prices and corporate actions has been ongoing for as long as the capital markets have existed.

So the idea that alternative data is something "new" doesn't quite hit the mark. Rather, the amount of data that's available is growing exponentially, and while barriers to storing and analyzing these datasets are coming down, there are still challenges. It may not be entirely new, but it is certainly emerging into a more sophisticated form.

But as with any emerging growth sector, there will be growing pains. It's safe to say that the size of these datasets, the number of vendors entering the space, and the unstructured nature of these datasets are serious issues to be overcome, but it doesn't stop there. At this year's TSAM New York event, data professionals explained some of the other major barriers, including the problem of youth.

"A lot of alternative data has a very short history. Even bigger providers will give you three, four years, maybe 10 years," explained Dmitri Pekker, who was the head of alternative data at Och-Ziff Capital Management just before leaving the company recently. "If you start your own data scrapping project, even if you get historical data from a vendor, it takes a while for that data to become useful because you don't have the necessary history."

This problem is exacerbated by the fact that these datasets are rarely consistent. Year-over-year, as the amount of information pumped into these datasets changes and evolves. Sometimes by adding geographies or different types of devices, and sometimes because the technology used to collect this data has improved. That has to be modeled and adjusted for, noted Jason Inzer, chief data and technology officer at environmental, social and governance (ESG)-specialist hedge fund Sustainable Insight Capital Management.

"None of our datasets are older than 10 years at our firm," he said. "That limits your ability to perform backtests, perform correlations, and do all sorts of other kinds of tests. It's also evolving over time and the amount of data is growing, so you have to keep up with the changes in the data, as well."

Just as challenging, said Paul Booth, global head of data for BlackRock's Active Equities unit, is that not only is the space becoming increasingly crowded with data providers, but these providers don't always have an understanding of what a particular buy-side firm needs.

"It's still a very imperfect market. A lot of firms that have some datasets don't really understand what the price and the value of that information is," Booth said. "The infancy of the market is also demonstrated by when you see a vendor come in. On the buy side, firms are different so there's a difference between how a long-only fund can actually use the information

versus a hedge fund and a lot of vendors don't appreciate that; they think there's one price."

People Problem

Booth also pointed out that because manipulating massive alternative datasets is a relatively new discipline in the world of finance, it's quite challenging to find people who are both good at drilling into unstructured datasets, and also understand what a trading firm is looking for.

"The skills of investment teams is also a significant challenge," Booth said. "We have very different skill levels and the ability to interrogate the information and understand it [differs]. So a lot of time is spent supporting our fundamental investment teams: How do I use that information, how do I visualize content and translate a very complex information set—oftentimes which is commingled with other data—into something that I can understand and manipulate?"

Likewise, traditional quants are not always going to be able to be parachuted into these environments.

"It requires a blend of skillsets," Booth added. "We're seeing a lot of programs at universities training up people but the candidates who have a lot of skills in this area are pretty hard to find and development. So it does require you to onboard and invest in the development of staff. It's pretty tough to find people, though, with the right blend of investment understanding of data science, understanding how certain sectors work, and those types of things."

Inzer concurred, noting that his firm, which is small, has two data analysts that do most of its analytics. Even though they're quantitative and skilled, he said they're also not traditional data scientists. Booth jumped on this point, saying: "If you actually have the word data in your title, I think you'll get a phone call from somebody asking if you want to go and work for them."

> "You may onboard a dataset and it may not tell you anything interesting for 18 months. It's a misconception of the fundamentals people: They think they enter this data and it will be this crystal ball, it's going to be amazing on the first day, and typically that's not the case." **Paul Booth, BlackRock**

Patience

As has also been true in the machine-learning and blockchain spaces, the hype of the alternative data sector has vastly outrun actual results.

In a feature from the May 2017 issue of *Waters*' sibling publication *Inside Data Management*, Wesley Chan, director of stock selection research for Acadian Asset Management, explained why most firms quit on alternative data experiments.

"You're going to have to investigate 90 different things to get 10 that are good. A lot of people who aren't used to those odds will walk away in disappointment, thinking the whole thing is a failure—it's going to be a lot of waste," he said. "What disturbs me a little bit is how everyone's talking about every one of these things as if it's the next big thing. It can't possibly be that way. Most of them are not going to be useful,"

At TSAM, Booth said that firms have to be patient if they're going to look to extract value from alternative datasets and go into the process understanding that it will take time and money.

"I think one of the misconceptions in the market is, if someone comes to you with an alternative dataset and they think it is amazing, the trick is that it requires lots of investment and lots of time. You look at lots of different datasets and often the information is of no or very little value," he said. "Many firms struggle with scale, either from a budgetary or skillset perspective. So they'll try one thing or two things and the probability is that it will not meet expectations."

There is a lot of pressure, especially on the fundamental side, to attribute a return on investment to a dataset, noted Pekker. What's the P&L? He recalled one recent instance of a hedge fund going out and hiring a few data scientists from Silicon Valley, putting them into a separate "fintech" space away from the fund's Manhattan headquarters, but "the project flopped because what they were producing was completely of no interest to the investment professionals" at the fund.

This is where patience comes in, said Booth. While the results may not be immediately clear, over time they can help to prompt questions that never would have been asked or to confirm a thesis.

"You may onboard a dataset and it may not tell you anything interesting for 18 months," he said. "It's a misconception of the fundamentals people: They think they enter this data and it will be this crystal ball, it's going to be amazing on the first day, and typically that's not the case. But after a period of time, after 18 months, it may tell you something really interesting. More often than not, though, it won't scream out and say that you have to sell me or buy me—it's additive; it augments information." **W**

SGX–NSE Battle Could BECOME A LONG WAR

The Singapore Exchange and the National Stock Exchange of India are undergoing arbitration regarding the launch of SGX's new futures contracts, meant to succeed the outgoing SGX Nifty 50 suite of products. Wei-Shen Wong investigates what is behind the spat, and what it could mean for both countries' futures.

The current skirmish between the Singapore Exchange (SGX) and India's National Stock Exchange (NSE) could turn out to be a drawn-out war if an upcoming court battle fails to resolve the dispute.

The exchanges have been locked in a legal dispute for months. In February, the three Indian stock exchanges—the NSE, the Bombay Stock Exchange (BSE) and Metropolitan Stock Exchange of India (MSE)—were asked by the Securities and Exchange Board of India (Sebi) to terminate their existing market data licensing agreements with foreign exchanges. In response, the SGX announced that it was set to launch derivatives contracts based on the NSE's popular Nifty 50 index.

The contracts were slated to be listed on June 4, but the Bombay High Court ordered an injunction on SGX's new products being listed after they were challenged by the NSE. Indian authorities are concerned that foreign exchanges, such as the SGX, are benefiting from liquidity in Indian names that should be concentrated on domestic exchanges.

At the heart of the dispute is whether SGX is legally able to use the end-of-day settlement reference prices in its Nifty derivatives, information that it says is publicly available. The NSE claims the use of those prices violates licensing rights.

On June 16, Justice SJ Vazifdar, the former chief justice of the Punjab

> "If India does succeed in blocking SGX, the level of inconvenience created for foreign institutional investors, not to mention the perception that India is not open to multiple channel access, will impact decisions of organizations like MSCI, which reviews index allocations on a periodic basis."
> **Lyndon Chao, Asifma**

and Haryana High Court and the sole arbitrator in the matter between the NSE and SGX, laid out the timeline for the case going forward, in addition to directing the NSE to issue a letter to the SGX extending the termination date of the licensing agreement for its listed products. The extension of the license goes up to two months after the arbitration outcome is announced, which is anticipated to be sometime in February 2019.

"It depends on when the arbitration panel was constituted, but usually the timeline is around 12 months," for these matters, Nikhil Narendran, a partner at India law firm Trilegal, tells *Waters*. "However, we've also seen arbitration cases close in a couple of months as well, depending on how the parties push for it."

In turn, the injunction issued by the Bombay High Court on May 29 that has delayed the SGX from launching its supposed successor derivative contracts on June 1 will continue to be valid for two months after the arbitration award is declared. The arbitrator has given the NSE until August 3 to file its statement of claim against the SGX along with a list of documents, after which the SGX has until September 26 to file its statement of defense and file its counter-claims, if any, along with supporting documentation.

Then the NSE will have to file a reply to the counterclaim by October 30. A few days later, on November 2, the draft issues between the two parties will be circulated, and inspection will be completed by November 19. The arbitrator will hear the framing of issues and further directions on evidence on November 21.

"In the meantime, it's good news that both parties have found a way to give the market time to de-risk and de-escalate as well as to ensure a process based on merit is followed. That's a good thing," says a source familiar with the issue.

Complicated Issue

A source close to the SGX tells *Waters* that the exchange is doing what it can to ensure stakeholders—which now include a "complicated" set of people onshore in India—understand that the NSE's actions will cause "irreparable" harm to India's liquidity if clarity on the matter is not conveyed appropriately.

Yet the problems run deeper than just perception and reputation; even if this particular case is solved quickly, there could be lingering animosity. The source says there are two aspects to the whole debacle: One is in ensuring that market maintains its order, a responsibility the source says the NSE is ignoring by jumping on SGX's case so late in the game.

The other is that the abrogation of the licensing agreements by the Indian exchanges has attracted heavy criticism from the investment community. Index provider MSCI, in particular, has come out hard against the exchanges, requesting that they reconsider what it calls their "unprecedented anti-competitive action." MSCI recently said it will potentially cap the weighting of countries such as India, as well as Brazil, Turkey and South Korea in its indices, as a direct result of them limiting investor access.

The index provider also said the mandatory registration process for international investors required by Sebi is lengthy and burdensome. MSCI will consult its clients and announce its decision by December 31 of this year.

"The [decision] that the NSE took is upsetting because it is like it is calculated to cause maximum uncertainty," says the source. MSCI's announcement, in particular, has caused consternation among market participants who were already increasingly concerned by the nature of the fracas between SGX and NSE, says Lyndon Chao, managing director for Asia-Pacific equities post-trade at the Asia Securities Industry and Financial Markets Association (Asifma).

"If India does succeed in blocking SGX, the level of inconvenience created for foreign institutional investors, not to mention the perception that India is not open to multiple channel access, will impact decisions of organizations like MSCI, which reviews index allocations on a periodic basis," Chao says. "We don't live in a static world. It's very dynamic. MSCI has a duty to serve their institutional clients. This includes them reflecting client feedback on how easy or difficult it is to invest in India and that's going to inform and influence investors' decisions."

Data Copyrights

The initial court action was objecting to the new products the SGX was meant to launch on June 4. Instead, the Indian exchange filed for a pre-emptive injunction on the basis that the new products should also be licensed.

"They think the new products should also be licensed, so they have asked to hold back on listing the new products until they sort the licensing issue out on their end," the source adds.

The SGX source says the NSE claimed the new products were passing themselves off as Nifty 50 products.

"Nobody believes that, because the SGX was very clear in saying that the Nifty products would be delisted. NSE maintains that since the SGX requires a license for its new products, it should go through arbitration. The SGX is fighting whether there's even a right to have arbitration or jurisdiction. There is no jurisdiction because there is no possibility of the new products relying on any license," the source says.

However, a source close to the NSE argues the contract specifications of the new SGX India contracts are similar to the contract specifications of the existing Nifty and Nifty Bank futures contracts traded on SGX, with the only difference being in the description of final settlement price.

"The description of the final settlement price/reference value specified in the contract specifications clearly indicates to the closing value of Nifty 50 and Nifty Bank index, respectively, without referencing the index names," says the source.

The source adds that SGX's approach is "detrimental" to Indian markets as both the Indian government and regulators will not have any information access to or regulatory oversight of these products.

Shifting price discovery of Indian assets to "unlicensed products" in an offshore jurisdiction may also lead to illiquid domestic markets. This could result in lower foreign portfolio investment in Indian capital markets, which will adversely impact macroeconomic factors, such as the current account deficits of India, the source adds.

"A diverse category of participants is a must for maintaining good liquidity in the markets. Currently, Indian markets have well-diversified participation from retail investors, domestic institutional investors, foreign investors and prop desks. With the alternate liquid venue, the foreign investors may prefer to transact in offshore markets. This will lead to illiquidity in the onshore markets, thereby further impacting the efficient price discovery for Indian investors," the source says.

As to whether SGX's new products violate data copyrights, Nikhil says it depends on where the stock exchange is gathering settlement data from. "Let's say it gathers data from existing sources out there in the public, one cannot say it's copyrightable. But if it's obtaining data from a source that is unique to the source where it's coming from, then that will be a copyright infringement. To my mind and my expertise in dealing with [intellectual property] matters, if it's gathered from public sources it's unlikely that it will be protected under copyright."

Nikhil continues: "Now, let's say NSE is giving out this information to another party on the condition that they will keep it confidential or they won't let it out and that data gets leaked, then that will become a copyright infringement ... or more of a breach of confidence. Also, a copyright will exist in the form of how it's presented."

The source close to the SGX adds that the new products are based on other futures, and not on an index. "It's a well-understood method. According to US and European case law, the legal standing in what SGX is doing is impeccable. The NSE's claim that the new products should be licensed is a legal trick to cause uncertainty. Facts are not copyrightable, and it's not protectable under license. The final settlement price of a future that's publicly available is a fact," the source adds.

The point about SGX's plans being legally "impeccable" is debatable, although it is true that a similar case has been brought before US courts in the past.

In a 2002 court case between the New York Mercantile Exchange (Nymex) and the Intercontinental Exchange (ICE), where the former sued the latter for usage of its settlement prices in over-the-counter (OTC) derivatives contracts, Nymex claimed it held copyrights on individual settlement prices, and that ICE had misused its property for its swap contracts.

The judge in the US district court terminated the lawsuit in 2005 on the basis that Nymex's settlement prices were not protected by copyright law, and that ICE had not infringed on any copyright or trademark in referencing Nymex's publicly available settlement prices in its OTC derivative contracts. The US Supreme Court, in 2008, declined to hear further appeals.

A managing director of Asia-Pacific equities at a bank says this ruling could support SGX's case. "It seems there is a precedent with the

Nymex-versus-ICE ruling to support SGX that there is no intellectual property rights angle for settlement prices," the managing director says.

Given that the case was heard in the US, however, a New York-based attorney tells *Waters* that the judgment would in no way be binding in Indian courts. "It could certainly be persuasive, particularly if those exchanges want to do business in the US, but ultimately variances in Indian law will be what informs the judgment there," the attorney says.

Regardless of precedent and persuasive past cases, one fact is certain: As the SGX is not under India's jurisdiction, the injunction technically is not enforceable in Singapore. While the exchange could have decided to act in its own interest and gone ahead with the launch, it decided to go through arbitration with the NSE to iron things out and ensure "maximum" clarity for its clients, says the source close to the SGX.

The source adds that there has been a direct line of communication with the NSE, and the Indian exchange knew about SGX's intention to find a replacement product for its clients to transition to as the SGX Nifty 50 family of products is retired.

Prior to this debacle, both parties were in talks to build a trading link via Gujarat International Finance Tec-City (Gift City) similar to the stock connects between Hong Kong, Shanghai, and Shenzhen. "They wanted to build a connection in three to six months, and obviously this is not possible. These things take years to build. It involves different regulators, brokers, and the whole investment community. It just isn't possible. The process takes a long time," says the source.

Immediately after NSE decided to pull back on its data license, the SGX knew it had to find a continuity solution so its investors could continue managing their risk, so it came up with the new products—SGX India Futures, SGX Options on SGX India Futures and SGX India Bank Futures.

"Without this, what is the point of building a bridge to Gift City? There is no point if there isn't going to be any liquidity offshore to migrate onshore," the source adds. Others agree. Asifma's Chao says that India is sending mixed signals by shuttering its foreign licensing agreements while simultaneously trying to partner with foreign entities to attract investment.

"The more channels you build up, the easier it is for investors to gain access to your market. So, what India is doing is really counterproductive. It's trying to establish Gift City but at the same time the message it is sending to investors is that it's closing more channels than it is opening up," he says.

Saving Grace

Perhaps one thing India has going for it is the US Commodity Futures Trading Commission's (CFTC's) decision—through its Foreign Part 30 exemptions program—to provide US customers with increased access to the futures traded on the NSE.

In addition, Sebi has extended trading hours until 11:55 pm in equity derivatives, thus making Indian markets accessible across all time zones.

Asifma's Chao says it is fortunate for India that US funds are no longer prohibited to invest in India single-name-stock futures, due to a recent no-action letter issued by the CFTC.

"Typically, US funds have restrictions as to where they can or cannot invest and with this CFTC letter, they are no longer restricted from investing in India single-name stock futures. This helps remove a long-standing impediment for direct investment onshore," he adds.

Chao says the big picture in all of this is really what the clients want.

"In the end, it's all about them—the customers are always right. As much as the NSE is trying to push foreign institutional investors to come onshore—and they're trying to do this through Gift City—the fact is they simply haven't built a robust and an efficient enough market infrastructure for that to happen just yet. But the offshore channels are providing that access to foreign institutional investors," he says. "India is risking the allure of its own market by taking away that offshore access. Liquidity is just like water. The more you try to grab it, the more it will flee from you."

If NSE wins its case and the SGX does not get to launch its successor products to the SGX Nifty 50 family of derivative products, there may be some impact on foreign investment into India. Investors need convenient hedging tools to get comfortable investing in markets, he says.

As for the SGX, Chao says what it could do in response to a negative outcome is continue to find opportunities to arbitrage the inefficiencies of other markets and provide an alternative platform with alternative products that would provide easier access to investors to that specific market, with low trading frictions—even if that involves resurrecting failed initiatives. "If their newly launched India products get cut off, for example, maybe they can re-explore the Asean Trading Link," which connected stock markets in Malaysia, Singapore and Thailand until it was shuttered late last year, he adds. W

BAD BLOOD: Regulators Lose Patience with Mifid II's Dirty Data

Although Europe's revised trading rules have been in effect for over six months, transparency rules have had a difficult period on several fronts. Now it seems that regulators have run out of patience. By James Rundle

When European lawmakers first envisaged the new era of transparency in European markets, with information on the trades that take place on a daily basis freely available to the public, they didn't imagine that information would be locked away behind a Bloomberg terminal. Or posted for blink-and-you'll-miss-it time periods. Or simply presented as a static image. Yet, somehow, that's how new European reporting platforms seem to have interpreted the guidance.

Under the revised Markets in Financial Instruments Directive and Regulation, known collectively as Mifid II, trading venues and reporting platforms, such as Approved Publication Arrangements (APAs), are meant to make information on the trades that are reported to them available in a digestible format, almost immediately after the trade is executed. Yet that's not what many have done, choosing instead to stick, as lawmakers describe it, to the very narrow confines of Mifid's exact wording.

"Many APAs used to publish post-trade data in a way that made this kind of data basically useless as the data was either only available in a

> "Many of these practices applied by APAs when publishing post-trade data were at least against the spirit if not the letter of Mifid II." **Markus Ferber, European Parliament**

data format that could not be used by third parties or only available during a very short time period of a couple of seconds," says Markus Ferber, a German member of the European Parliament and the vice-chair of the powerful Committee on Economic and Monetary Affairs (Econ), which was substantially responsible for Mifid II. "Many of these practices applied by APAs when publishing post-trade data were at least against the spirit if not the letter of Mifid II."

Now, European authorities are taking action. In an update to Mifid II through a Q&A, which is regarded under the European lawmaking process as a legitimate phase of rulemaking, the European Securities and Markets Authority (Esma) came down hard on these practices in late May.

Spelling out, in detail, exactly what it expected from APAs and other reporting platforms, Esma said that reports must be available for at least 24 hours; require no third-party platforms or tools to digest; must be machine-readable, so as to promote systematic analysis of data from platforms; and be available on substantially the same basis as commercially reported data.

Esma, which did not respond to requests for comment, was unusually scathing in its assessment of current practices. Listing them one by one, the regulator said that many of the ways in which APAs currently disseminate data do not "meet the requirement to make information available to the public free of charge." That particular phrase occurs at least five times sequentially.

"I've not seen a European body, outside of some of the antitrust folks, be so explicit in their condemnation of current practices before," says one Brussels-based lobbyist. "Granted, it's the European Union, so they're not going to come out and say they're thoroughly pissed off, but they are definitively saying 'you are not in compliance and we are taking notice of this,' and if I were an APA doing some of this I'd be sweating bullets."

As a technical body with limited oversight capabilities, Esma cannot directly enforce the provisions of Mifid II. That, instead, falls to the National Competent Authorities (NCAs)—domestic regulators charged with overseeing their local markets.

"I think this is additional information that firms will have to take into account when working out whether or not their current arrangements are compliant and whether they may need to make a change," says Michael Thomas, a partner in the financial services practice at law firm Hogan Lovells. "But just because Esma has put out something clarifying their position, it doesn't necessarily mean firms need to jump to it immediately."

That should offer limited succor to firms, however, particularly those in the UK—people familiar with the Q&A say that the UK's Financial Conduct Authority (FCA), for instance, was heavily involved in the production of this update. Many of the major APAs are based in the UK and regulated by the agency. Most major APAs either did not respond to a request for comment or declined to comment for this article, some citing national holidays as a reason for not doing so. Those who did speak with *Waters* say that regulators might want to be careful what they wish for.

Before that, however, it's worth noting that this is not the first time that transparency requirements under Mifid II have been derailed.

Teething Problems

The problems with trade reporting began almost as soon as Mifid II went live, on January 3 of this year. In truth, there had been issues building up well ahead of that—multiple market participants told *Waters* that firms had run their final builds on software by December 20, 2017, confident that they would be ready to return on January 2 after the holiday break, ready to go, only to find that APA providers had issued emergency fixes over that period.

Then, on day one, Approved Reporting Mechanisms (ARMs) operated by NCAs went down. The Hellenic Capital Markets Commission, for instance, suffered an outage for several hours on January 3, as did the FCA's own

platform, built by French technology firm Sopra Steria. The problems were reportedly so severe that APAs were ordered to stop sending reports to the regulator until the system was restored.

Other problems continued with APAs. *Waters* reported in January that Tradeweb's APA, for instance, suffered a glitch relating to mapping issues with identifiers, which meant banks were unable to submit their transaction reports. Tradeweb confirmed that an issue did take place, but that it was fixed almost immediately.

But problems seemed to continue across the board, often requiring institutions themselves to implement patches to fix issues that were caused by hotfixes and other updates. An internal memo at one bank, written one week after Mifid II went live and seen by *Waters*, illustrates the depth of the problems some institutions continued to have, in many cases being forced to route orders only through systematic internalizers (SIs).

"We are currently mitigating these issues as best we can by encouraging the front office to only use SIs so that the reporting obligation does not fall on the bank. However, this is not a practical long-term solution," said one such memo. "We have been able to use the [multilateral trading facility] for deal execution; however, the lack of ability to test before go-live meant that it hasn't been without incident."

Other information suggests that banks were unable to submit full reports to some APAs for at least a week after January 3, and many suggested lodging written complaints so that they would have a record to show their regulators if and when questions began to be asked.

While teething issues with APA reporting were eventually ironed out, other problems with Mifid II's transparency regime quickly reared

Michael Thomas
Hogan Lovells

their heads, this time from Paris, at Esma's headquarters.

Under the double volume cap regime, which is supposed to govern the amount of trading in listed names that can take place in the dark, Esma is obliged to publish a list of those stocks that breach caps on trading on a single venue, or a percentage of trading in that name's entirety each month. Those that breach the caps are then limited to trading only on lit, or disclosed venues (with a number of exceptions).

However, Esma delayed the initial publication of volume-cap data for January soon before it was due. Once again taking an unusually combative stance, it blamed the quality of data received from exchanges and trading venues for this. The exchanges were—and according to some sources, still are—livid over Esma's reasoning, and reacted accordingly.

Esma eventually began publishing the data from February onward, but the episode was yet another bump in the road to Mifid II's painful birth, particularly as transparency had been repeatedly cited by lawmakers, regulators, and market participants as being at the core of the revised rules.

Despite this, the largest abrogation of the spirit of Mifid II, as Ferber says, appears to be the manner in which many APAs have gone about publishing the data they provide. Yet the APAs themselves say that, while they will comply with the new guidance from Esma, the new rules may end up having a detrimental effect on some corners of the market.

Unintended Consequences

Those APA operators that did respond to queries from *Waters* on this topic acknowledge that there have been bad practices among some of their peers. The updated guidance from Esma, they say, will go some way toward fixing this.

"So on one extreme, there were people who were making it difficult to obtain, or making it difficult to use thereafter—by giving a screen shot, showing a photo of the data that couldn't then be grabbed and used in spreadsheets or whatever—as data. It was just displaying the thing but not in a usable format," says Mark Kelly, director of professional services at NEX Regulatory Reporting, which operates an APA. "All of those things have been hammered out and the guidance is stopping people from doing that."

Others, such as Fredrik Ekström, vice president and head of Nordic fixed income at Nasdaq, say that deliberately making the data hard to access would be "counterproductive." He says Nasdaq already makes its trade data downloadable in a CSV format, directly from a dedicated website, but that the enhanced guidance should also assist in standardizing approaches among operators.

"From a customer perspective, it is important to have access to transparency data on equal terms throughout Europe. This fact makes

having the same interpretation among the different APA regarding how and what should be published even more important," he says.

Likewise, a Bloomberg spokesperson said it already publishes its data in line with the updated rules, and that little if any technical lift would be required to change its approach. Others also say the new guidance is a welcome dose of prescription, but that communication on this issue should work both ways.

"Regulators have been prescriptive about certain things and have left other areas vague—if real market transparency is to be achieved, then a certain level of prescription is required," says Virginie O'Shea, research director at analyst firm Aite Group. "Regulators also need to listen to the industry feedback on problems around certain data fields and items, and respond in an appropriate manner."

However, APA operators have expressed concern over at least one part of the updated guidance, in that Esma said simply providing a searchable database that users could query by identifier, such as an Isin, was not in compliance with the rules. Rather, APA operators should provide access to the full data.

This could hinder certain market participants, NEX's Kelly says, such as day traders and smaller shops that not only may just be interested in specific instruments, but who also may not have the technical nous to take in, format and analyze such vast quantities of complex data.

Virginie O'Shea
Aite Group

"Some APAs have tried to make things simpler for them by making a website available with search criteria, because they are likely to be interested in the price of a specific instrument, so you can put an Isin in, you can get all of the prices for the last 24 hours in that instrument, then you can download it to CSV," he says. "All of that is well within the reach of someone without specialist tools; the problem is, even people who have considered the different types of user and made these different platforms available, they are all being hit by this requirement that you can't filter the data."

Some of the guidance, he says, may therefore make it more difficult for members of the general public to access information on trades—ironically, the very people the provisions surrounding publication of data are designed to inform and protect.

Consolidation Equations

Much of the problem, experts suggest, stems from a goal that has been long in the minds of European regulators but has thus far proven elusive—a consolidated tape for fixed income that would be a centralized, standardized means of printing trade data across the bloc's markets.

People familiar with the regulatory agencies and Parliamentary committees who created Mifid II say that while this is true, the level of problems already seen with transparency and, as one European politician puts it, "deliberate unwillingness to engage with the process" on the parts of "some sections of the market," shows that a consolidated tape will remain a pipe dream for some time.

"This needs to be a project that the whole industry works on, not just those who want to control the process and make some money off it," the politician says. "But if the regulator is forced to turn around and say, 'Stop publishing JPEGs of trade data, guys,'—and I don't care how much you argue about what is and what isn't in Mifid II, you know that's not what we meant—you can see how we're awhile off getting agreement on something so complex."

While the APAs may have been temporarily cowed, however, one threat still remains—consolidation, but of a different kind. Publishing this data is not a revenue-generating model for businesses that, at the end of the day, answer to their shareholders first. If some are required to radically overhaul their systems, NEX's Kelly suggests, there may well be a few less APAs in the market this time next year.

"Having to redo their architecture to meet all of these criteria could actually make the difference and hasten the consolidation of the APA space. It might be that this isn't worth doing on a commercial basis anymore if people have to re-engineer their whole systems," he says.

Despite this, regulators and politicians seem unfazed—indeed, the general sentiment from those spoken to by *Waters* for this article was that Esma is simply doing its job, and fixing bad blood in the market's circulatory system.

"This will help bring actual market practices more in line with the intention of Mifid II," says Econ's Ferber. "With Mifid II we wanted to democratize access to post-trade data and I believe that the new Esma Q&As are a good step toward achieving that objective. Obviously, now national competent authorities have to make sure that those new Q&As are thoroughly enforced." W

With additional reporting by Josephine Gallagher and Hamad Ali

SALIENT POINTS

- Mifid II was meant to usher in a new era of transparency, but the revised rules have faltered on multiple fronts since January 3, 2018.
- In particular, APAs have proven to be a problem child, first through glitches during go-live, and now through the ways in which they publish data to the public.
- Regulators have begun to crack down on bad practices, and many see this as a warning of action to come if standards aren't raised.

After spending two decades in IT roles at HSBC, Peter Clark is just over a year into his new role revamping legacy banking architectures at Standard Chartered in Hong Kong. Wei-Shen Wong talks with Clark about these ambitious projects, and the influences that define the people who lead them. Photos by Alex Jung

Asia can be as tough

a market to navigate today as it was for Marco Polo in the 13th century. There are numerous language barriers, fragmented markets, and disparate regulations imposing differing agendas. The market is dominated by retail technology that drives innovation across all sectors of finance in the region. It's also a region where banks are largely running on infrastructures that are up to three decades old.

Peter Clark, chief information officer (CIO) for Greater China and North Asia (GCNA) at Standard Chartered, has navigated these waters for more than 20 years. From 1996 to 2016, he held senior technology roles at HSBC in Japan, India, and Hong Kong, starting as a senior developer and rising to COO for Asia-Pacific and later, COO for India. Then, at the start of 2017, he moved to Standard Chartered in Hong Kong, where he oversees technology and operations for Hong Kong, China, Taiwan, South Korea, and Japan.

Major Overhaul

Clark is currently in the middle of a project to overhaul Standard Chartered's IT platforms in GCNA, starting with its legacy core banking systems. It is a project that will require significant coordination across GCNA, and will draw heavily on one of the major lessons Clark has learned over the course of his career—the importance of people.

Clark manages a team of 14. Upon joining the firm in January 2017, he hired three new employees and promoted another internally, and now, he says, the team is stable and performing well. He counts his ability to build teams as one of his greatest strengths, and says that even after moving on to a new role, the team he leaves behind is stronger than it was before he joined. "I think I've managed some great teams, which weren't necessarily great when I picked them up," he says. "But when I left them, I always had a sense that I just left a department in great shape. I feel my success is largely measured on the basis of the strength of the team I leave behind."

TEAM Player

Peter Clark
Standard Chartered

To Clark, a team that is sustainable will be able to fuel itself on the work and values instilled by a manager even after that individual has moved on. In Asia, it is traditional for employees to stay with a firm for more than a decade—sometimes even an entire career—but as the markets have become more interconnected, the movement of talent has also increased.

This creates two problems. First, the shelf-life of platforms has dropped precipitously. What's cutting-edge today is in the trash just a couple of years later, so platforms from the 20th century look dated in this age of blockchain development and artificial intelligence (AI), and it's difficult to connect these platforms to those in other regions of the world. The second problem is acquiring and retaining talent. The hunt for talent has always been a challenge, but it has been exacerbated in Asia because it's difficult to attract top people to work on core-banking projects. This is where Clark's background, and his outlook on the human factor, come into play.

The Accidental CIO

Although Clark's talents would seem to point to leadership roles in financial technology, he landed in the world of banking by chance—his background and training is in electrical engineering and IT. For the first 10 years of his career, he worked as a software engineer at several IT companies, initially stationed in Denmark and then later in Japan. Had his career in IT not worked out, and had he wound up in banking, he says he would probably be doing something related to his main personal interests—science, history, and travel—or perhaps something relating to exploration and mining.

Career decisions made by people joining the IT ranks are different from what they were when he was in university. It is increasingly common for a top technologist to join a startup rather than a prestigious bank or manufacturer. "When I graduated, a lot of my peers were joining graduate programs in the big companies," he explains. "But now I'm seeing more and more graduates leaving university and creating their own startups or joining one. People are now more prepared to take risks."

But Clark says his chosen path taught him early on about the value of people and teams. While at his first job, in Copenhagen, he was assigned to work alongside Eric Hojsted, a Danish engineer who Clark says is the best technician he had ever seen because of his ability to read code, debug binary code, reverse-assemble code, and understand incredibly complex logical problems.

Hojsted opened Clark's eyes to the possibilities and capabilities of technology—and how individuals can inspire others. This extends to other influencers in his life. "I learn much more from people like Jeff Schulze [the previous group chief of staff and CFO for technology and services at HSBC, and Clark's former mentor], and Eric than I ever would from reading a book or taking any course. Watching these people in action can be very inspiring," he says.

In 1996, when Clark moved back to the UK to settle down, he began looking for opportunities as a database programmer or a contractor working on Unix systems and databases. HSBC was the first firm to offer him a job. He started at the bank as a senior developer contractor, before taking a permanent IT executive role some four years later.

But rising to the highest levels of the bank didn't come naturally. A self-described introvert, Clark had to overcome his natural shyness in order to move into larger leadership roles. He built himself up, presenting to five people, then to 10, 20, and 100, and now he can stand up in front of

1,000 individuals and connect with them. To deal with the daily challenges of running a bank's IT, Clark says he relaxes his brain sometimes—his preferred outlet is running—rather than dwelling on the next hurdle to be conquered at the office. "The work things I worry about are probably the same things all CIOs worry about: cybercrime, systems stability, and whether or not we can keep up on the digital transformation," he says. "Can we be fast enough? Can we be radical enough? These are all the challenges and I would guess they'd be quite common for all CIOs."

These challenges are not overcome by being an island—it's a team that moves the organization forward. This is a new challenge for Clark, but with the right people in place, it is one he is looking forward to conquering. "I often think about customer experience, enhancing the digital customer journey, protecting our customers' data, protecting the bank from cyber criminals, keeping our platforms running all the time so our customers can interact with us whenever they want," he says. "These are the kind of things as a CIO that I have to focus on. I've also got a great team to help me do that."

This is where Clark's Standard Chartered journey begins. With the building blocks now in place, he says he hopes 2018 and beyond will see the group revolutionize the bank's capabilities.

"I think the challenge is to get the balance right, and the better CIOs will be able to do more in those areas than perhaps the less-able CIOs. You need to know where the balance is and how it changes over time and then maximize everything you can, but at the same time, not go to one extreme to the detriment of everything else."

The GCNA Challenge

As part of his role, Clark is in charge of operations in five countries: Hong Kong, China, Taiwan, South Korea and Japan. Though each country has its own set of challenges, he says they are similar in terms of being tech-savvy countries with well-educated workforces. The key is to tap into those talent pools.

Hong Kong and Korea are Standard Chartered's biggest markets of the five, followed by China, Taiwan, and Japan. The bank has different ongoing projects in each country. For example, in China—which he views as "unique" in the region because of the nature of the domestic competition between banking technology platforms—he hopes to see better digital customer onboarding using biometrics, whereas in Japan, the bank is looking closely at robotic process automation (RPA). In Korea, Standard Chartered is developing peer-to-peer (P2P) payments, biometrics and improving its AI capabilities, while in Hong Kong, it is working on distributed-ledger technology (DLT) and AI.

The bank is not working in isolation. Last year, for example, Standard Chartered completed a proof-of-concept (PoC) to demonstrate the applicability of DLTs for reducing risk in trade finance, together with the Bank of China, Bank of East Asia, Hang Seng Bank, HSBC, and Deloitte Touche Tohmatsu. The PoC platform for banks, buyers and sellers, and logistics companies demonstrated the application of DLT in digitizing manual processes through prototype smart contracts for open trade financing. The PoC was started to test if different banks were able to link their trade systems with each other to prevent fraud. This year, the collective will work on commercializing the initiative.

The bank is working on more projects, but the one that sticks out for Clark involves open-banking application programming interfaces (APIs), an area he hopes to see accelerate across the region, starting with Hong Kong and Taiwan. Clark says the bank is working with global technology teams and also observing what happens with the Open Banking initiative and PSD2—the revised Payment Services Directive—in Europe. "Some banking groups are trying to define standards, particularly around payloads and APIs. I think when that happens, it's going to be a big deal," he says. "In Hong Kong, at least, the Hong Kong Monetary Authority has signaled interest in it, as part of its smart banking initiative. We just need to make sure we're ahead of the game on that."

Legacy Platforms

One of the biggest challenges currently facing banks is competition—not just from other banks, but also from fintech companies, which are proving increasingly disruptive and agile when it comes to innovating and quickly developing new digital solutions. And it's not just the fintech startups encroaching; banks are now competing against big tech companies like Google, Facebook, Amazon, Alibaba, and Tencent, which has started reselling wealth-management products, something that has traditionally been a core business line for banks.

Clark says this is particularly challenging in Asia-Pacific. "The strength of some of the tech companies here is impressive, particularly in China, Korea and Japan. For example, [we're seeing it] with peer-to-peer lending with the likes of Lufax, and then we have Alipay and WeChatPay," he says. "These are the biggest challenges for the traditional banks—to compete with these guys that don't have the legacy infrastructural systems or products or distributions to worry about and can build out a new banking platform for the future."

One of the biggest IT projects Clark has been tasked with as CIO for GCNA is to review, upgrade and potentially replace some of the bank's legacy core banking systems across the region and bring some of Standard Chartered's older platforms up to date to ensure they can operate in the coming years.

Many of these systems used by banks across the region—not just Standard Chartered—are comparatively prehistoric. As users now expect all services to be available anytime across all channels, these infrastructures must become more agile, requiring a complete review of the firm's platforms across GCNA.

The silver lining, perhaps, is that Standard Chartered is not alone in this scenario. Many other banks in the region are in a similar situation, as are exchanges, which have been rolling out upgrades to their trading, clearing and settlement platforms, and even undertaking complete overhauls of their existing infrastructure—in some cases, exploring tools like distributed ledgers to achieve this.

Clark says replacing legacy core banking platforms is one of the most difficult IT projects a bank will ever undertake. "It's like changing the engine of an aircraft while it's still flying, and it's probably one of the most complicated IT projects the bank has because it's always quite easy to add things, but it's difficult to replace things. These tend to be multi-year projects," he says.

Refreshing these platforms will benefit both retail and institutional clients at the bank by providing more efficient and effective services, he adds.

Balancing Act

As the CIO of a capital markets firm in a fragmented region, Clark has to juggle several responsibilities. "On one side, you've got cost. You want to do things as cost-effectively as you can, which doesn't always mean as cheaply as you can. You have people to look after, and you need to attract the best talent. You're trying to manage risks as best as you possibly can. You're trying to deliver great things for your customers, and you're trying to do it very quickly, as well. Sometimes not all of these are naturally aligned," he says.

And sometimes that balancing act involves trade-offs. For example, new and innovative projects can carry higher levels of risk. And CIOs who want to hire more talented people must be prepared to pay more to attract and retain them.

Clark's daily balancing act includes looking at service quality key performance indicators (KPIs), risk management KPIs, and digital project plans, as well as spending time building, mentoring and training the team. Juggling these, ultimately, informs his philosophy of what it means to be an effective CIO.

"I think the challenge is to get the balance right, and the better CIOs will be able to do more in those areas than perhaps the less-able CIOs," he says. "But that balance may well change over time. In a recession, cost matters more than it does if you're in a boom. In a labor market that's very static without many opportunities, people retention is less of a worry. You need to know where the balance is and how it changes over time and then maximize everything you can, but at the same time, not go to one extreme to the detriment of everything else." W

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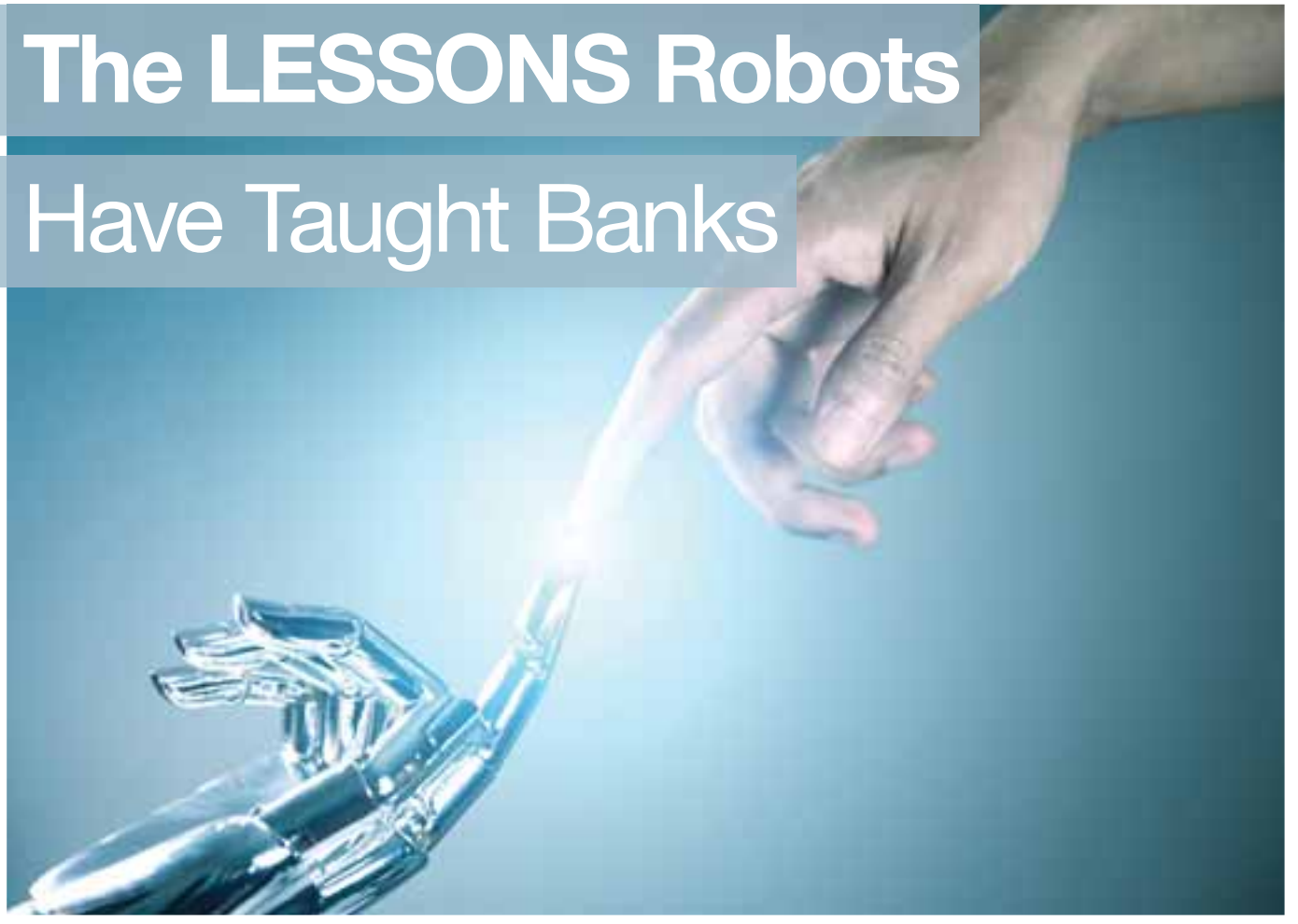


Robotic process automation offers the banking sector many benefits, such as time savings and a clear audit trail. However, as some case studies show, those adopting the technology must consider its limitations. By Hamad Ali

The General Data Protection Regulation (GDPR), which took effect at the end of May, brought a new regulatory headache—and a stiff workload—for banks across Europe. The potential increase in staff hours needed to deal with customer requests for data being held served as an added cost many would have dearly loved to avoid.

One bank that found a solution to the conundrum was Nordea, which turned to robotic process automation (RPA). "It was quite difficult to estimate how many GDPR requests we were going to get," says Ingrid Kristensen, the project manager for GDPR at Nordea. "I know the GDPR project [at Nordea] did some surveys with existing customers asking if they would be requesting access to their personal data. But it can be difficult for customers to answer that as well [knowing] that it will also be influenced by the media attention that this would get, and how other companies would handle it as well."

Nordea's Robotics Centre of Excellence automated two aspects of the GDPR regulation: customers' rights to access data, and their right to data portability. When a customer reaches out to the bank and requests an overview of their personal data that Nordea holds, that triggers a robot, of sorts, that finds the relevant applications where customer data is stored, collects the information, and then combines it

> "In terms of time savings, when we were doing this manually before robotics was introduced, it took anywhere from one to three hours to process one customer. A robot can do this in a matter of minutes, so the actual manual labor that is left over here is just a couple of minutes." **Ingrid Kristensen, Nordea**

into a template for an overview. Then a staff member in operations reviews and sends out that requested information to the customer.

"In terms of time savings, when we were doing this manually before robotics was introduced, it took anywhere from one to three hours to process one customer. A robot can do this in a matter of minutes, so the actual manual labor that is left over here is just a couple of minutes," says Kristensen.

Teaching the Robot

While RPA promises a lot of benefits for banks such as Nordea—including time savings and a clear audit trail—to make the most of the technology it is important to be aware of its limitations

Nordea has been working with RPA since 2015 and has robotized almost 300 processes. One of the lessons the bank learned when planning for the GDPR project was that access rights are time-consuming and can cause delays. Kristensen says it is important to build a buffer for this into the schedule.

Another lesson included getting the close involvement and commitment of key stakeholders and process experts early on. "To prevent scope creep, focus on developing a minimum viable product (MVP) first and then discuss additional nice-to-have features after the initial launch," she says.

Banks have started looking at RPA seriously over the last five years or so, with the last couple of years seeing a massive acceleration in development and deployment, according to Vinit Sahni, CEO of artificial intelligence (AI)-powered platform provider Arkera. Sahni, who was previously the head of the fixed income and foreign exchange (FX) sales divisions at Goldman Sachs, and had stints at Bank of America Merrill Lynch and Deutsche Bank, has been part of many committees over the years that have decided when people had to dismantle certain processes and bring in automation.

"There has been a lot more seniority that has come on the technology side: CIOs, the whole digital strategy, incubators—if you notice all of this has led to bit of a cultural change to break down some of the barriers. I think RPA can only be brought about on a scale if you bring in the infrastructure and you create the right environment for it," he says.

Indeed, not all tales about RPA are quite that romantic. During the 2017 Sibos conference, held in Toronto, Matthew Davey, a managing director at Societe Generale Securities Services, spoke about being a "bit disillusioned" with the experience of RPA.

"When we talk about AI, most of what we mean is machine learning, but we've also done a lot of work with robotics, with RPA recently," he said at the event. "I have to say that we've been a bit disillusioned with that experience. When I talk to people internally, there's been a lot of negative comment about RPA."

Edward Sander
Arachnys

Talking to *Waters* for this story, Davey says some of the early tools they used didn't perform the way they thought they would.

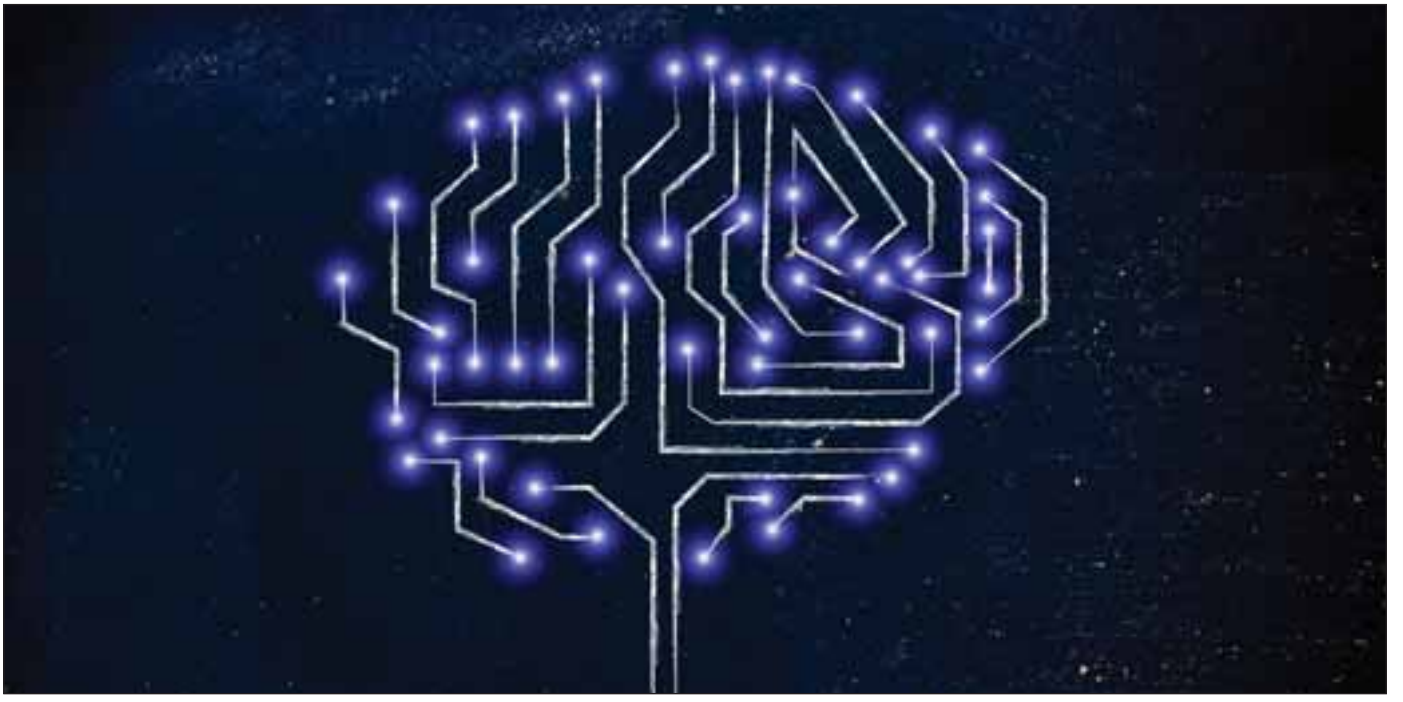
"There have certainly been some mixed experiences with it. And part of it is because it has the word 'robotic' in there—people picture a humanoid robot, and that is not helpful to RPA as that creates some unrealistic expectations from people that this robot will be incredibly clever and capable," he tells *Waters*.

SocGen uses RPA in operational processes such as reconciliation and generating reports. But as Davey notes, they are focused on relatively simple processes. "If you try and apply it to a complex process then that becomes very difficult," he says.

Davey says RPA may not be a good match in the bank's valuation process for refunds, a very complex process with several hundred pathways. "When you look at how you might parameterize that with RPA then you end up spending a lot of time creating the parameters to try and capture that process," he says.

Then it is worth asking whether the process is too complex, says Davey, and whether there is an off-the-shelf package already available to do this from a vendor. For an invoicing process, for example, an invoicing package will probably get the job done without the need for investment in RPA.

One of the obvious benefits for banks is the potential savings in terms of getting the RPA to do the work of human staff. However, there are also added costs in terms of staff who can understand the technology. At Nordea



there is a team of controllers that works with monitoring the processes.

"We see that as the number of processes we have over time is increasing, then the amount of development work that goes into maintaining these processes will also increase," says Nordea's Kristensen. "For instance, if an application is updated or changed or if we switch to a different application then every robot that would interact with that application has to be adjusted. There is definitely a maintenance cost but we try to factor that in when we do a business case analysis and a feasibility study for each new process that we want to robotize."

Another area to be careful about with RPA is that it's a very specific tool. For example, at SocGen, part of one of its operational processes was defined in Italy, and when it was deployed in France it didn't work properly. The reason for that was they were using an Italian keyboard in Italy and a French keyboard in France, and because the keys were in different places in the keyboard with different mappings, the RPA as parameterized didn't work.

"RPA is a highly specific tool," Davey says. "And you need to think about those kinds of details to make sure that you define things down to a keystroke level because it is literally replacing what a human being will do on a machine."

It's not all problems, of course—the use of RPA can also expose bad practices on occasion. Davey cites one bank that deployed RPA and upon looking at the statistics after a month or two of operation, found that it wasn't working as they expected. When it looked into the details, it found that the people who were previously doing the job were not doing it completely correctly, whereas the RPA was.

Davey says he believes that RPA has great potential going forward, especially when combined with machine-learning processes. He predicts a big increase in RPA adoption in the next few years, and thinks RPA will be at the front of the queue because of the cost-reduction potential, the return-on-investment (ROI) and being able to get a full audit trail of everything that is happening.

Vinit Sahni
Arkera

Legacy Integration

Looking back over the past three decades, many of the same platforms Davey was working with years ago are still in existence today, he says. The challenge of legacy technology is probably one of the main things that hasn't changed because of the volume of business that is processed on those platforms, he notes.

Deploying RPA onto legacy systems can produce fairly immediate benefits, he says, but it can also make it harder to make changes to the underlying systems. "There is a bit of a double edge to it that makes it harder to make those changes. Because we talked about how they are so specific, if you start to change systems, then your RPA will fall over, so that is an important dynamic that people need to think about," he says.

Arkera's Sahni mergers and acquisitions (M&A) present another challenge. As the M&A environment heats up, and even as banks try to break down siloes and bring together business units or acquire new lines of business, complexity is added into the system and processes can get entangled.

SALIENT POINTS

- For complex processes—for example, where setting the parameters can take a long time—RPA is unlikely to be a good match. In addition, the prevalence of legacy systems and a 15- to 20-year-old cultural mind-set have held back banks from enjoying the benefits of RPA.
- RPA is a highly precise tool that needs to be defined down to a keystroke level, often making it fiddly and problematic for use cases that require a certain degree of flexibility.
- The fusion of RPA with other forms of AI is where many believe the sweet spot lies.

Matthew Davey
Societe Generale Securities Services

However, Nordea's Kristensen takes a bit of a different view. She maintains that the issue of legacy systems is conquerable. "We have had a very good experience working with the legacy systems in Nordea. Especially if they are an old mainframe system, then that is quite straight forward to combine with RPA," she says.

Much of the success—or failure—of projects also depends on the task they're trying to complete, which may require radically different understandings of what RPA is and how it applies to a specific business process, rather than being a one-size-fits-all template.

According to Edward Sander, president of Arachnys, which provides RPA for know-your-customer (KYC) processes, understanding the linkage between RPA and machine learning is important from a financial-crime perspective. He says that what most RPA technology does is simply enable an organization to automate data collection and transposition into a data field, and that is usually within some type of template or data schema within an application.

"That is really all they do," says Sander. "It is a very mechanical activity. It does provide operational benefits and standardizations and consistencies. But it is a commodity benefit. I would venture to say that you are going to see something like a hype-cycle curve where eventually the benefits that RPA technology can offer a financial institution will reach a plateau. What is far more important and why machine-learning investments today are going to reap significant benefits is because they help to automate the actual investigative process, not just information collection and information assembly."

It is important to draw a distinction between RPA and machine learning. RPA is a form of AI, but it is vastly different from the discipline of what would be considered true machine learning. The processes that are best suited to RPA are those that involve structured data with the user looking for a single answer. On the other hand, machine learning is typically using large amounts of unstructured data and it is more about inference-based assessment, producing an answer with probability rather than concrete results.

But he also says they work very well together when combined. "They are very powerful complementary technologies. And that is probably one of the biggest changes since my comments at Sibos is that we are seeing more of them working together—RPA tools with AI components in them," says Davey.

He gives the example of RPA helping with data collection for AI, in terms of collecting the data and getting it ready for the algorithm to process. Conversely, AI can also create data input for the RPA. It could be an AI image recognition for a birth certificate, a KYC check, or using natural language processing from a customer-service chatbot that picks up input for the RPA.

The challenge is to make sure they are properly integrated into an internal ecosystem so the technologies play well together. "Because often you are dealing with deploying multiple tools, it becomes a slightly more complicated deployment but the benefits can be a lot greater if you can get them working together," he says.

Nordea Life & Pensions Norway has built a robot using a combination of machine learning and traditional RPA to handle disability insurance claims. "They can get the handling time of these claims down from 75 days to a matter of minutes," says Nordea's Kristensen.

The March of the Robots

Interestingly, according to a recent survey of financial services professionals by Broadridge, 80 percent of respondents are at least assessing the value of AI, machine learning or RPA initiatives.

"How do you create the right ecosystem in the bank that can absorb these technologies from the outside? You can't create all these inside. It is going to be legacy systems, and there is a 15- or 20-year-old culture there. So the only way you can do it successfully is if you create the right ecosystem that encourages outside technologies," says Arkera's Sahni.

Kristensen echoes this point, noting that it's easy to get lost in siloes, hence why it's so important to be holistic when developing a plan for the entire bank.

"We still have a long way to go and it has definitely been a learning journey," says Kristensen. "I think what we have learned is that it doesn't matter how good you are in a robotics team within an organization, or how sophisticated you are within that little team; you still need to spend a lot of effort in educating the rest of the organization. Because as one team within the organization we are not able to identify every opportunity in a bank, so we need the whole bank to work together here. That has taken some time and it is still an ongoing process to educate the bank on this." W

CODE RED: Trading Firms Turn to AI for System Stability

Blackouts. They are a company's worst nightmare. But now, thanks to the emergence of artificial intelligence, financial services firms are exploring new ways to mitigate outages. By Josephine Gallagher

The London Stock Exchange, Deutsche Börse, Euronext, the New York Stock Exchange, Cboe Global Markets, the Miami Options Exchange, Nasdaq—they've all suffered technology issues in the past few years, because when it comes to operating the technology powering the world's markets, there is one constant truth, and it's not one that anyone likes to admit: At some point it's going to go down.

"Failures of complex platforms will always happen," says Wolfgang Eholzer, head of department for cash and derivatives trading IT at Deutsche Börse.

There are litany of reasons why system outages are becoming increasingly more difficult to overcome. Some of the challenges in recent years derive from adoption of complicated trading mechanisms and the data explosion that has consumed the industry.

In many cases trading platforms are under pressure to process unprecedented numbers of transactions, operate faster than ever before and handle greater volumes of traffic. Eholzer says that there two primary areas to consider when it comes operating complex systems: the infrastructure, and its applications. In other words, all hardware technologies should have the capacity and resilience to withstand its intended functionality.

That doesn't always happen, of course. As exchanges and trading venues scramble to innovate and

"This notion of predictive maintenance is one of the key ways that artificial intelligence can really help reduce the number of outages. There are lots of things where you can look at history, historical failures or historical events. You could even do the same thing for cyber attacks." Sumit Gupta, IBM Cognitive Systems

create products according to client demand, or add new infrastructure to support new activities, this is often being bolted on to decades-old technology. The problems are, quite literally, stacking up.

"When you are putting these new capabilities into existing systems that are relatively high-speed, it just introduces all sorts of risk and all sorts of complexity that is really difficult to deal with," says Lev Lesokhin, vice president of strategy at software analytics firm Cast, which specializes in identifying misbehaving systems. "Traditional approaches to dealing with that complexity for software development shops has been testing, so trying to test to make sure you don't have any glitches or problems. But testing has gotten really hard to do because with newer architectures you have parts of your systems that are always running in production."

Glitches may be unavoidable, but the problem is particularly acute in finance. A trading platform going down, a data feed going dead, or an exchange's datacenter short circuiting can cause market turmoil—and the potential loss of significant sums of money—for both retail and institutional investors, alike.

Therefore, given the complexity of modern trading machinery, how can firms continue to improve and analyze their systems for potential problems while keeping their markets running? For some, the answer lies in emerging technologies—in particular, artificial intelligence (AI).

The All-Seeing AI

AI is being broadly developed—and sometimes, actually used—in multiple areas across the financial markets. In many instances, smart tools have shown to be effective at detecting behavioral patterns and fine-tuning market surveillance operations.

More recently, AI has proven to be a valuable tool for mitigating system outages by using historical events to predict future failures or spot-check malicious activity. Up until now, firms have built resilient hardware and have commonly used simple rule models to identify patterns of abnormal behavior to create an alert. Sumit Gupta, vice president of AI, machine learning and high-performance computing (HPC) at IBM Cognitive Systems, says there has been a shift toward using more advanced technologies and using them to bolster existing maintenance controls.

"This notion of predictive maintenance is one of the key ways that artificial intelligence can really help reduce the number of outages," he says. "There are lots of things where you can look at history, historical failures or historical events. You could even do the same thing for cyber attacks."

Because IT systems are usually complex and siloed, it can be challenging to monitor performance and security activity using basic technologies. Enzo Signore, chief marketing officer at FixStream, a provider of AI technology, says there are three fundamental stages to minimizing outages: correlating data across entire IT stacks, applying machine learning algorithms to detect historical patterns, and using that information to create an alert to prevent future glitches.

"The machine correlation is learning about every single fault, alert, log or any sort of abnormality that happens across the entire stack," he explains. "We'll see the sequencing of those events, what starts first, what is next and what is after that. And once we can connect them one by one, we can actually see that this is a pattern and this is the level of probability that a particular event will happen, and then we can tell the operations team."

In many ways, this is similar to how other industries have been deploying machine learning to gain a measure of predictive analysis for where and when something along the tech stack might buckle or break.

Indeed, financial services firms could take a lesson by looking beyond terra firma, and into outer space, where bodies like the European Space Agency (ESA) are tasked with monitoring the health of thousands of different systems that they can't physically reach to repair.

One of the ways that the ESA accomplishes this is through machine-learning algorithms that monitor the health and performance of individual mechanisms within deep-space satellites. The algorithms can also use

> "For us, an outage can affect many firms or even all firms at the same time, and so it's not just about lost revenue for the day, it's the reputational impact and the potential for future lost confidence and volumes."
> **David Howson, Cboe Europe**

pattern analysis logic to pick up on potential anomalies far quicker than a human analyst might be able to—if they could at all.

The ESA is now partnering with a vendor, Mosaic Smart Data, in order to gauge how this technology could be applied to financial markets. While it has applications in surveillance, it may also be applicable to other areas, such as monitoring globally dispersed infrastructure and systems.

"These machine-learning models spot potential technical issues on satellites before things go seriously wrong by learning what 'normal' behavior is and then spotting anomalies in the data from the tens of thousands of telementary parameters," says Matt Hodgson, CEO and founder of Mosaic Smart Data. "The difference is that satellites have tens of thousands of inputs, and catching something before it goes wrong can save millions of dollars in damages. In the markets, there are millions of data inputs, but catching something earlier could save hundreds of millions, possibly even billions."

Using AI powered platforms can allow firms to have a hawk's-eye view of IT operations and domains. In this case, a map of the IT environment can be formed, through what FixStream's Signore describes as the discovery of every single element, including the likes of routers, switches, devices, servers and containers. Alerts can then be allocated to incidents that have formerly led to failures, such as an overheated hard drive, a struggling fan or unauthorized entry.

However, AI technology is just one layer of surveillance used to strengthen a multifaceted strategy for reducing the likeliness of downtime. In many cases, AI is just one tool in a box of many.

Regulatory Imperatives

The need to develop new methods of testing infrastructure comes at a time when regulators and the public are increasingly focused on outages at exchanges. When Nasdaq suffered a major outage in 2013, for instance, which was triggered by problems at both the New York Stock Exchange's (NYSE's) Arca venue and software code flaws in the Securities Information Processor it runs, the White House was reportedly receiving up-to-the-minute information on the problem as it unfolded. Regulators have also introduced new rules—and penalties—for firms that allow their systems to go haywire.

David Howson
Cboe Europe

Under Regulation Systems Compliance and Integrity (Reg SCI) adopted by the US Securities and Exchange Commission (SEC) in 2014, trading venues and clearinghouses must reduce the occurrence of systems issues, improve resiliency, and "enhance the Commission's oversight and enforcement of securities and market technology infrastructure." In March, the SEC flexed its muscles by fining NYSE $14 million for what was described as "several disruptive market events," stretching back to 2014, the first such fine under the provisions of Reg SCI.

And across the Atlantic, January 3 saw the implementation of

the revised Markets in Financial Instruments Directive, through which EU regulators clamped down on trading venues performance and their ability to function without "failures, outages or errors," a provision outlined in Regulatory Technical Standards 7.

David Howson, COO of Cboe Europe, emphasizes the importance of performance and reliable infrastructures, because outages are costly on many different levels. "For us, an outage can affect many firms or even all firms at the same time, and so it's not just about lost revenue for the day, it's the reputational impact and the potential for future lost confidence and volumes," he says.

In recent years the industry has seen a number of prominent system failures across tech heavyweights and financial services firms such as Bloomberg, Amazon, Nasdaq and, most recently, the London Stock Exchange. Many of the reported reasons for outages include technical glitches or software issues. But those are just a few in a long list of threats. At face value they seem relatively simple, but in reality the modern day data and technology challenges are much more complex.

"The more complex and dynamic the environments, the more challenging they are to manage," says FixStream's Signore.

Wolfgang Eholzer
Deutsche Börse

Enzo Signore
FixStream

SALIENT POINTS

- IT systems are under pressure to cope with modern-day trading and volumes of data, with glitches, downtime, and outages proving to be frequent occurrences.
- As US and EU regulators weigh in on preventing disruptions and downtime, a regulatory imperative has been added to reputational concerns for such problems.
- Firms are turning to AI technologies to detect patterns and predict future system outages, as systems become ever-more interrelated and complex. But AI cannot be a substitute for proper planning.

Code Red

Not all outages are due to system components simply failing, of course. A well-known frequent cause of downtime are traffic spikes, where users overload the web platform at unanticipated times of the day or week. Other such causes relate to software issues, bugs or hardware failures including overheated central processing units, device malfunctions or damage to connecting network cables.

Further complications can arise with the adoption of hybrid storage models where applications are run across third-party cloud services and proprietary datacenters. In situations like these, it can be difficult to pinpoint where a malfunction originated—whether it occurred in the cloud, the firm's private datacenter or its internal system.

"That's a very challenging environment because you're using different tools and you don't know the correlation between the application running in the cloud and your own prime infrastructure," says FixStream's Signore. "Also, you don't know if the application in the cloud is running on top of your routers or switches or not, at any point in time."

Limitations also exist in the use of AI. While it can be beneficial as a predictive technology, or in a monitoring capacity, much of the grunt work and heavy lifting involved with mitigating the effects of glitches still lie in tried-and-tested methods.

This can include scenarios where enough preparation and foresight have been in place to ensure graceful failures, or those when a piece of hardware fails but all data and applications migrate to another server for the purposes of minimizing disruption. In other words, says IBM's Gupta, have a plan B—and that B stands for backups.

IT systems are the lifeblood of any modern firm and key to their survival. In that case, many financial services firms are dependent on mission-critical systems, where IT is built to be highly resilient, but in the event of a failure, backups are readily available. This usually involves doubling or tripling up on hardware infrastructure, including multiple servers, power supplies, and devices.

"If hardware fails, most real-time-mission critical systems have a redundant backup waiting to take over for the primary in the event of an outage and that is certainly the case throughout our infrastructure," says Cboe's Howson. "When hardware failures do occur there may be some interruption to service but the resumption of service is typically very quick."

In extreme cases, major institutions such as banks located in high-risk locations—vulnerable to natural disasters—are expected to have extremely resilient hardware. Gupta reflects on a time where he was shown an image of a Japanese bank following the aftermath of an earthquake in March 2011. The bank's datacenter and mainframe had both collapsed during the event, but its banking operations remained up and running as the connecting wires stayed intact.

Reliability of services is critical in situations where firms carry huge responsibilities over vast amounts of data and investor finances.

"I think if you are dealing with critical customer information or data—for example, your customers' money, whether it's my stock, whether it's my cash, whether it's my mortgages—[complete] failure is just not an option," explains Gupta.

Therefore, despite all of the promise of AI, failure testing is a crucial part of maintaining and safeguarding a systems integrity and remains one of the core methodologies targeting weaknesses.

"On the software side, there are always bugs as code of a certain complexity cannot be error-free," says Deutsche Börse's Eholzer. "As no software is error free, there have to be built-in mechanisms that deal with partial failures." W

Anthony Malakian

Voting > Complaining

Congress is the most powerful branch of the US government, and Anthony says it's about time that voters in America started caring about who represents them in Congress.

For the last 12 years, I've called the same Williamsburg, Brooklyn, apartment home. While many have been forced out of this neighborhood due to skyrocketing rents, I've been lucky enough to not have to move. As such, I've seen first-hand the transformation of this area—and, increasingly, that of neighboring Greenpoint and Bushwick—from one of struggling artists mixed with pockets of Italian, Hispanic, Polish, and Hasidic families, to one of well-to-do professionals and upscale shops and restaurants.

This region sits in New York's 12th Congressional District, which, after redistricting in 2013, also includes neighborhoods from the east side of Manhattan, parts of the west side of Queens, and Roosevelt Island. Democrat Carolyn Maloney serves as the district's representative in the US Congress and has been in office since 1993. In 2008 and 2012, voters in the district pulled the lever for President Obama to the tune of 80 percent and 77 percent, respectively, and 83 percent of voters went for Hillary Clinton in 2016. This is all to say that this is not a battleground district for the Republican Party. Thus, those who win the primary will likely win the general election.

By the time you read this, the Democratic primary—and primaries in seven other states—will have been held on Tuesday, June 26. Maloney—who has overseen Williamsburg's transform, along with fellow Democrat Nydia Velasquez prior to the redistricting—is the favorite, but this year she is being challenged by upstart Suraj Patel, who has raised $1.2 million to Maloney's $1.7 million. Patel has been hammering Maloney on voting to fund the US Immigration and Customs Enforcement (ICE) agency and her anti-vaccination comments from 2012.

I wonder how many people in District 12 realize that Tuesday's primary vote—the vote for who will be their voice in Congress and in hearing complaints about local issues, like gentrification and rent increases—will matter more for them than what they'll be voting for in November's general election?

> If you don't show up to the polls—and I'd argue that even includes the primary—then you are doing exactly nothing to help the problem.

In the 2016 Presidential Election, only 60 percent of eligible voters actually showed up to the polls in a contest that featured Donald Trump against Hillary Clinton—two of the more polarizing figures of the last 50 years. Only 62 percent showed up in 2008 when Barack Obama beat John McCain. The numbers get far worse when you look at the midterms, which is when many of the members of Congress, in both the Senate and the House, are up for election.

In the 2014 midterm elections, during the second term of the Obama Administration, a little over one-third of eligible voters turned up, the lowest turnout since 1942. What we've lost perspective of—and this is certainly true with President Trump in office—is that Congress, by constitutional design, is the most powerful of the three branches of government. The President may set an agenda, but it's Congress that executes. And it's important to note that impeachment is a political move—one that is created and carried out by Congress—and not a legal one.

I've seen a lot of pundits and even friends compare the US to 1930s Nazi Germany because of the despicable zero tolerance immigration policy that sees children separated from parents for days and weeks at a time. While this is a shameful moment in American history, this isn't Nazi Germany. Posting your displeasure on Twitter and Facebook is all well and good, and the protests do make for good TV, but if you don't show up to the polls—and I'd argue that even includes the primary—then you are doing exactly nothing to help the problem.

Technocrats Unite

While I often use this page in a technology magazine to write about politics and social issues, I do try to wrap it back to tech. As artificially intelligent tools continue to pervade our lives, as we become more reliant on technology for personal use and for work, issues of privacy, intellectual property and who has the right to certain kinds of information will increasingly take center stage. And the people sitting in those Congressional seats will have a lot of say as to the direction of those conversations, as well as about the funding of ICE. W

Can voting drive tech change?
For more information and readers' feedback please join the discussion at **waterstechnology.com**

The Pot Noodle Effect

Just like how England fans forget their performance at previous World Cups, James says that authorities are quickly forgetting the lessons of the financial crisis.

Crisis lessons forgotten?
For more information and readers' feedback please join the discussion at **waterstechnology.com**

At the time of writing this column, the English national football team has just crushed Panama six goals to one, and despite my very best efforts not to, I'm wondering if there's not a path to the World Cup final after all. I'll likely be eating these words by the time you read them. But there are few things more inalienable to an Englishman than Queen, country, and an undying faith in the ability of the England squad to make it all the way in the World Cup, despite all odds and empirical evidence to the contrary.

My friends and I call this the Pot Noodle effect. If you've never had the pleasure, Pot Noodles and their own-brand supermarket derivatives are responsible for sustaining roughly three quarters of the UK's student population and a good chunk of its early-20s males. Essentially, they are freeze-dried noodles with a scattering of flavored powder mixed with some indeterminate colorful things that once longed to be vegetables. Pot Noodles are truly horrific.

And yet, every few years, you start to question if they were really as bad as you now remember them to be. Maybe this time, it'll be different—you're older and wiser, after all. A fresh perspective is undoubtedly what's needed. So, boiling kettle in hand, you pour it heartily into the round white plastic receptacle of Lovecraftian culinary madness, wait the prerequisite few minutes while nodding sagely with your mates about exactly the right amount of time to let it stew, and with much anticipation, that first bite.

It's just as horrible as it always was, of course, much like England was always going to go out in the knockout stages without getting close to touching gold. It's unsurprising—anyone who thinks that rejuvenating necrotic noodles with some boiling water is going to be a delicacy is an idiot. Yet, the US seems to be having a Pot Noodle moment of its own.

> **It's risk the banks want, after all. Nobody ever got rich over people responsibly paying their debts.**

What's Old is New Again

Increasingly, zero-down mortgage loans are being made, and subprime is in its rudest health since, well, the subprime crisis. Added to this is the proclivity on the part of influential House committees to strip back key regulations from the crisis era in the name of "freeing up the US economy." The Volcker Rule has taken a battering, and last I read, Congressmen in leading positions were urging banks to make small-dollar, short-term loans to their customers—payday loans.

It's all got a whiff of that old irrational exuberance. The economy is doing great by most measures, the stock market is roaring. Technology is back, baby, and it's brought its little brother along—you remember fintech, right? He's old enough to come to the bar now.

Ask anyone about this and they shake their heads, as if indulging an irritable child. No, don't be silly, they say, they're rolling back the worst parts of Dodd–Frank. The ones that didn't make sense, those that stopped banks from loaning money out to Main Street. Yet that argument rings hollow for anyone who has a basic grasp of risk or finance and understands how loans are actually written and accounted for. It's okay, though. The House is debating stuff that really matters, like the Fintech Leadership in Innovation Program, as part of the Financial Technology Protection Act.

It's risk the banks want, after all. Nobody ever got rich over people responsibly paying their debts. Likewise, in the capital markets, it's hard to make a buck without some kind of arbitrage going on, whether that's measured in microseconds or how many leaves of paper Dodd–Frank is left with by the time the current administration is through with it.

The thing is, nobody has really learned. Reforms are opposed at every measure, and even when implemented, the financial sector has an infinite appetite for a fight to see them rolled back. The industry as a whole, however, just needs to be careful that it doesn't go too far. If they thought public anger was bad the last time, just wait for the next. W

Human Capital

Crypto Compliance Vendor iComply Nabs Thomson Reuters' Pinn

Greg Pinn, former head of Thomson Reuters' World-Check risk and financial crime intelligence platform, has joined Vancouver-based regtech software vendor iComply Investor Services—which provides know-your-customer (KYC) and regulation automation solutions for blockchain platforms and cryptocurrency offerings—as head of product strategy.

Pinn served in his former role at Thomson Reuters since the vendor acquired World-Check in 2011, where he was director of strategy, technology and product development. Before that, he was an R&D digital hardware and software engineer at network technology vendor CommScope, and an R&D engineer at Hewlett Packard.

Based in Dallas, Texas, Pinn reports to iComply CEO Matthew Unger.

Greg Pinn

Scott Eaton

Former MarketAxess Exec Eaton Takes Reins at Algomi

London-headquartered fintech firm Algomi has announced that Scott Eaton is its new CEO, just over two months after the departure of co-founder Stuart Taylor. Eaton, who was the COO for fixed-income trading venue MarketAxess Europe, has taken on the new role with immediate effect. Usman Khan, Algomi's co-founder and CTO, who was serving as interim CEO, will resume his duties as the firm's full-time technology chief.

As CEO of Algomi, Eaton steps into the top spot at a time when the fintech vendor is aiming to diversify its product offering after the acquisition of Alfa from AllianceBernstein in March 2017, and its November 2017 announcement of a major custody partnership with BNY Mellon and HSBC.

Algomi has traditionally been known for its Honeycomb platform, which effectively acts an information network for bond salespeople and traders, identifying likely interest with available inventory, and pairing potential counterparties.

Finastra CEO Syed Leaves for Vista

Having overseen the creation of one of the largest fintech companies in the industry, Nadeem Syed is preparing to leave Finastra and hand over the firm's reins to his deputy, Simon Paris. Finastra was created after private equity firm Vista Equity Partners bought Misys in 2012, later merging it with D+H, which it acquired in 2013.

Simon Paris

Syed, who has been the CEO of Misys since 2012, will leave the firm to become an operating principal at Vista, although he will remain on Finastra's board.

The appointment of Paris to the top spot is effective immediately, according to a Finastra spokesperson. Paris has been deputy CEO since 2015, when he joined the firm after an eight-year stint at SAP, holding a number of roles ranging from vice president of large accounts to global head of banking. He also served as the firm's president of industry cloud.

Before his SAP tenure, he was a vice president in charge of EMEA global accounts for Infor Global Solutions, a partner at Netdecisions, and earlier in his career he was a senior associate at consultancy McKinsey and Co.

Finastra, which was formed in 2017, has over 10,000 employees and operates in 130 countries. This is the latest in a series of senior moves and appointments for the London-headquartered firm. In March 2018, it appointed ex-NCR CTO, Eli Rosner, as its new chief

Hochstein Lands Global Entity Data Role at TR

Thomson Reuters has appointed Kristin Hochstein as its global head of entity data services, in a move to align and scale the vendor's legal entity, pricing and reference service, and verified entity data-as-a-service business lines.

Hochstein, previously head of issuer reference and corporate actions solutions, has spent more than a decade at Thomson Reuters, having joined the vendor as director of business development for enterprise pricing and reference data, and also served as head of the firm's legal entity business in the Americas, as well as head of financial regulatory solutions.

She joined the vendor in 2007 from Dun & Bradstreet, where she was a senior product director.

Kristin Hochstein

product and technology officer, while in May, it hired Calypso veteran Jim Fiesel to head up its capital markets practice for the Americas.

Data Vet Mendez Joins Crux Informatics

Data processing startup Crux Informatics has hired market data management veteran Jason Mendez as supplier relationship manager, responsible for managing the vendor's network of data providers, and for contracting and onboarding providers onto Crux's platform.

Mendez was previously a market data consultant, prior to which he was a senior market data manager at Raymond James Financial, and spent almost 10 years as manager of market data services at AllianceBernstein. Before that, he was a senior technical analyst at Citigroup, a senior market data analyst at The Roberts Group (now TRG), and a market data analyst at Lazard.

Based in New York, Mendez reports to Elizabeth Pritchard, head of go-to-market at Crux.

Dash Hires Agency Brokerage Vet Lesko

Dash Financial Technologies has announced that brokerage veteran Glenn Lesko has joined its ranks in the role of chief growth officer. Reporting directly to the firm's CEO, Peter Maragos, Lesko will be responsible for revenue growth on an organic and inorganic basis.

Prior to his new role, Lesko was the CEO of Bloomberg Tradebook, the information provider's agency brokerage business; prior to that he spent nearly 10 years at Nomura-owned broker Instinet, first as CEO of Instinet Asia and later as head of Americas equities.

Before that, he was a partner at CF Global, a managing director at Deutsche Bank on its international trading desk, and a managing director for ABN Amro, first in Hong Kong and later in New York.

It is the second senior hire for Dash in recent months—in April, Dash announced the appointment of Jamie Bogen as its managing director of execution services.

J&J Taps Deutsche Exec for Compliance Consulting

New York-based data, technology and management consultancy Jordan & Jordan (J&J) has hired Chris Montagnino as managing director of compliance services, responsible for the firm's trade surveillance and best execution practices, regulatory requirements and reporting, and industry initiatives such as the consolidated audit trail.

Montagnino rejoins J&J after a nine-month stint at Deutsche Bank Securities as global head of exchange-traded products surveillance, prior to which he spent two-and-a-half years at J&J as director of compliance services.

Before that, he was deputy chief compliance officer at First Republic Investment Management, senior vice president and head of regulatory matters at Jefferies & Co., director of surveillance planning and assessment at the New York Stock Exchange, and a compliance officer at Credit Suisse.

TNS Realigns Product Management, Development Ops under Telecoms Vet Versen

Transaction Network Services has named Bill Versen as its chief product officer, a newly created position overseeing the network provider's global product vision, design, development, marketing and management.

Versen was previously director of product management at Samsung-owned Harman International, responsible for its cloud platform that supports driverless cars, and was principal of his own marketing consulting and research firm, Statement Marketing.


Bill Versen

Before that, he spent 10 years in director roles across various divisions of US telecoms giant Verizon, served as director of digital marketing and consumer insights at marketing agency TargetCom, and also served as senior digital marketing manager and business intelligence manager at networking hardware vendor 3Com, prior to which he was global marketing manager for Motorola's network management group.

BSO Preps Network, Office Expansion to Meet Growing Asia Demand

Network provider BSO has opened new offices in Hong Kong and Singapore to cater to increased demand from the global electronic trading community that has arisen from an influx in client volumes, resulting in increases in network demand. Demand has been particularly high in Dubai, India, and Shanghai, and there is also demand for trading links between market centers such as London, Tokyo, New York, and Singapore, according to Matthew Lempriere, head of Asia-Pacific at BSO, who recently joined the vendor from Australian telecoms provider Telstra to lead the Hong Kong office.

Much of the demand is being driven by an influx of trading activity to banks in the region, resulting from MSCI's recent decision to include 234 Chinese A shares in its flagship emerging markets index, which will require increased connectivity services between other Asian market centers and Shanghai.

In addition to Lempriere's arrival, BSO has also relocated sales director Tom Fulford-Brown from London to lead the Singapore office and support BSO's initiative of onboarding more clients in Asia. Lempriere says the vendor will first build up its customer base in the region before hiring more staff and potentially investing in new technologies to further reduce latency.

Nasdaq Names Alt Data Head

Nasdaq has promoted Bill Dague to head of alternative data for its Global Information Services business, including responsibility for the exchange's Analytics Hub of third-party and alternative datasets. Dague has spent four years at Nasdaq, most recently as director of data science, having also served as a senior data scientist and a software engineer since joining the exchange as a software engineer intern in 2014. Before Nasdaq, Dague was a junior programmer at CIQ Labs.

In his new role, he will be responsible for analyzing potential datasets to ensure they are appropriate for inclusion in the Analytics Hub, coordinating partnerships with data partners, and for exploring new partnerships and


Bill Dague

datasets. He reports to Terry Wade, senior vice president of Global Information Services.

Morgan Stanley Moves Beaton to Head US Trade and Transaction Reporting

Morgan Stanley has promoted Joshua Beaton—previously program manager for the bank's work on the SEC-mandated Consolidated Audit Trail (CAT) and head of US regulatory reporting—to the role of head of trade and transaction reporting for the Americas.

Beaton joined Morgan Stanley in 2010 as program manager and head of global settlement projects, and has since held positions as COO of the bank's institutional securities group product operations division and COO of shared services and banking operations.

Prior to joining Morgan Stanley, Beaton held vice president roles at Barclays Capital and Goldman Sachs, where he led processes and systems management teams within equity and credit derivatives.

Beaton remains based in Morgan Stanley's New York headquarters. W

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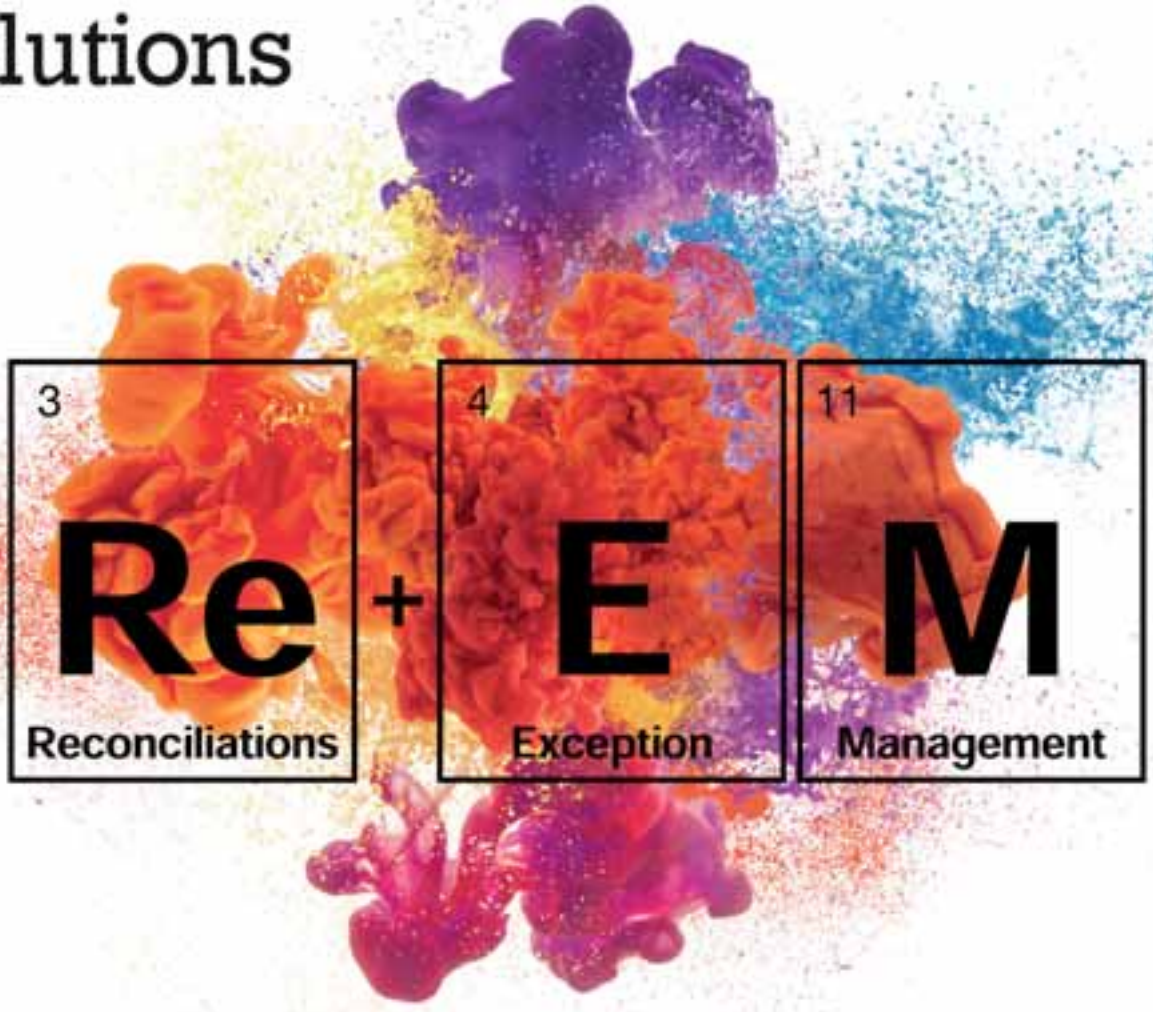

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