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Constitutional Crises and Gut Instincts

The end of 2018 was marked, perhaps typically, by lurching from one crisis to the next. In the UK, Prime Minister Theresa May faced a no-confidence vote from her own party, just months before the official hard stop for Brexit. In the US, the Trump administration careened its way into a government shutdown which, at the time of writing in early January, had yet to be resolved.

Stocks were hardly calm, either. Rarely have the colorful clichés of whipsawing, see-sawing and vacillating been employed with such aplomb by market desk reporters, although as Bloomberg's ever-sagacious Matt Levine pointed out in his daily column at the beginning of the year, the seven-day movement of the S&P 500 to December 31 actually amounted to a paltry 0.11 points—or 0.004 percent. You wouldn't have thought it, judging by the hourly coverage.

Much of what has been occurring of late, either in domestic politics or in market economics, has led many to ask some pretty soul-searching questions. Is it democratic to hold a second referendum, when there's a lingering feeling that it's just because the result wasn't what many wanted? Is the system of checks and balances on the executive branch of government sufficient? Do markets really have any attachment to reality, anymore?

On December 20, I found myself in Boston being asked similarly fundamental questions about institutional asset management. What if, the question went, posed by Dr. Richard Michaud and his son Robert, of New Frontier Advisors, the technology used in asset management is broken, because the fundamental premise of what drives investing is wrong?

It's a question which, with nearly 15 years in journalism under my belt but not a great deal of academic achievement—least of all in mathematics—I'm supremely unqualified to answer. But the issue is discussed at length on page 16 in this month's profile of the Michauds, which is tied intrinsically to the work of one of the great economic scientists of our time, Harry Markowitz, and his theories of portfolio optimization.

Start-of-year editor's letters are meant to be, if not redolent with, then at least tinged with a thread of optimism. But this year promises such upheaval that it's hard to see a straight path through. In technology, at least, many are taking 2019 as a year to consolidate, shore up and brace for an uncertain future, and that's perhaps what we all need to do. After all, while adrift in any crisis, often the only sure way to make it to shore is to trust your gut. **W**

James Rundle
Editor

waterstechnology

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DNB Unveils Data Science, Big Data Strategy

The bank is one-third of the way through a three-year project to re-engineer its data management processes to become a more data-driven business. By Max Bowie

Nordic financial services giant DNB Bank has created 60 data scientist roles as part of a three-year project to better leverage data for risk and compliance purposes, as well as for spotting new opportunities and growing its business overall.

These positions are being filled by existing staff under a new, centralized structure to support the bank's new customer insights data strategy.

"These data scientists are people who have been with the organization for many years doing analytical work. We're bringing them together, giving them a formal structure and advanced technologies, and … developing an up-skill training program to take people to the next level," says Aidan Millar, CDO and executive vice president of group digital insights at DNB Bank.

He says the data scientists will be responsible for a range of functions, including identifying new use cases to leverage the bank's data, and "optimizing" delivery of financial products—"ensuring we are offering the right product at the right price through the right channel at the right time."

But getting to the point where the bank can achieve this involves a lengthy process of re-engineering the way it handles data. This requires not only engagement—teaching the organization how to be data-driven—but also processes and structure: putting in place a federated data ownership model where data is owned by the business, rather than the firm's IT function.

Hence, Millar's team spent last year building the foundation for this initiative, and will use this year to "operationalize, institutionalize, and embed" the new processes, before finally being able to leverage data to its full extent for customers' benefit next year. The initial uses will focus on what he calls "protect the bank" areas, such as risk and reporting, before moving on to "grow the bank" opportunities.

A key component of this is New York-based data governance software vendor Collibra's platform, which Millar says provides the foundational layer for a complex environment across the bank, enabling staff to crowdsource content that can be managed centrally. "We're using a federated physical organizational model with a central component—my team," he says.

Creating and implementing this new structure required the bank to create the new CDO role and hire Millar with a mandate to transform its processes to support the creation of new insights. Millar joined the bank just over a year ago after more than 25 years in strategic data and change management roles—most recently as senior vice president of enterprise business intelligence and data management at Bank of the West in San Francisco, and senior vice president of corporate strategy, change management and enterprise business intelligence at Central Pacific Bank, in addition to a decade at ABN Amro and consulting roles at PwC and Arthur Andersen.

Creating the role was a "significant strategic decision" for the bank, he says. "The bank executives acknowledged and understood that there is a shift to digital platforms, and that data underpins everything. There is a need to reconnect and understand customers in the digital age, and when you have a large network [of retail, corporate, and financial clients], some of that content can be lost."

Millar says in today's banking environment, firms such as DNB must not only be able to optimize how they price credit and risk services in a way that delivers most value to clients rather than focusing just on the bank's bottom line, but must be able to do this better than new, agile challenger banks.

"Our advantage is that we're bigger and have more data to achieve those insights," he says.

Achieving the bank's aims also requires initiatives to explore new ways of looking at data—such as the new data scientist positions—and new technologies, such as a new big data repository that DNB has recently deployed in Amazon Web Services' (AWS's) cloud.

Using AWS will enable the bank to move away from traditional, backwards-looking financial reporting towards performing predictive analytics on the ever-rising tide of big data volumes, such as for anti-money laundering initiatives, because of the compute power available via the cloud.

"Without something like AWS, we'd never have had the storage or compute power," he says. "To do it in AWS takes seconds; to do in a bank, you have to order hardware and so on. … It could take six months." W

Northern Trust Plans Wider Blockchain Rollout in 2019

The bank currently has two blockchain projects in train, for private equity and clearing. Next year will see it expand its efforts. By Anthony Malakian

While some financial institutions have soured on blockchain technology in the past year, Northern Trust still sees two viable use-cases for distributed ledgers, and will be pushing forward in earnest with one of those projects in 2019.

Peter Cherecwich, head of the corporate and institutional services business at Northern Trust, says that the firm has been working with one client on its private equity blockchain and after adding some new features and running a successful capital call on the platform in 2018, it will look to roll it out to a wider audience this year.

"On the private equity side, we have a client that is live on our blockchain application. We've been moving along prudently in adding new features and capabilities with that client," he says. "We will start rolling it out in earnest next year. We do believe that blockchain for private equity is absolutely fit-for-purpose and a very good use-case that we are embracing."

Cherecwich says executives at the bank are right now trying to figure out if it will release functionality in pieces to clients, or if they will bring in a partner firm "to invest with us and go faster" on rolling the platform out. "We are exploring it and we should know more in the January/February timeframe about what our plan is," he says.

The other blockchain project it has in the works is tied to the Australian Securities Exchange's (ASX's) decision to replace its Clearing House

"We do believe that blockchain for private equity is absolutely fit-for-purpose and a very good use-case that we are embracing." Peter Cherecwich, Northern Trust

Electronic Subregister System—its equity clearing and settlement platform—with a blockchain platform developed by Digital Asset Holdings. While that project is still progressing, the exchange has already delayed the scheduled rollout date from the fourth quarter of 2020 to March or April 2021.

Northern Trust has two people in Australia working "very closely" with the ASX on the project, according to Cherecwich. He says he believes that this blockchain will change how the institution operates as a global custodian. Today, Northern Trust has to hire a sub-custodian, which deals directly with the marketplace in Australia.

"In the future, we will have a node on the blockchain and that sub-custodian may only do things like corporate actions posting and other types of asset servicing functions for us, potentially, but holding the security they won't have to do anymore because we'll have a node on the blockchain," he says. "So it could dramatically change the cost structure, the timing of information that's available to all of our customers, because everyone has a direct node and direct access."

It should also be noted that —potentially affecting the timeline— Blythe Masters, the CEO of Digital Asset, which is building the distributed ledger, has stepped down as the head of the company. AG Gangadhar, who has served on Digital Asset's board since April, has stepped in to serve as board chairman and acting CEO while the company looks for a permanent replacement. W

StatPro Pushes Forward with Investor Analytics, UBS Delta Integrations

The performance and risk measurement specialist is also using machine learning to help drill into value-at-risk calculations. By Anthony Malakian and Wei-Shen Wong

At the start of 2016, StatPro made a big splash by acquiring buy-side risk specialist Investor Analytics (IA). Then, 15 months later, it made another major acquisition, nabbing UBS Delta, UBS's risk and performance analytics service.

These large-scale integrations can be challenging, but StatPro has made progress in the last year on that front as it looks to bring IA and Delta into its flagship platform, Revolution. "Right now StatPro has three separate risk modules, but in the not-too-distant future—though I can't promise when—we'll have two and then we'll have one," says Damian Handzy, global head of risk for StatPro.

And for the first half of this year, the vendor has several big rollouts coming. Handzy is the founder and former-CEO of IA, having joined the StatPro team after the January 2016 acquisition. That IA piece has since been rebranded as Revolution Alpha and it is deployed as a module in the Revolution cloud-based product.

Since the deal finalized, the main component that the Revolution Alpha team has worked on has been on fundamental factor analysis. In 2017, it built a fundamental factor model for Australian securities. This year, it built a massive, global model, which includes over 50,000 securities. For 2019, it plans to build models specific to the US, UK, European and South African marketplaces.

"Inside Alpha, the old IA technology, we are building all these fundamental factor models," Handzy says. "We spent 2018 putting together two things: the interface for all the models and the first big model, which is the global model. We built it in a way that it can be accessed through the old IA—now Revolution Alpha—interface but also can be fed to the rest of Revolution through an API. So we're building it with integration in mind."

The Alpha team has also been developing its Risk Driver Decomposition (RDD) analysis piece. The service, which was launched earlier in 2018, helps clients to understand and actively manage their sources of risk.

"Revolution—the flagship product—has a historic simulation risk methodology that it employs. Just like every other risk engine out there that calculates VaR, it has a challenge when clients ask, 'Where does that risk come from?'" Handzy says. "You can calculate value-at-risk at different parts of the portfolio—you can segregate it and say that this much comes from this category and this much comes from that category—but that's only part of the picture. What you really want to know is how much risk comes from interest rates, how much risk comes from volatility of stock markets, how much comes from credit spreads, and how much comes from volatility of interest rates. You want to know how much risk comes from those individual market drivers."

The reason why this is a challenge is because VaR is a non-linear function. Traditionally, he says, you essentially calculate the simulated returns of various securities as those drivers move, and you create a probability distribution to calculate the VaR of the entire portfolio. But how much of that risk came from credit spreads? Handzy says there's no straightforward way to answer that question. "With RDD, the basic idea is that you have to come up with a local, linear approximation to the pricing function," he says.

To do this, RDD uses an algorithm based on the Multivariate Adaptive Regression Spline (MARS) approach, which uses machine learning to separate each security's pricing function into a form that reveals the sensitivity to each risk driver. It's a linear regression that basically takes any function and breaks it into, piecewise, linear chunks, says Handzy. It decides how many chunks it needs to be an accurate representation and then it creates straight lines, in multiple dimensions, to represent various parts of that curve. More simply, the machine-learning algorithm inside RDD takes a wide series of complex, interconnected data and basically distills it into smaller linear components that can be easily calculated.

The vendor is also working on integrating the UBS Delta piece into Revolution. For the time being, like the legacy IA piece, Delta has its own module, as it is being actively migrated from UBS's systems into Revolution.

Delta made its bones in the industry by offering high-fidelity credit curves by issuer, by seniority, and by currency. Moving that piece from the UBS platform and building that into Revolution is the single biggest development project currently being undertaken at StatPro and it will be made available to Revolution clients by the end of the second quarter of 2019, Handzy says. W

Cinnober Shareholders to Mull Revised Nasdaq Offer

US exchange group's offer rejected by holdout investors who deemed Swedish fintech firm undervalued. By James Rundle

Nasdaq has boosted its offer for Cinnober Financial Technology after failing to reach a critical threshold of shareholder support, which now values the Swedish firm at around $220 million.

Under the terms of the revised offer, Nasdaq will pay SEK 87 ($9.62) in cash for each share, and SEK 121 ($13.37) in cash for each warrant. The deadline for acceptance has also been extended until January 9, 2019. Under the terms of the agreement, the deal must gain approval from 90 percent of shareholders.

Initially, Nasdaq had offered SEK 75 ($8.29) per share and SEK 85 ($9.39) per warrant, with a deadline of December 14 for shareholders to tender their holdings to the deal. However, a number of investors said that deal undervalued Cinnober, which supplies post-trade software to a number of leading global exchanges across asset classes, and has been expanding its surveillance offerings after its May 2017 acquisition of Ancoa.

Cinnober had been struggling with the performance of certain business lines and the departure of CEO Veronica Augustsson in the first half of last year, following a weak 2017 report that saw the firm post a loss of SEK 97.6 million ($10.7 million). Peter Lenardos, a former banks analyst at RBC Capital Markets, took over the reins in August and has implemented a cost-cutting plan, which has seen the cost base reduce by 20.6 percent quarter-on-quarter.

"Nasdaq is acquiring a company that is in much better financial shape than it first thought, with good revenue momentum and a lower cost base, in addition to no funding requirements,"

Peter Lenardos
Cinnober Financial Technology

says Lenardos. "Thus, in my opinion, the revised offer is warranted, and I also believe it should be accepted by shareholders as it represents the crystallization of shareholder value in cash."

Potential problems with some shareholders had been on the horizon since the two companies first announced the deal, with investor Invium and several others speaking publicly about the price being too low. However, sources in both firms indicate that disagreement has not stemmed from Nasdaq's potential ownership of Cinnober—rather, it has been fixated on a perceived undervaluing of the company.

A Nasdaq spokesperson adds that the offer represents "full and fair value" for the company, and that this was indicated by Cinnober's largest shareholders accepting the bid.

Another potential hurdle arose in December, when the UK's Competition and Markets Authority (CMA) announced that it would be investigating the deal for possible anti-trust concerns. However, in its revised offer, Nasdaq took the unusual step of removing its caveat that the deal would only go through if regulatory clearances—such as the CMA investigation, which is due to report by February 9 on whether it will instigate a further investigation, known as a phase-two inquiry—are met.

People familiar with both Nasdaq and Cinnober's thinking say that this demonstrates a degree of confidence that the CMA will not choose to refer the deal for further scrutiny.

As for whether the enhanced price that Nasdaq is paying for the vendor may, in turn, cause it to revise its plans for Cinnober once the acquisition is completed, the exchange remains tight-lipped. "With the increased bid, we still expect the transaction to meet our return on invested capital and accretion targets," the spokesperson says. At the time of Nasdaq's announcement, over 80 percent of investors had agreed to the deal. W

FCA Extends Sopra Steria Deal after January Glitch

The Financial Conduct Authority (FCA) has inked a new deal with a French firm to shift its technology to the cloud and provide application maintenance across all of the regulator's major systems. The FCA selected Sopra Steria, a big-data specialist, for the enhanced contract after a competitive tender.

Craig Wilson, managing director of financial services at the company, says the cloud migration is scheduled to be completed by 2022 an endeavor that "will involve lots of different elements of the FCA," some with Sopra Steria involvement and some without.

That work will begin in early 2019 and will be provided via the vendor's UK and India locations. The deal covers a wide range of capabilities including big data, user experience and middleware, plus integration with Salesforce and Oracle technologies.

The FCA is no stranger to the firm. Sopra Steria has provided technology services to the regulator for the past 10 years, with its most recent project being a $32 million, three-year contract to provide a cloud-based platform to handle trade reports mandated by new European rules that came into force on January 3.

Known as the Market Data Processor (MDP), the system connects directly to other technologies used by regulators including the European Securities and Markets Authority, but problems emerged almost immediately after Mifid II went live. *Waters* and *Inside Data Management* reported problems with systems operated by National Competent Authorities, with sources saying that the MDP was unreliable, unstable, and had to be shut down for a number of hours on day one. The

FCA initially denied any problems with firms submitting their data to the MDP, then confirmed a *Risk.net* report that the system was suspended on January 15, although it continued to deny any other issues had taken place.

"All of the issues were identified and fixed," Wilson says. "All of the initial glitches were resolved, no data was ever at risk; it was all contained within the system."

Wilson indicated that the problems had to do with stacking and securing data from "various different bodies," including external sources.

Since then, the MDP has processed an average of 31 million transactions per day, adding up to more than six billion as of October 1, 2018.

Jamie Hyman

FlexTrade Taps Corvil for Network Analytics

New York-headquartered FlexTrade has taken Corvil's analytics platform to monitor and improve the visibility of client experience and infrastructure performance. The analytics functionality layer is plugged into Flex-Trade's internal system to detect and analyze issues or anomalies across a network of brokers, asset managers, liquidity providers and banks. Integrated into FlexTrade's connectivity channels, Corvil's technology creates a detailed map of the network, designed to discover performance issues, such as latencies, technical glitches, transmission failures, and client service problems.

Graham Collier, FlexTrade's head of infrastructure, explains that technical teams will be able to visualize, monitor and refine dashboard functionality based on an overview of what is needed, and allow technical teams to proactively tackle specific client issues on the network, faster.

"A lot of other tools in this space require manual configuration for setting up, and given how large our network piece is, that is a lot of work," says Collier. "We were able to allow Corvil to discover our network and then from that refine the dashboard according to business functions so that our network could see at a very low level if there is any connectivity latency to a client or broker, how that is affecting trading, and create more trading-focused dashboards that work at the next level up." The analytics are expected to enable FlexTrade to become more efficient when it comes to resolving issues, improving its technology capabilities, and delivering better customer services.

Josephine Gallagher

Arachnys Debuts CRI Platform for Financial Investigations

Ed Sander
Arachnys

London-based Arachnys has announced the launch of its Customer Risk Intelligence (CRI) platform. The cloud-based product encompasses anti-money laundering (AML), know-your-customer (KYC) investigative activities, and client onboarding processes.

"The regulations that have come out over the past two years now require banks, when they perform risk assessments for specific individuals or companies seeking to open-up a business relationship, to go through a laundry list of checks," says Ed Sander, president at Arachnys. "From determining the nature of the business, is it a natural form of business relations that those firms seem to have with the bank, to uncovering the hidden relationships and partnerships in determining whether or not there is a beneficial ownership status that needs to be reported."

The first client for the platform was a tier-one firm headquartered in Southeast Asia. It rolled out a portion of its intelligence platform to support 1,400 AML compliance analysts across five global locations. The rollout was completed in six weeks. Since then it has seen its usage grow within the global bank, with over 2,600 personnel now active on the platform.

Hamad Ali

DTCC to Partner with Xceptor for SFTR Data Service

The Depository Trust and Clearing Corp. (DTCC) is integrating Xceptor software capabilities for data capture and pre-check review of regulatory reports submitted to trade repositories for the Securities Financing Transactions Regulation (SFTR).

Val Wotton
DTCC

SFTR's trade reporting requirements are extensive, with more than 153 fields required. Andrew Kouloumbrides, CEO of Xceptor, says the DTCC is instrumental in creating the rules and analytics, which will evolve over time, that determine the value of the fields so the data automation company's software can capture the data.

London-headquartered Xceptor offers DTCC clients the ability to capture and normalize data in any format. The service also provides a pre-check review for data enrichment and validation that allows firms to make corrections to the data before submitting to a trade repository.

"What we're doing—and this is one of the reasons why DTCC has partnered with Xceptor—is using the data capture and transformation capabilities of Xceptor at the front-end to allow the clients to load the data in whichever format they have it into the platform, and then Xceptor will be configured to take their data, normalize and validate it, and then create the data source that is required to be reported. So we're shifting the burden of the data transformation from the clients to the SFTR service," says Kouloumbrides.

Val Wotton, managing director of product development and strategy, derivatives and collateral management at the DTCC, says Xceptor's capabilities were chosen because of their data-centric intelligent automation approach and the ease of use, which won't require significant training or technology.

"We are very conscious around firms having to use multiple different sets of external reference data, for example from the Global Legal Entity Identifier Foundation around legal entity identifiers, clients› own internal data, or even from third-party sources around building up that entire file of information and data elements that are required for reporting,» he adds.

He says that in many cases, firms may need to add additional reference data, which comes from static files. The SFTR solution enables firms to input those files and piece them together into the ISO 20022 format. The DTCC then applies the validation rules that would be required when reports are submitted for cross referencing.

The DTCC anticipates the integration to be fully functional within the next two months. SFTR goes live in 2020.

Amelia Axelsen

IPC Sets Asian Unigy 360 Launch for Q1 2019

IPC Systems will be launching its cloud-based Unigy 360 platform in Asia-Pacific in the first quarter of next year.

Don Henderson, senior vice president, product and customer success at IPC Systems says the go-live for Unigy 360 in Asia-Pacific reflects banks' demand for cloud and software-as-a-service (SaaS) solutions.

"Banks are eager to follow this direction and are looking beyond traditional providers towards solutions like Unigy 360 that offer a single unified platform. Unigy 360's capabilities and story has resonated well already with the success we have encountered globally and similarly will serve Asia-Pacific needs," he says.

Unigy 360 gives market participants access to counterparties, liquidity, and trade lifecycle services. It combines workflow capabilities including capture and archival, speech-to-text and policy management.

"The regulated user market, in particular, is a very real component that is expanding and forming a unique position for IPC. Notably, the Asian market is even more ready at the moment for a cloud-based solution than other markets are presently," Henderson says.

Wei-Shen Wong

Fed Enlists Finra to Expand Data Collection Efforts

The US Federal Reserve is "close to finalizing an agreement" with the Financial Industry Regulatory Authority (Finra) to collect trade data from a wider range of market participants in the US Treasury markets, as part of plans to expand the data that the Fed captures on the fixed income markets.

In a speech on December 3, Federal Reserve governors' board member Lael Brainard noted that data collected and disseminated via Finra's TRACE (Trade Reporting and Compliance Engine) has proved "indispensable" to the Fed's ability to understand Treasury markets activity, but added that the data is not comprehensive because Finra only collects data from its members, so it is enlisting Finra as an agent to collect trading activity data from other key banks that participate in the Treasury market.

In addition, in response to "recent changes in the market," Brainard said that the Fed will seek public comment on plans to collect similar data on agency mortgage-backed securities and debt transactions.

This will "round out the Interagency Working Group on Treasury Market Surveillance's (IAWG's) view of these markets and ensure continuous coverage in circumstances where trading moves between the bank and the broker-dealer within a firm," she added.

Max Bowie

For Citi, Data Management is 200-Year Project

At Citigroup, data quality isn't just an issue that has emerged in recent years: it's a 200-year-old problem requiring ongoing maintenance programs that begin again as soon as a current project is finished, according to officials who spoke at December's Waters USA conference.

"Citi started in 1812, and its data issues started in 1813," said Don Callahan, global head of operations and technology at Citi, which still maintains historical data as far back as 1812, including early shipping records, he said. "We used an 'adjacency model,' which means we didn't integrate data. People kept their cards close because that information is power—and that [approach] is bad within an organization, because shared information is more powerful."

Though data management is an age-old problem for the bank, recent market events have given data management projects renewed impetus and have helped data professionals make their case for enhanced data quality programs.

"The financial crisis gave us the opportunity to take a step back and come up with a common data architecture," across all the companies that have merged together to create the present-day Citi, Callahan said. "We spent a significant amount of money and time on this: I presented the board with a five-year roadmap to take 23 companies and unify them on common data."

And—just like painting the Golden Gate Bridge—as soon as Callahan's team finished that project, they had to start over again, and will have to continue doing so to match the ongoing evolution and constant acquisition of new data.

One of the challenges was changing the mindset of allowing different businesses to keep data to themselves. "Some of it was having the discussion with business leaders, and saying, 'What you thought was your data is our data,'" Callahan said.

But once the firm can establish common ownership and ensure that technology exists to move data from point B anywhere within an organization without recoding at each point, the benefits are higher levels of insight firm-wide.

"I've been in the industry for 40 years, and I can tell you that without solid data, you won't be able to build any kind of organization. You turn data into information, information into knowledge, and knowledge into insight, and that's when you get paid, whether it's a trade, a credit card transaction, or a decision about a mortgage. But it starts with data, and if that data is flawed, then the outcome is flawed. So data is not just the fuel of growth, but is essential to any organization," Callahan said.

It's during this transformation process that technology has an important role to play. "Technology was our friend," Callahan said, adding that he was surprised how easy technology made it to move data from point A to B.

Christian Nentwich, CEO of data management platform vendor Duco, noted two contributing trends: first, that the cycle time for displacing older technologies is getting shorter; and second, these new technologies are enabling firms to "empower their data citizens … and put more power at the fingertips of a company's employees. "There is a lot of potential to use AI [to perform] this first step of turning data into information. We are doing a lot of work on that, and are looking to roll something out next year," Nentwich added.

Max Bowie

Dash Signs Off on eRoom Securities Acquisition

Dash Financial Technologies has signed a definitive agreement to acquire eRoom Securities, a Chicago-based provider of clearing, reporting and brokerage technologies, for an undisclosed amount.

The move marks Dash's entrance into the brokerage space and follows on from last year's merger in March with LiquidPoint, ConvergEx's options trading and technology business. The eRoom platform will be rebranded as Dash Prime and will continue to be headed up by eRoom Securities' current CEO, Collin Carrico, and president, Ben Schwartz.

Peter Maragos, CEO and co-founder of Dash Financial Technologies, says both platforms will eventually be integrated and the move will mean that eRoom clients will have access to Dash's suite of multi-asset routers, algorithms and trading tools, as well as transparency, reporting and analytics capabilities. The acquisitions will allow Dash to provide prime brokerage services for the first time. The deal is expected to close in the first quarter of this year. Both firms are currently in talks to finalize the outstanding arrangements and regulatory approvals.

Josephine Gallagher

OpenGamma Sets US Expansion

Derivatives analytics provider OpenGamma will expand its footprint to the US as regulations start squeezing asset managers.

OpenGamma—which will continue to be headquartered in London—foresees the US to be its biggest market. The move comes on the heels of recent regulatory action around margins that the company believes will increase margin costs by 70 percent for clients.

Peter Rippon, OpenGamma CEO, says the timing was right to take advantage of coming rules to expand the vendor's reach.

"For any service provider, it is important to have a local presence," Rippon says. "It is a bigger market for us with more funds and sophisticated regulations. But it also happens to be an obvious next step for us as the timing has been driven by regulations starting to make an impact."

He says the new office opening will be a good opportunity for clients to get to know OpenGamma more and trust them with their sensitive data. The New York office will be the first location outside of London for OpenGamma.

Josephine Gallagher

Regis-TR Files for London Trade Repository Ahead of Brexit

Luxembourg-based trade repository (TR) Regis-TR has filed an application to establish a TR in London to continue serving the UK market, ahead of the UK's departure from the European Union. Before granting authorization to trading and reporting firms to operate within the UK and the EU27, the Financial Conduct Authority (FCA) and the European Securities and Markets Authority (Esma) require the firms to form a "meaningful presence" in the respective markets.

"Post-Brexit, the UK will remain one of the most important financial markets in Europe and so, frankly, it's unthinkable that we would turn our back on this jurisdiction," says John Kernan, senior vice president and head of product management at Regis-TR. "We are a European TR with a wide market spread across all of the European geographical area; nonetheless, the UK still represents, and will continue to represent, a significant proportion of our overall business."

Launched as a joint venture between Iberclear and Clearstream in 2010, Regis-TR will build on Clearstream's existing presence in London. It plans to expand its existing UK team and IT infrastructure dedicated to TR services.

Going forward, Regis-TR expects to replicate its existing EU systems and technology stack to construct an operationally separate entity in London. It intends to eventually enable existing clients to access its UK TR offering and other TR services through a single user interface.

Ahead of the April 1 deadline, Regis-TR will offer clients guidance and assistance on meeting their testing requirements. The timeliness of the application is to ensure UK clients are prepared for the transition and to avoid any disruption to their regulatory requirements under the European Market Infrastructure Regulation (EMIR) and the likely FCA adoption of the upcoming Securities Financing Transactions Regulation.

"With the current political uncertainty, we are working backwards from an April 1 start date and our intention is to have the key documentation ready for our clients to start completing at the end of this month," explains Kernan. To date, Regis-TR is the only TR with authorization to operate within the EU27 and Switzerland after the UK's departure, under EMIR and Finfrag, a Swiss markets regulation. Its UK submission is currently pending approval from the FCA, with the application process set to officially begin in early January.

The latest announcement comes on the heels of recent moves made last year by repositories such as the Depository Trust & Clearing Corp. (DTCC), the London Stock Exchange Group's UnaVista and CME Group's recently acquired NEX, which filed similar applications to Esma to ensure it is authorized to continue servicing its EU27 client base. In July, the DTCC set its sights on Dublin as the location for its EU offices, whereas UnaVista and NEX have announced plans to establish separate reporting entities in Amsterdam ahead of Brexit.

Josephine Gallagher

ISIN Fees Rise for the Second Year Running

As the Derivatives Service Bureau (DSB) moves into its second year of operation, its highest-volume users will pay more for International Securities Identification Numbers (ISINs).

The DSB, the fully automated generator of ISINs for the over-the-counter derivatives market, has published its user fees for 2019. Power users, who require programmatic connectivity to ISINs in real-time, will pay €117,500 ($134,651), up from €112,500 last year. Standard user fees jump to €39,200 from €37,500, while infrequent users hold steady at €3,000 and registered users, who cannot create ISINs but access ISIN data, remain free of charge.

According to the DSB, registered users make up two-thirds of the user base, with banks shouldering the heaviest burden of fees at 56 percent. Trading venues represent 31 percent and other categories, such as buy-side and data vendors, make up the remaining 13 percent of users. The fee announcement follows two rounds of industry consultations that ran May through July of 2018, which covered fees, user categories, the legal agreement, service levels and availability and functionality.

Jamie Hyman

Mobius Capital Partners Selects Bloomberg Buy-Side Solutions

Palak Patel
Bloomberg

Mobius Capital Partners, an emerging markets-focused asset manager, is integrating Bloomberg solutions to enhance its strategy of combining environmental, social, and governance (ESG) investment opportunities and improved corporate governance for portfolio managers.

Industry veterans Mark Mobius, Carlos Hardenberg, and Greg Konieczny left Franklin Templeton in January 2018 to found the boutique asset management firm, which currently focuses on ESG-driven companies in Brazil, China, Hong Kong, Poland, Russia, and Turkey.

"Mark Mobius is a widely respected leader in the emerging markets space, so when we learned that he was starting his own fund we knew we could be a great partner for him and his team," says Palak Patel, global head of the Asset and Investment Manager (AIM) product at Bloomberg. "We wanted to ensure they had the support they needed from day one as they built their firm from the ground up."

For portfolio management, trading, and compliance operations, Bloomberg's AIM; portfolio and risk analytics solution, Port; and execution management system are now live for use by Mobius.

Josephine Gallagher and Amelia Axelsen

Firms Tap AI to Leverage Trade Reconstruction for Surveillance

A lack of data has historically been an obstacle to applying machine learning for regulator-mandated trade reconstruction initiatives, but the recent, explosive growth of digital information could change that—while making trade reconstruction more relevant to financial firms' commercial activities. By Hamad Ali

Whisper it quietly, but regulation may not be the all-consuming burden that some claim it to be. Or, at least, firms are beginning to see the potential fruits of their labors. For example, recent regulations are helping firms derive benefits from a significant post-trade process—trade reconstruction.

At a basic level, trade reconstruction is the process of searching records related to trades and building cases around them. To reconstruct a trade that has taken place, a researcher needs to know how those trades came to life—a process that is, in practice, far more complicated than it might seem on paper. One issue is that trad-

ers today use myriad communication tools such as phones, email, text messaging, Slack, and WhatsApp. So, a typical trade reconstruction scenario could look at a trade that began with a verbal agreement over a phone call, followed by a Bloomberg instant message that confirms in writing the price. Then records from order and execution management systems would be required.

In and around that, lots of things can take place. "Before you and I have that phone call, maybe somebody called me and gave me some inside information," says Matt Smith, CEO at compliance and data analytics firm SteelEye. "Maybe

afterwards I tell a back-office person to make something look the way it shouldn't."

A trade reconstruction effort would involve going through all these communications records and building a story around the trade that took place. Once that case is ready, notes Smith, it can be used by a regulator, a potential client or for internal audit purposes.

Rules such as the Market Abuse Regulation (MAR) and the revised Markets in Financial Instruments Directive (Mifid II) in Europe have mandated that firms store enormous amounts of data related to their trading activities, while in the US, the Dodd–Frank Act served as something of a milestone in the development of modern trade-reconstruction technology.

Smith recalls working as a chief information officer for a big trading company with offices all over the world. In 2013, his chief compliance officer in Stamford, Connecticut, called and informed him of a letter from the Commodity Futures Trading Commission (CFTC). The letter talked about an investigation into two other companies in Europe for oil price fixing from seven years ago.

"I sit with my head of compliance, my head of legal, and we talk about this," he says. "Ultimately, what happens is they say, 'Matt, OK, we need you to go find all the records.' Now the records would be Bloomberg instant messages, so I had to send one of my guys to stop doing what they were doing during the day, go and contact Bloomberg to get these messages back." In a three-month window they had to retrieve voice-recording tapes from seven years ago. Only a few months before, the bank had turned off the trading system. So, they had to get physical tapes and bring in specialists who could retrieve the data.

"Then we had to re-install all the trade systems and replay all the tapes back," he says. "It took us about three to four months to get all those data points. And then there is no central way of searching it. I had to look at the emails in an email silo. We had to look at the trades in the trades silo. The voice in the voice silo. The Bloomberg in the Bloomberg silo. So another month-and-a-half we paid the third-party legal company to go off and find all this data. So we are now talking five months out. Then finally the legal company said here is everything you give to the regulator."

In 2014, provisions in Dodd–Frank came into force that introduced a requirement of 72 hours to reconstruct events around a trade if requested. "We could have been fined even though we hadn't done anything wrong," he says.

When Mifid II came into force in 2018, not only did records have to be retrieved in a reasonable timeframe but they needed to be electronic, online and readily available. "You don't have the option of having it on tape anymore, and more importantly [the records have to be] immutable, which means they can't be tampered with," says Smith.

Now, with continuing demands for information around trading from regulators and clients alike, the advent of artificial intelligence (AI) and harnessing the capabilities of cloud computing could power the next phase of evolution in this area of financial technology.

AI, in particular, has great potential to assist in trade reconstruction, but requires fuel in the form of quality data. Herein lies the rub—historically, it has been very difficult to develop machine learning for the purposes of surveillance in trade reconstruction because there hasn't been enough data available, according to German Soto Sanchez, president of Cloud9 Technologies.

Cloud9 facilitates better trade reconstruction by collecting data from traders' phone conversations, recording them at high fidelity, and transcribing the conversation by utilizing natural-language process-

Matt Smith
SteelEye

German Soto Sanchez
Cloud9 Technologies

ing. The resulting data can be mined and analyzed by machine processes, for activities associated with "bad behavior" or sentiment.

The long-term goal with AI in trade reconstruction is to perform tasks better, faster, and at a bigger scale than human analysts can currently accomplish, such as being able to tell whether or not there is an intent to commit market abuse. "It is very difficult to train a machine to do that. Humans can do that much better today, but obviously it is not super-scalable," says Sanchez.

This, however, requires client firms to have their data in the first place. SteelEye's Smith says his firm spends a lot of time upfront before closing a deal with a client to make sure the data needed for their platform is available.

If the client doesn't have it, in some instances SteelEye can work with them to find it, but it is really down to the clients to make sure they get the data. "This is one of the beautiful things about Mifid II and other regulations that force record-keeping," says Smith. "It has forced the industry as a whole to focus on data quality, and cleaning up data quality in its entirety."

An Issue of Scale

While trade reconstruction technology has been around for a long time, Nuno Hortensio, global head of operations at legacy data management specialist firm Trusted Data Solutions, says what has changed now is the opportunity to macro-scale. "If you look at the data generated in the last two years, the total amount of data is more than in the 10 years before, and it will keep going that way," he says.

In the world of banking, this exponential growth in data can mean being able to better understand what factors drive trading activity and how traders are behaving. This is where AI comes to the table, notes

Hortensio, who previously worked at HSBC as a manager for audio surveillance implementation on the bank's trading floor. Neural networks and deep-learning techniques are actually what enable banks to go through all the datasets and generate insights. "That is why I think it is being talked about more than ever. It is a question of scale," says Hortensio.

Yet the Holy Grail of complete automation remains elusive, even with recent advancements in AI applications. According to SteelEye's Smith, there is no such thing as automated trade reconstruction. "You just can't do it," he says. "There is no technical way. But what we can do is use AI and machine learning to improve the accuracy and the ability to find what was relevant, when it was relevant in and around a transaction."

SteelEye applies technologies like deep learning, effectively teaching a machine what is more relevant and what isn't. This can help to reduce false positives. "So, the deep learning bit we are building into it right now, with a view of reducing false positives. That is not specifically around trade reconstruction. That is more sort of broad across the entire platform. So that is looking at communications and trade surveillance, and best execution as well. But it does relate to trade reconstruction," says Smith. Deep learning does this by helping get closer to the data faster. According to Smith, what is needed are tools to help get the most relevant information as fast as possible.

Beyond the trade reconstruction process, Smith says AI has even greater potential for performing surveillance monitoring on reconstructed data, such as identifying unusual trading patterns across all datasets, once they're linked together. If a trader trades and communicates in a certain way all the time, but on a Thursday every quarter they email or they make a late night phone call to a particular counterparty and trade a security in an unusual way, it can be picked out with an AI algorithm. "That is where we are investing," says Smith. "I think from a market perspective, looking at trade reconstruction as a silo is just flawed because as a silo it is just one piece of the equation of why you have trade reconstruction and how compliance officers want to use it."

Indeed, statistical techniques like machine learning are often more useful for catching activities such as market abuse.

"There may be a hundred dimensions to the way a trader behaves," says Dermot Harris, senior vice president at OneMarketData. "So, it is not always obvious when their behavior changes in a way that increases risk. Looking for these changes in trader behavior, and combining them with risky practices [is the goal], like placing orders in a book and withdrawing them before they execute, [which indicates] apparent hesitation to execute. Pushing the market with excess volume, you combine those risk factors that are covered in Mifid II regulations, those so-called indicators, with a change in trader behaviour over the past few months."

To be sure, AI is currently being used to a certain extent in these processes. Nasdaq, for instance, has deployed machine-learning algorithms in surveillance on its Nordic markets, and has licensed the same technology to others, including Hong Kong Exchanges and Clearing. But the technology isn't necessarily geared toward intent just yet—more, it categorizes information and prioritizes alerting to potential problem cases. Work is underway on behavioral science to model and ultimately predict changes in behavior that could, perhaps, point to abusive practices, but it is still in its early stages, and requires extraordinarily advanced applications of data

Nuno Hortensio
Trusted Data Solutions

science and forensic techniques to work properly. Nasdaq's acquisition of Sybenetix in 2017, and Trading Technologies' purchase of Neurensic in the same year point to the level of interest in this area.

Technology Follows Regulation

One of the key players in the surveillance space is Nice Actimize, whose trade reconstruction offering has been around since the time of Dodd–Frank's passage. Customers needed to comply with these new regulations and one of the areas that was especially challenging was voice communications. Customers were recording voice conversations that they had to archive, but they had no real way to identify the relevant ones to reconstruct the trades that were occurring, or at least, to identify sections of conversations that may be pertinent to a particular trade.

It started to provide speech analytics technology to analyze those phone calls, and then made them searchable so clients could more easily reconstruct the trades that were happening. The vendor further evolved that capability by adding other forms of communications into the platform, bringing in electronic communications, emails and chat data to sit alongside the voice conversation.

"Now, customers are able to bring together their trading activity with their communications activity, and really have a complete start-to-finish view of all the trading lifecycle that occurred and all the events and data that were generated in between," says Steve LoGalbo, director of product management at Nice Actimize. "So, now you can do a trade reconstruction for the purpose of reviewing any trading alerts that occurred, or any suspicious communications, or just on an ad-hoc basis they are able to look into an order, see the related trade data, see the related communications."

There are a variety of machine-learning techniques used within the platform that help improve the trade reconstruction process to make it more accurate for the end-user. "Our clients have told us that before having our solution, any investigation that required the reconstruction of what took place could take anywhere from eight hours to several days," he says.

Cloud Power

The scale of the challenge with trade reconstruction is, to put it lightly, non-trivial. A longer-dated swap trade, for instance, could generate thousands of pieces of associated information during trade reconstruction, ranging from the early conversations between sales traders to the trade ticket itself, and the various lifecycle events associated with its execution and settlement. These events include external and internal messaging between the front office, risk, compliance and treasury functions for managing margin activities, and reporting requirements, among others. When additional data is brought in to feed more advanced analytics, such as behavioral data, the number of information points, in turn, balloons.

Processing all of this information requires serious infrastructure. This, according to Trusted Data Solutions' Hortensio, is where cloud technology comes into play. The use of cloud platforms could allow financial institutions to use computing power at a more reasonable cost than relying on local hardware, and to generate the insights that they need from the data.

Many banks are already engaged in this in a broad sense. Bank of America's Project Greenfield, for instance, now called Bank of America Cloud, aims to migrate 80 percent of its applications to an internal cloud infrastructure by 2019 (*see page 46*), while the emergence of secure platforms such as Amazon Web Services, Google Cloud and Microsoft Azure have eliminated much of financial

Dermot Harris
OneMarketData

institutions' hesitancy around engaging with the technology over the past decade.

Yet, Hortensio says banks need to be more open to using cloud technology, which can augment their capacity to explore technologies like machine learning that need highly scalable computing capabilities. Because of the costs involved, these usually cannot be built in-house.

Cloud technology could give banks the capacity to operate and process datasets at scale. "There are parts of the trade reconstruction that are being done now for those who have the money to make it work," says Hortensio. "But I think that only when you have truly cloud-native applications and banks embracing the cloud will you really be able to extract all the value from trade reconstruction and surveillance."

The Big Picture

Trade reconstruction is an augmentation to the analytics around commercial activities—but depends on integration with those analytics to realize its full potential, says SteelEye's Smith. "On its own it is interesting, but not being plugged into your market abuse and your financial crime prevention technologies, it is less valuable to a firm," he says.

Smith says the vendor is spending more time looking at how to use AI to detect unusual patterns. For SteelEye

it is less about making trade reconstruction more accurate, but more about identifying the activities that can benefit from trade reconstruction. "That is where we are investing more of our money in terms of AI and machine learning, which then augments and helps trade reconstruction become more relevant to a financial firm," he says.

Ultimately, while AI certainly has a part to play in the next evolution of trade reconstruction, it's not a must-have at present. OneMarketData's Harris says trade reconstruction usually does not need AI or machine-learning technologies, since the most important requirements are the linking keys and the timestamps that allow analysts to bind together information on a trade.

Yet, looking ahead, that may not be enough. As regulators continue to demand ever-increasing levels of sophistication on the part of firms and their surveillance processes, the ability to reconstruct a trade—and every possible input into the decision-making that took place during said trade—is becoming increasingly vital. Not being able to produce that information will be no excuse in the years ahead.

The penalties for non-compliance can be severe. Under Mifid II the potential fine can be €5 million ($5.6 million), or 10 percent of the company's revenue. "Dodd–Frank is not as prescriptive, which gives the regulator a lot more leeway to be far more punitive, or less punitive, depending on how they perceive things," says SteelEye's Smith. "That will really boil down to what took place. If you haven't kept records, and you have intentionally hidden something, you can expect them to be very aggressive.

The other side is the reputational damage of being publicly reprimanded by the regulator. "Even if you have a small fine, it goes on to a register with the regulators, which is made available to everybody," he says. W

SALIENT POINTS

- Historically, it has been difficult to leverage machine learning for surveillance in trade reconstruction because there hasn't been enough data available.
- Cloud technology still has not found wide-scale adoption in the banking world. For

trade reconstruction, it offers an affordable way to scale and analyze large sets of data.

- Trade reconstruction becomes much more valuable to a firm when plugged into existing market abuse and financial crime prevention technologies.

For over 50 years, modern asset management has been guided by the Capital Asset Pricing Model and the theories of Harry Markowitz. Yet, a father-and-son team in Boston says it's wrong—and they can prove it.
By James Rundle with photos by Timothy Fadek

"What if I told you that everything

we thought we knew about the theory of capital markets was based on a mistake made decades ago?" says Richard "Dick" Michaud. "And I can tell you exactly what that mistake was and when it was made." As openings to interviews go, it packs a punch. But then, little about New Frontier Advisors, the company founded by Michaud and his son, Robert, is typical. Based in Federal Tower, a stone's throw from Boston's South Street station, the firm was formed in 1999 to put the Michauds' investment theories into action.

New Frontiers is ostensibly an investment advisor that runs money—around $4 billion at last count—and technology that utilizes the Michauds' theories. But to describe it as such is to seriously underplay the intellectual weight behind the company, and to minimize the importance of its raison d'etre.

Indeed, the work of the Michauds cuts to the very heart of the present disruption in the very foundations of asset management—the shift from active management, to passive.

"Why is it that active management doesn't work? Because the tools and the technology that are being used don't work," Michaud says. The reasons behind that not only take up the majority of this interview, but explain much about the Michauds and their company, too.

To fully understand their story, it's necessary to go back nearly 70 years, to the University of Chicago's library, the musings of a young man named Harry Markowitz, and the creation of the efficient frontier.

Intellectual Graft

Known as the father of modern investment theory, Markowitz's landmark paper, *Portfolio Selection*, was published in 1952. For the first time, it effectively quantified risk as a mathematical principle rather than an intuitive one, relative to investing, by balancing the expected return of a portfolio versus its standard deviation—or, how the performance of an investment portfolio can be effectively predicted by taking into consideration the movement of risky assets.

Much of the key behind Markowitz's theory came from an epiphany one afternoon, in that library, where he realized that parametric quadratic programming, or the process of optimizing several variables that are subject to linear constraints, could
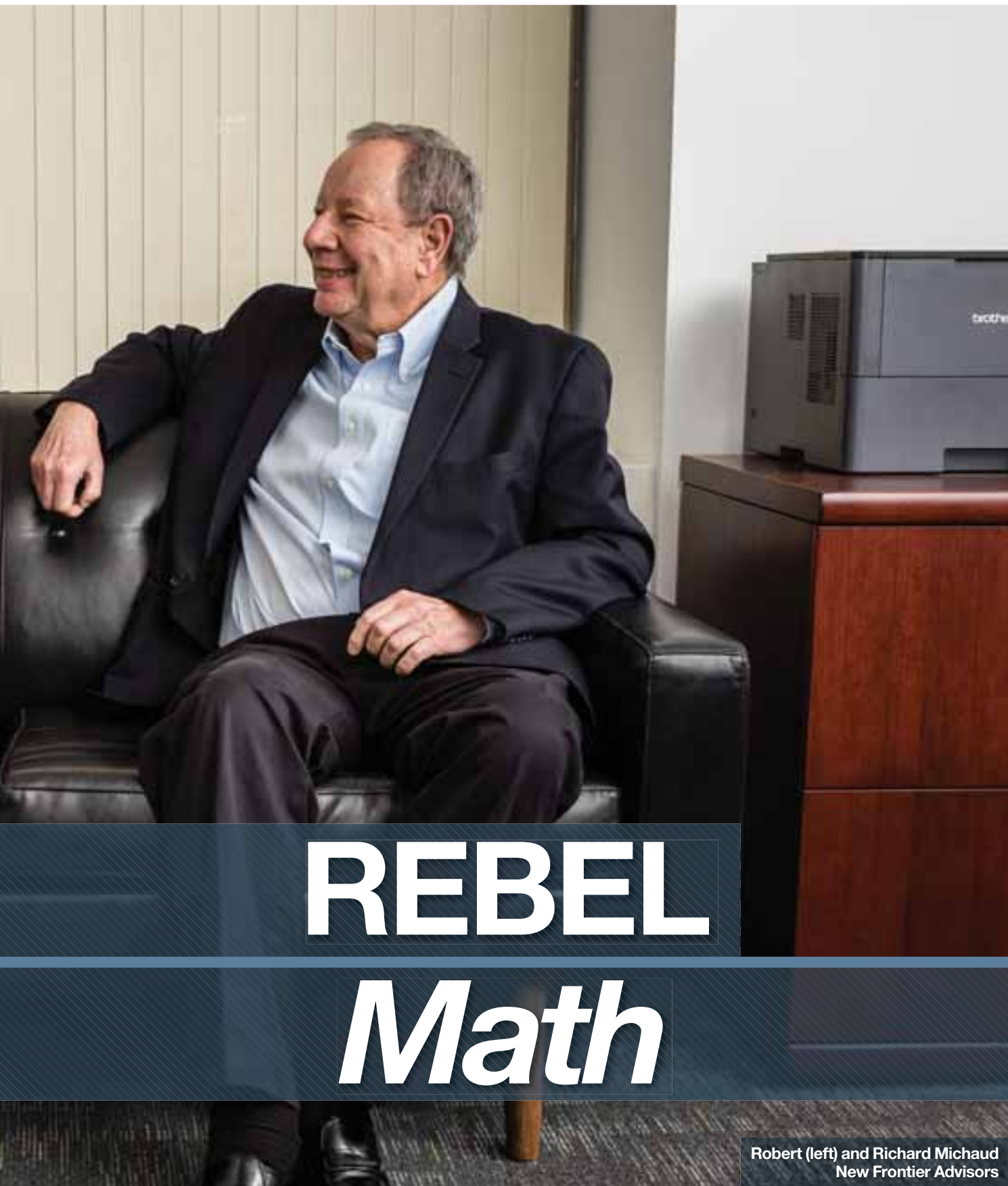
REBEL
Math

Robert (left) and Richard Michaud
New Frontier Advisors

explain—or, at least, provide a mathematical framework for—modeling investor behavior.

"He realized that he could build an efficient frontier that would explain institutional investor behavior. He also explained how people could duplicate institutional investor behavior," Michaud says. "He was inventing quantitative management at 25, and he did all of that all at once while sitting in the library of the Chicago Business School. You know, that's pretty amazing."

Markowitz's paper changed the very nature of investing. Up until that point, investment strategy had largely been driven by maximizing returns, often by chasing what was considered to be the best stock. The idea of a diversified portfolio that balanced risky assets, such as stocks and bonds, with the insurance of riskless assets, like cash, in effect modeled how people make decisions in their daily lives—for instance, people don't expect to be in a car accident, but they buy automotive insurance nonetheless. The maxim this proposed was that the risk of loss, not the prospect of gains, is what actually drives investor behavior in the long term. The efficient frontier, therefore, optimized the portfolio by considering risk and building it in rather than ignoring it.

The real fire was lit under Markowitz's theories with the introduction of the Capital Asset Pricing Model (CAPM), a Markowitz variance preference theory that uses Von Neumann and Morgenstern game theory in its calculations. CAPM has been, essentially, the catalyst for the creation of a multi-trillion dollar asset-management industry.

The 1952 paper and later work would eventually earn Markowitz the Nobel Prize in Economics. Yet, the theory has a problem.

While an elegant mathematical model, Markowitz is information error-sensitive in practice. It is, in effect, too precise, and the outcomes it generates are sometimes bizarre in nature thanks to its tendency to treat predictions as solid truth. With the addition of CAPM, its

effects are further amplified—it ignores the fact that rationality and order do not always manifest in human behavior. Nor does human behavior neatly fit into predictions to 16 decimal places, a measure of accuracy that is important for scientific endeavors, of course, but relatively useless for finance.

Michaud found this for himself when he was working at the Boston Company in the 1970s. His boss at the time tasked him, as a new analyst, with coming up with a quantitative model for a European capital markets mutual fund. Michaud fed his data into the Markowitz optimization program at the Massachusetts Institute of Technology (MIT), but it wasn't until he presented the results that he realized there was a problem with how the model portfolio was weighted.

"I remember running the Markowitz optimizer program and then very proudly bringing the results to my boss," Michaud says. "And so, we were looking at the results and he said 'Austria? 35 percent, is that right, Dick?' 'Yes,' I said. 'That's right.' 'But we could buy everything, Dick,' he said. 'We could buy everything in the Austrian capital market.'"

This supposedly diversified portfolio ignored, it seemed, certain inconsistent elements—and more damningly, without key data, the model sometimes drew wild conclusions. Needless to say, the problem stuck with Michaud. Indeed, it was the genesis moment that eventually led to his famous 1989 paper, which would challenge the very orthodoxy of the market to date.

New Frontier

That paper, *The Markowitz Optimization Enigma: Is 'Optimized' Optimal?*, laid out much of Michaud's initial thinking around the problems with the Markowitz mean-variance efficient frontier. But it was in the 1990s, when Michaud was working at Merrill Lynch, that Harvard University approached him with the idea to write a book on portfolio optimization. His

son, Robert, pitched in with what they thought was the solution to the Markowitz problem—Monte Carlo.

The problem with Markowitz, as described earlier, is its mechanical nature and its tendency to regard predicted returns as ironclad. But that doesn't always reflect reality—sometimes, stocks beat bonds, sometimes small caps beat large caps, sometimes small Treasurys beat long-term Treasurys—the market is not simply a program running through subroutines. The solution, the two believed, was to take the essence of Markowitz and run it through thousands of Monte Carlo simulations.

Black swans, fat tails, aberrant events—you name it—were all thrown into the simulations. A spray of wildly variant outputs followed, and, after a while, a conclusion became apparent to the two mathematicians—the answer, it seemed, lay somewhere in between.

"We could find crazy, crazy, efficient frontiers," says Michaud. "The problem is not the forecast, it's how the optimizer behaves, how it uses statistically estimated information. The procedure is very unstable, even small differences in the inputs can make large differences in how the optimized portfolios behave. And so, with Robert's help, we created a patented averaging process of Markowitz frontiers resulting in a new efficient frontier that did not exist before."

The result was truly diversified portfolios with distributed balance between risk and return, as depicted in New Frontier's logo, which at first looks like a rainbow but is actually a graphical representation of portfolio weighting under Michaud optimization. The landmark book, *Efficient Asset Management*, detailing these findings, was published first by Harvard University Press in 1999, with a second edition published in 2008 by Oxford University Press. The Michauds moved quickly to patent their work, rather than simply allow it to exist in academia or start a hedge fund

in secret, a move that would eventually lead to the formation of New Frontier Advisors, and the cementing of the professional relationship between father and son.

Robert, interestingly, was not all that taken with finance in his earlier career. He was a mathematician by trade, but the publication of the book changed that. After its release, he says, he started "getting calls from Nobel Prize winners who were actually interested in my work."

After that, he says, his outlook changed, and he began to question his choice to do pure math. "I could spend my whole life, maybe getting a result that a handful of people care about. And this is something that seemed like it was actually useful to people. So, I thought I'd switch from math to a finance program."

Robert began a doctoral program at UCLA, but the seeds of what would become New Frontier were already there. He had been writing the early software for the company, which had been geared as a consultancy, to serve as a delivery mechanism for Michaud optimization theory. It wasn't until he realized that the technology was the key that he really began to reconsider his position, thanks to a client who asked his father whether they might be able to license it from them during the course of a consulting engagement. As such, they pivoted from pure consultancy.

"Sure, you can build a nice business as a consulting firm but to really get the ideas out there, selling the technology was clearly the way to go," the younger Michaud recalls. "And the business was doing well. We had domestic and global clients using our technology to build much more diversified portfolios, and many told us their performance was improved and their clients were benefiting. I enjoyed getting to travel around the world a little bit, but I especially liked that we were making people better off. There was even a national social security systems using our technology to build retirement portfolios."

The first version of New Frontier's Asset Allocation System was released in 2000, around the time that Robert left his doctoral program and joined the firm full time. The Michauds' theories had begun to work in practice, but their true importance would soon be determined by the very person whose theories they questioned—Harry Markowitz.

Peer Review

"Dick, I know what you're doing, and I'm going to beat you."

Those are the words that Richard Michaud recalls Markowitz speaking to him at a professional conference, not long after he and Robert published Efficient Asset Management. Markowitz teamed up with Nilufer Usmen, an associate professor of finance at Monclair State University, to test Michaud's optimizer against his own.

Markowitz realized that what the Michauds were doing wasn't something completely different from what he had

formulated—rather, it worked with different inputs. And so, he pursued the same, what Richard Michaud calls "Markowitz plus." He ran the tests dozens of times, and eventually, in 2003, the Michauds received a phone call. Markowitz was on the other end of the line.

"Dick," he said. "We've finished our work. And I think you're going to like it." Michaud's optimizer had beaten Markowitz's in every single test, a result that was memorialized in a *Pensions and Investments* article from December 2003, titled "Markowitz Says Michaud Has Built a Better Mousetrap." A copy of it hangs on the wall of New Frontier Advisors' conference room.

Despite sounding adversarial, the relationship between the Michauds and Markowitz was quite cordial. Robert remembers visiting the esteemed mathematician in San Diego "every once in a while" at the elder academic's request during his tests, in order to ensure that he had been implementing their algorithms correctly. He recalls, with a distinct fondness, coding together with Markowitz on those days, and even offering ways to improve the Nobel winner's programming.

The Michauds remain deeply respectful of their peer. Indeed, the foreword of the second edition of *Efficient Asset Management* states: "The second

edition is most indebted to the research, interest and ongoing support of Harry Markowitz. Our admiration of his towering body of work only increases as our understanding deepens."

But with the technology in place, and a remarkable affirmation of their theories from one of the greatest minds in finance under their belts, there remained a further hurdle before New Frontier would become what it is today.

Actively Passive

"People were asking us, if we're so smart, why aren't we managing money?" Robert Michaud says. "Occasionally we'd have people asking if we would manage money for them. These were mostly institutional mandates, but not large enough to change our business model at that time."

Such "smaller" mandates would, of course, be substantial by any measure, but that would necessitate a radical change in how New Frontier operated. Both Robert and Richard had worked in finance, both at Acadian Asset Management, and the elder Michaud at a range of firms over his career, and they knew that investment decision-making realistically comprised a small group of people.

Yet there had to be hundreds supporting that small group, in terms of marketing, distribution, operations, trading, compliance and everything else. It didn't fit with what they were trying to achieve with New Frontier. The emergence of exchange-traded funds (ETFs) changed that.

By this time, Robert was the chief technology officer of New Frontier, with Richard as the CEO. They had been watching the development of ETFs closely for some time, and the vehicle seemed eerily well-suited to what they were attempting to achieve.

"Since we were so focused on total portfolio optimization, I said, 'Oh, ETFs are exactly what you want to optimize: low-cost, transparent, liquid building blocks of a portfolio,'" says Robert Michaud. "Although ETF

portfolios are extremely popular now, we were building global multi-asset portfolios entirely out of ETFs from the very beginning."

In many ways, it does tie in perfectly with where New Frontier sits in the new world of asset management, and the new existential struggle in the shift from active to passive management.

"Passive has to do with low cost," Richard Michaud says. "But in spite of the fact that the index fund managers are right to think in terms of low-cost investing, they have not repealed the law of finance that says you get what you pay for. For active management to work, you need technology that works and that is what has been the problem up until now. What we are trying to do is apply state-of-the-art investment technology to very low-cost, low-risk funds. So, it's the best of both the active and passive worlds."

What the Michauds are trying to do, in effect, is actively managed passive investing, with a number of different strategies to achieve that, based on Michaud optimization. Assets under management passed $500 million in 2006, shortly before the second edition of the book was published. They passed $1 billion in 2008, just before

the fourth patent was granted to the Michauds for their work. Currently, the firm manages multi-asset portfolios and ETFs with about $4 billion under management.

By their own admission, returns from these strategies are not spectacular. But they are consistently above the benchmark, Robert Michaud says. And their mission is succeeding—the Chartered Financial Analyst institute, for instance, teaches Michaud optimization. Their technology and theories are used—both legally, and perhaps more dubiously so in some instances, which Richard Michaud declines to cite specifically—across finance and related professions.

And as New Frontier continues to grow, the core mission remains the same: a bedrock of science, tempered with a certain social, psychological and mathematical practicality. While the market remains dominated by Markowitz and CAPM for now, the so-called wrong turn mentioned at the beginning of this article, perhaps in the future and if this current trend toward passive continues to reshape the very nature of asset management, the name Michaud may become even more prominent. **W**

✕ IPC, Charles Schwab Dominate 2018 AFTAs

With three wins each, IPC Systems and Charles Schwab Investment Management were the big winners at the 2018 American Financial Technology Awards, held on the evening of December 3 in New York.

The 2018 AFTAs featured a record number of category winners with a total of 31 awards on offer—14 end-user categories and 17 vendor categories—and were dominated by New York-based Charles Schwab Investment Management and IPC Systems, headquartered in Jersey City. As expected, the technologies that fall under the artificial intelligence moniker were prominent across a large swath of this year's entries, while analytics, security, interoperability and time to market (in terms of development and deployment of new applications and functionality) were also in evidence.

This year's three individual categories—best third-party technology vendor CEO or CIO, best technology executive (buy side) and best technology executive (sell side)—were won by Alap Shah (Sentieo), James Ferrarelli (Charles Schwab Investment Management) and Beatriz Martín (UBS Investment Bank), respectively. Charles Schwab also won the best IT team category, underlining the outstanding work the firm is currently doing on the technology front.

Write-ups by James Rundle (JR), Wei-Shen Wong (WSW), Emilia David (ED), Josephine Gallagher (JG), Hamad Ali (HA) and Victor Anderson (VBA). **W**

Victor Anderson
Editor-in-Chief

Winners' Circle

Waters honored the winners at a ceremony on December 3 in New York.

Best Artificial Intelligence (AI) Technology Initiative

MarketAxess

With all the innovation currently taking place in the artificial intelligence (AI) field, this is one of the most keenly contested of all the categories on offer in the AFTAs. In 2017 the winner was FIS for its Control Center platform. The 2018 winner is New York-based MarketAxess for its Composite Plus (CP+) offering, a proprietary algorithmic pricing engine for corporate bonds.

It was three years ago that MarketAxess first turned to machine learning. According to David Krein, global head of research at MarketAxess, machine learning has traditionally been more common in equities as opposed to fixed-income markets. "We sought to apply it to corporate bond market data, which is notoriously sparse," Krein explains. "Market data can come from various sources. There is a lot of stale information, there is a lot of incomplete information, and a lot of it is not centralized. We went through a major data exercise to consolidate, condition and warehouse a lot of this data across the entire firm. Then we used machine learning to digest and make sense of it."

CP+, which can be used to support best execution and price discovery functions, was launched in May 2017. The engine generates prices for more than 24,000 bonds globally from public TRACE data, proprietary MarketAxess trading platform activity, and Trax. Prices are generated up to every 15 seconds.

According to Krein, the idea of having a pre-trade price to display took traders some time to get used to. "What we looked to do was something that hadn't really been done before, which was to be able to use this price as a pre-trade reference for the corporate bond market, meaning that it should provide the greatest transparency by being closest in level—price, spread or yield—to the next trade that occurs in that bond," he says. "Competing commercial products, certainly those that have access to more limited datasets and are not AI-driven, are not deployed as useful pre-trade references."

MarketAxess continues to refine the machine-learning algorithm on a quarterly basis, incorporating new data points to improve accuracy and reduce errors. "There is a real inflection point in the corporate bond market right now with respect to data," Krein explains. "There is finally enough information for us to build products like this and have them be meaningful. We feel that we started early in the cycle, made the investments in people and infrastructure, and because of that we are realizing the fruit of that now when the market needs it most."

—HA

MarketAxess won the AFTA for the best AI technology initiative thanks to its Composite Plus offering.

> "
> The engine generates prices for more than 24,000 bonds globally from public TRACE data, proprietary MarketAxess trading platform activity, and Trax. Prices are generated up to every 15 seconds.

Best Back-Office Initiative

Cobalt

Cobalt snags this year's best back-office initiative category at the AFTAs from SmartStream, winner of the 2016 and 2017 editions, thanks to its foreign-exchange (FX) reconciliation platform.

The company wanted to re-engineer post-trade functions for the FX market, a process it sees as too complex, with a shared record of transactions that makes reconciliation much easier, according to Cobalt's CEO, Andy Coyne. "We create a single, shared record of transactions—think of it as a utility or an infrastructure—which is why it's affordable," he says. "It simplifies the workflow in what we think is a unique approach to blockchain. Our offering kills layers of reconciliation and is the first post-trade FX infrastructure that was built to meet the industry's exacting standards. At a minimum, we are targeting the $20 billion in FX transaction infrastructure costs, considering most major banks spend more than $500 million on post-trade FX alone."

Coyne notes that Cobalt's approach to the back office offers information pertinent to the transaction, although participants will only be able to access their own data. He adds that by deploying a shared ledger for FX transactions, firms will see improved lifecycle management and enjoy the benefits from methods like compression, which are easier to do when reconciliation processes aren't overly protracted.

Cobalt, which received investment from Citi, the Singapore Exchange and former Deutsche Bank COO, Henry Ritchotte, went live on the BT Radianz Cloud ecosystem in August 2018 to expand its clientele looking to use its blockchain-based offerings. While on the Radianz Cloud, it is continuing to onboard additional clients.

The past year saw Cobalt introduce more risk-reducing features to its FX post-trade infrastructure. Coyne says Cobalt's 2019 upgrade roadmap includes assessing workflows related to credit, new features and improvements around work sharing.

Cobalt considers the FX market as ripe for innovation, particularly the post-trade space where investment has been slow. "We chose the FX market because we are domain experts and we know how it operates," explains Coyne. "The industry has been looking for ways to be more efficient and, particularly since the financial crisis, it has been really focused on providing more value. There was no competition in the post-trade process for market participants, so investment in it was largely ignored. Post-trade is the last bastion of inefficiency for the FX market."

Coyne predicts that more investment will be made in post-trade processes, particularly in the FX market, as companies continue to demand more efficiency and value from their workflows.

—ED

> " By deploying a shared ledger for FX transactions, firms will see improved lifecycle management and enjoy the benefits from methods like compression, which are easier to do when reconciliation processes aren't overly protracted.

2018

American
Financial
Technology
Awards

VENDORS

Best Collaboration Initiative

AxiomSL

AxiomSL wins this year's AFTA for the best collaboration initiative, a category won last year by SS&C Advent and Maitland. AxiomSL's data integrity and control initiative, responsible for delivering this year's win, is designed to help clients comply with Comprehensive Capital Analysis and Review (CCAR) requirements and other complex regulatory mandates that have sprung up in the last few years.

The company works with its clients by way of a consultation process on how best to approach their implementation of regulations like CCAR. The platform allows clients to compile reports for regulations that require granularity, something that they previously were not required to do.

Eli Feuer, a vice president and solution architect at AxiomSL, says transparency is a big focus for the company, as it wants to provide its end-users with the ability to point to specific records used for reporting purposes. "A big focus for us is transparency—any change we make is saved forever," Feuer says. "We're not a black box so clients can see how data comes in. This transparency makes it easy for institutions to point out which records make up the amounts they have reported. It also helps us focus on end-users because we want them to know how the platform works."

Beyond knowing how the platform works, clients also have to deal with the constantly evolving nature of regulations. For the past year, Feuer says, AxiomSL has built new products around new or upcoming rules, as well as introducing new features. One such update is a data lineage function that traces individual records from source to final report. Feuer says clients demanded the ability to map out data to better understand where the data is coming from and trace its ownership. The firm also released an initial product for the new Federal Deposit Insurance Corp. (FDIC) rule that requires banks with two million or more account deposits to report insurance calculations. The FDIC regulation is not due to come into force until 2020, but the company decided to release a version based on initial rules, which will be updated when more information becomes available. Another update was around rules for single counterparty credit limits, which comes into force this year.

Feuer says clients are moving past just wanting to comply with rules—they are learning that all this granular data may be useful for business. "After the financial crisis, there was a big focus on regulations. We're now moving past that and people are thinking about ways to have a sustainable model in the long term to comply with all these new regulations," he says.

—ED

AxiomSL's win in the best collaboration initiative category was on the back of its work around CCAR compliance.

> " AxiomSL's data integrity and control initiative, responsible for delivering this year's win, is designed to help clients comply with Comprehensive Capital Analysis and Review requirements and other complex regulatory mandates that have sprung up in the last few years.

2018
American
Financial
Technology
Awards

VENDORS

Best Communications Infrastructure Provider

IPC Systems

This year and for the third year in a row, IPC Systems has won the best communications infrastructure provider category at the AFTAs. Jersey City, NJ-based IPC has done extensive work to make its ubiquitous voice communication platform, Unigy, and its recently unveiled cloud-based ecosystem, Unigy 360, more responsive to the demands of its clients, including additional integration with other offerings to increase workflow efficiencies.

Don Henderson, senior vice president for product, research and development, and IT at IPC, says the next year will see more voice to data and platform integration. The firm plans to roll out an offering that builds out additional metadata from voice calls and other communications to create information that can be fed into analytics platforms. "We kicked off a data project a year ago and we're already testing it in beta," Henderson confirms. "This is our big innovation project for 2019. The project will take the data that our users generate through our ecosystem and convert that usually unstructured data to structured data to derive good intelligence."

Henderson adds that voice communication still holds huge importance in the trading world, but the data that can be gathered by it can be unwieldy. With this in mind, IPC wants to ensure that analytics from communications—either from voice or text—can be made more efficient so that clients can derive better information from it to inform their trading or strategies.

Innovation is important for IPC, says Henderson, which is why the company spent the past few years working on new offerings as well as with other firms. IPC partnered with other voice data services firms like GreenKey Technologies to deliver more value, an initiative that won the best partnership or alliance category in this year's AFTAs.

In October 2018, IPC also announced a partnership with business communications provider tekVizion to test out the interoperability of IPC's platform and security patches. The partnership is expected to deliver upgrades much faster to clients to ensure any security fixes or updates don't experience glitches in live environments.

But IPC's innovative streak has not been limited to new offerings. According to Henderson, one of the company's largest ongoing projects has been to expand access to Unigy. The company has been working to make using the Unigy platform more fluid between desktops, mobile phones and tablets as well as to other potential access points. Henderson notes that mobility and mobile access is especially important in the Asian and European markets where customers are often on the move.

IPC will be launching Unigy 360 in the Asia-Pacific region in the first quarter of this year.

—ED

IPC Systems' first of three wins in this year's AFTAs came courtesy of its Unigy and Unigy 360 platforms.

> "
> IPC wants to ensure that analytics from communications—either from voice or text—can be made more efficient so that clients can derive better information from it to inform their trading or strategies.

Women in Technology & Data Awards 2019

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Best Middle-Office Initiative

Indus Valley Partners

The winner of the best middle-office initiative category at the 2018 American Financial Technology Awards is New York-based Indus Valley Partners (IVP), thanks to its IVP Robo Recon platform. IVP previously won this category in 2016, while in 2017 the award went to data specialist RIMES Technologies.

According to Gurvinder Singh, CEO of Indus Valley Partners, most of the middle-office services platforms currently on the market tend to be Excel-driven. "We gave our clients full access to the platform so that once the raw data comes in they can actually see how the engine works and what people are doing," says Singh. "It is all about full transparency—they are not just getting back reports. That has been the other problem in the middle-office space where the relationships are done through Chinese walls. Now, it is almost like both sides are sitting on the same system and they can see what each other is doing in a clean, auditable way."

IVP Robo Recon is designed to meet the reconciliation needs of alternative asset managers with the help of machine learning and natural-language processing (NLP) technology. This new AI capability learns how to identify breaks, flags non-normal activity and automatically suggests resolutions. When IVP began looking at machine learning three years ago, reconciliation functions were one of the earliest areas it applied the technology to. "More and more people are asking us to make a golden copy of their security master transaction data," says Singh. "And more people are asking us to make a golden copy for their IBOR (investment book of record) as well. Our teams are responsible for bringing in all of this data, processing it and applying all the rules to it. And now they are being assisted by our master data management solutions and robotic process automation (RPA)."

In terms of its reconciliation service, the vendor has approximately 70 clients with around 1,000 users. IVP Robo Recon currently supports $160 billion in AUM, across 300 portfolios and 80-plus counterparties. "We were able to come to a point where our suggestion engine was effectively reducing the workflow on the exceptions by 50 to 60 percent on our managed services team," Singh explains. "Over time, we were actually able to start pricing our solution not by how many people were working on it, but by how many accounts we were reconciling based on the asset mix. So that was really an interesting first that we were able to bring to the market."

—HA

Indus Valley Partners won the best middle-office initiative category at this year's AFTAs thanks to its IVP Robo Recon platform.

"

IVP Robo Recon is designed to meet the reconciliation needs of alternative asset managers with the help of machine learning and natural-language processing technology.

Indus Valley Partners

Indus Valley Partners' technology solutions and services are transforming the world of buy-side firms. Addressing needs that span the front, middle and back office, IVP's solutions & services help buy-side firms harness the power of data, improving flexibility, scalability and efficiency so decision-makers can generate insights, reduce risks, gain a competitive edge and find alpha.

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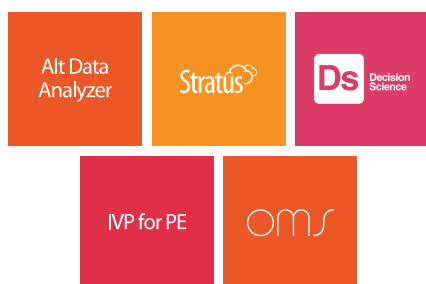
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Data Reconciliations	Data Management	Treasury	Regulatory Reporting	EOD Reporting

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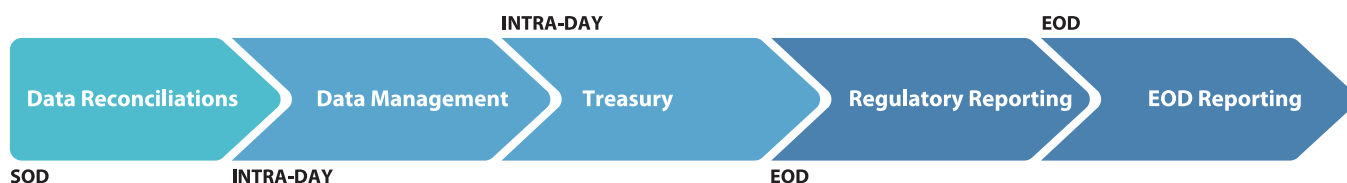
Portfolio Data. Empowered!

Best Front-Office Initiative

SS&C Advent

In the 2017 American Financial Technology Awards, the win in the best front-office initiative category went to State Street for its Quantextual Idea Lab. This time, however, it is the turn of SS&C Advent in the winners' circle, thanks to its cloud-based portfolio construction and rebalancing platform, Advent Genesis.

Daniel Eriksson, vice president of solutions management at SS&C Advent, says what the firm has built is something that the market was missing. "It is a complete order creation solution built for the portfolio manager," he says.

The platform, which was launched in 2017, relies on mixed integer linear optimization. "The math in the optimization engine is what allows us to scale so we can rebalance over a 1000 accounts in less than a minute," Eriksson says. "So why does it matter? Today, that would take a portfolio manager two or three hours, and if something goes wrong they have to re-run that process. It's just a waste of time," says Eriksson.

The platform has exception-based capabilities so that it can identify accounts that might be moving outside the allowed drift limit in order to quickly get them back in line. "You have information around which account has cash that needs to be invested and which account needs cash based on that requirement, so you can act on that. Or simply, you might be drifting, or you might be over-weighted or under-weighted in a security, and you want to act on that. Those are examples of information flow to the portfolio manager that they can act on, without having to look at spreadsheets," he says.

This year, the vendor is looking to add machine-learning technology for a number of use-cases such as smart-order ticket collection based on usage patterns. According to Eriksson, many of the technology vendors operating in the capital markets are not as specialized as they used to be. Many, he says, take a hybrid approach. "For us, it has been to focus on the portfolio manager, not the order management part," Eriksson explains. "That is different. The pure scale and speed of this is different. Not many systems out there can work at the pace or speed that we do. So that has been a key. I think the benefit that we get from being a 'true cloud' provider is that we are able to release every six-to-eight weeks, which will continue to allow us to stay ahead of the competition, because obviously it is a never-ending game."

—HA

Victor Anderson, Catherine Daly and Ron Farrell

> "
> The platform has exception-based capabilities so that it can identify accounts that might be moving outside the allowed drift limit in order to quickly get them back in line.

American
Financial
Technology
Awards
2018

Best New Technology Introduced Over the Last 12 Months (Data and Operations)

UnaVista (London Stock Exchange Group)

As 2018 has now come to a close, the year has seen capturing data and regulatory reporting obligations occupy large numbers of capital markets participants, especially with the introduction of the Markets in Financial Instruments Regulation (Mifir) on January 3, 2018.

A year on, and the regulatory burden has shown little signs of subsiding. UnaVista, the regulatory reporting arm of London Stock Exchange Group Technology, is a familiar name in this space, and over the past 12 months has dedicated its efforts to develop its Mifir three-way reconciliation service to help firms comply with their reconciliation requirements under Mifir RTS 22 article 15. This latest functionality, aimed at tackling a complex data problem and minimizing compliance breaks, has helped UnaVista win the AFTA for the best new technology introduced over the last 12 months (data and operations).

Maryse Gordon, senior pre-sales and business development manager at UnaVista, explains that the three-way functionality captures and reconciles data from three key data points: a firm's internal system, the data records submitted to UnaVista from one or multiple firms, and extracts of the reports filed with regulators. The technology's core objective is to ensure consistency of data quality throughout the process, reduce the likeliness of compliance breaks, and deliver clear visibility of reporting failures. "The process of submitting data is one aspect of regulatory reporting where firms need to do their due diligence to ensure that what they have reported is quality data, is accurate data, is complete data, and is also submitted in a timely fashion," Gordon explains. "So one way to do that completeness check is to use reconciliation services such as UnaVista, which allows for post-reporting using three-way reconciliation on a T+1 [basis]."

Built using a modular approach, the UnaVista platform is regulator-agnostic and can be adapted to support multiple jurisdictions, asset classes and products. Looking ahead, the provider plans to continue rolling out its Securities Financing and Transactions Regulation offering and focus on developing its data and analytics capabilities to allow clients to benchmark and compare their reporting performances with those of their peers. "Data and analytics are going to be a very big part of our strategy for 2019 and beyond," says Gordon. "We are looking at enhancing the visualization of data, creating new products from it to allow our clients to gain deeper levels of insight into their reporting activity, but also using that information to make decisions about where to take their business."

—JG

Victor Anderson and Eisso VanderMeulen

> " This latest functionality, aimed at tackling a complex data problem and minimizing compliance breaks, has helped UnaVista win the AFTA for the best new technology introduced over the last 12 months (data and operations).

2018
American
Financial
Technology
Awards

VENDORS

Best New Technology Introduced Over the Last 12 Months (Infrastructure)

Axioma

For many capital markets firms, irrespective of whether they are from the buy side or sell side, legacy systems are invariably the cause of inefficiency, inflexibility and unnecessary cost. It is therefore now more important than ever for market participants and the technology providers servicing them to build and deploy open and flexible technologies that support interoperability, customizable investment strategies and operational scalability. Axioma's cloud-based axiomaBlue platform has hit the ground running in this space since its launch in October last year, winning the 2018 best new technology introduced over the last 12 months (infrastructure) category at the AFTAs.

Sebastian Ceria, founder and CEO of Axioma, describes axiomaBlue as a cloud-native environment that functions similar to a computer's operating systems. He explains that it is designed to act as an intermediary layer, using application programming interfaces (APIs) to connect and manage individual technologies from various providers. The platform allows multiple applications to more easily interoperate with each other, supporting data consistency across all embedded systems, including front-to-back office operations. "The key today is infrastructures that are open," says Ceria. "That means whatever piece of technology you put in a client's system, they have to be able to interact and interoperate with other tools from other vendors in a seamless and consistent fashion. Otherwise, the choice is a monolithic platform that becomes all-encompassing, rigid and the client becomes completely dependent on one vendor."

The infrastructure service offers clients a variety of integrated modules and packages relating to security, interoperability, scalability, and transparency. It is currently available with Axioma's API-first risk product, and features new business intelligence and dashboard capabilities.

Recently, Axioma's complete technology suite was added to the platform, which covers risk management, performance attribution and customized analytics, as well as portfolio construction and optimization. Additionally, the open architecture is developed to allow third-party vendors to more easily integrate their technologies such as order management systems, accounting platforms and investment books of records.

Going forward, Axioma intends to continue introducing additional capabilities to axiomaBlue and forge strong alliances with technology partners by adding their services to the platform. Ceria explains that Axioma is currently in talks with OpenFin, a provider of desktop workspace applications, to collaborate and integrate its services. "One objective is to increase the number of Axioma services on the platform and the second is to illustrate its openness by bringing partner applications on top of the infrastructure," he adds.

—JG

Axioma's recently launched axiomaBlue platform delivered the win in the best new technology (infrastructure) category at this year's AFTAs.
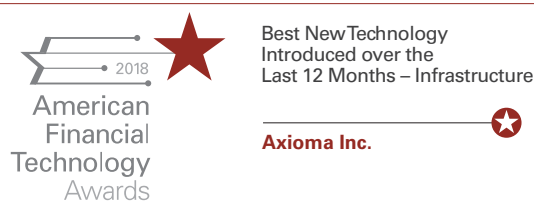
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Axioma's cloud-based axiomaBlue platform has hit the ground running in this space since its launch in October 2018, winning this year's best new technology introduced over the last 12 months (infrastructure) category

2018

American
Financial
Technology
Awards

VENDORS

Best New Technology Introduced Over the Last 12 Months (Trading and Risk)

SS&C Eze

Buy-side firms have spent decades trying to consolidate and streamline their front-to-back office operations. The value of such an achievement enables hedge funds and traditional asset managers to develop complete visibility of performance, risk and regulatory compliance through the adoption of unified platforms. SS&C Eze, formerly Eze Software, has taken this concept one step further with the development of its Eze Eclipse platform, tailored to meet the needs of startup hedge funds focused on equity and event-driven markets.

In the year-and-a-half since its launch in June 2017, the offering has garnered attention for its growing risk and investment management capabilities, and this year its hard work has paid off as it takes home the award for best new technology introduced over the last 12 months (trading and risk) at the 2018 AFTAs.

Built on cloud-native technology, Eclipse supports the full investment lifecycle, viewable through a single web browser interface. Designed with a holistic approach in mind and aimed at minimizing total cost of ownership, the platform can be configured and customized to fit clients' needs at various stages in their growth. Portfolio managers can tailor investment strategies by adjusting portfolio, custodial and strategy-level allocations and leveraging Eclipse's order-routing capabilities. Supplemented by ICE Data Services, clients have access to built-in analytics on performance measurements, execution and real-time market insights, including valuations, profit and loss (P&L), and position-level exposure.

Eze Eclipse sits on an internal investment book of record platform that allows for complete visibility and management of risk and regulatory compliance. It provides configurable pre- and post-trade compliance checks and enables clients to monitor positions throughout the transaction lifecycle.

Eric Christofferson, managing director of product and engineering at SS&C Eze, explains that the firm works closely with clients to consistently improve the platform's functionality and uses an Agile approach to bring those solutions to market quickly. In one example, he highlights the fact that the provider dedicated a large amount of time to developing the front-end of the platform based on users' specific requirements. "We have focused pretty heavily on the user experience and tailoring workflows so that clients have all the data they require at their fingertips," he says. "We have focused heavily on how to navigate through the application to find what you need as easily as possible and implement an action very quickly."

Looking to 2019, SS&C Eze expects to roll out the offering across the EMEA and APAC markets, and continue to expand its asset class coverage, including support for credit instruments and futures.

—*JG*

> "
> **Designed with a holistic approach in mind and aimed at minimizing total cost of ownership, the platform can be configured and customized to fit clients' needs at various stages in their growth.**

VENDORS

2018
American
Financial
Technology
Awards

Best Partnership or Alliance

IPC Systems & GreenKey Technologies

One of the secrets to a successful partnership is the ability for each side to complement the other. This is certainly the case for winners of the best partnership or alliance category in the 2018 AFTAs, IPC Systems and GreenKey Technologies, for their collaboration on an AI-based speech recognition product.

Anthony Tassone, founder of GreenKey, notes that the two firms were originally competitors. Over the years, they started to find common ground with one another and the two management teams began to understand each other. "GreenKey began to re-position its product offering; it became less competitive with IPC and much more complementary," says Tassone.

Once GreenKey's offering was repositioned to focus on speech-recognition transcription, there was suddenly a lot more for the two firms to talk about. IPC specializes in voice-based trading infrastructure and back-end telephony, while GreenKey specializes in web-based application development and speech recognition. "Working directly with GreenKey in some ways is like having GreenKey as an extension of IPC, and IPC an extension of GreenKey," says Mark Slivovsky, director of global product management at IPC. "We are able to work independently as two distinct companies but still come together on a collaborative application and move everything forward."

The front-end application the two firms have jointly developed will be launched sometime in the first quarter of 2019. "It sits on top of a broker's or trader's desktop," says Tassone. "Essentially, if that person is intercoming or calling on their IPC turret and across the IPC network, the platform is going to capture their structure, quotes and trades, and display them on the desktop. So it eliminates the step of having to type that information up, and it gives you additional functionality like if you step off the desk and you go to lunch, or if you are late onto the desk, you can just step into your position, look at your desktop screen and see all the different quotes and trades that have been shouted. Until now that has never been available."

Once that data is captured, it can be analyzed and fed downstream into trade tickets and risk management systems, according to Tassone.

The two firms work closely, with frequent office visits and sharing of online communication channels. Customer experience has also been paramount to the success of the partnership. "It is collaborative, not just between IPC and GreenKey, but with customers too—that is the key component here. We work directly with customers day in and day out," says Slivovsky.

—HA

Victor Anderson, Nader Shwayhat (GreenKey Technologies) and Don Henderson (IPC Systems)

> "
> One of the secrets to a successful partnership is the ability for each side to complement the other. This is certainly the case for this year's winners of the best partnership or alliance category in the AFTAs, IPC Systems and GreenKey Technologies.

2018
American
Financial
Technology
Awards

VENDORS

Best Third-Party Technology Vendor
IT Team

SS&C Advent

SS&C Advent wins the AFTA for the best third-party technology vendor IT team, wresting the award from last year's winner, Axioma. The team works on SS&C Advent's Genesis application, which is designed to offer portfolio construction and rebalancing functionality for various types of buy-side clients. Genesis is a new offering in the SS&C Advent line-up, having been launched in September 2017, but it has so far been upgraded at least eight times in the last 12 months.

Dave Blair, vice president of solutions development at SS&C Advent, says the Genesis team's mixture of experience and enthusiasm has allowed it to be agile and able to move quickly to address the various needs of Genesis' customers. "We serve different types of clients who have varied needs when it comes to portfolio construction or rebalancing, so it is very challenging to meet those demands," Blair says. "But we do have a team with a mix of experience who can see how complex these needs are and are always striving to make it easier on clients. We have some who are fresh out of college and are ready to try anything, but we also have veteran team members who work very closely with the business side and with clients. This means they are agile and can follow the rapid cycles of innovation."

According to Blair, Genesis plugs a hole in SS&C's front-office coverage. It allows clients to balance their portfolios depending on their specific models. Many of Genesis' users are what Blair describes as "hybrid traders"—those who vary their focus between institutional investor-heavy portfolios to ones mainly concerned with wealth management.

In the past year alone, the Genesis IT team delivered eight new features to the platform, including expanding its model-based workflows, adding the ability to trade related instruments and not just accounts, and incorporating real-time pricing integration. Other enhancements focused around multi-asset class securities classification that provides information on the underlying assets in a basket. Given that Genesis is a cloud-based, software-as-a-service platform, these enhancements were delivered with the minimum of fuss to clients.

Blair says the coming year will largely follow the same pace for the Genesis team. The company plans to put out six to eight new updates to the platform during 2019. Many of these upgrades will be around tax optimization, machine learning and additional fixed-income functionality.

—ED

Victor Anderson, Catherine Daly and Ron Farrell

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The Genesis IT team delivered eight new features to the platform, including expanding its model-based workflows, adding the ability to trade relationships and not just accounts, and incorporating real-time pricing integration.

2018

American
Financial
Technology
Awards

VENDORS

Best Use of the Agile Methodology

Fitch Solutions

Remaining one step ahead in an increasingly competitive industry is not only about the quality of the technology, but the process by which it's delivered. In an industry obsessed with speed and efficiency, it's no surprise that the Agile methodology has risen to prominence over the last decade as an alternative to the time-consuming, costly and complex Waterfall approach, where projects might take many months, if not years, to complete. Today, end-users are demanding more from their service providers; Agile allows developers to increase their release cadence, delivering functionality in short bursts, becoming more cost effective and enhancing client collaboration throughout each point of their development cycle.

This is the second year the Agile category has been up for grabs at the AFTAs, with Fitch Solutions taking the title for its use of the methodology in developing its internally facing content management system (CMS) for analysts producing research for its Macro Intelligence Solution, housed on the FitchConnect platform. Fitch's objective of rebuilding the CMS was to allow analysts to process information quicker, and convert their thoughts into valuable and easily consumed material. The development process was broken down into one, two and three-week sprints across 10 internal product teams, dedicated to various sections of the build and delivery. All members of each team—developers, quality assurance engineers, project managers, integration teams and even end-users—collaborated throughout the process, from brainstorming sessions to story building, planning, development, deployment, testing and feedback. "For us, the Agile method was great because it focuses more on working software, people talking and brainstorming together," says Brian Filanowski, global head of data, product, technology, and solutions at Fitch Solutions. "Everybody gets in the room, from the end-users to the developers and the project managers. So as they are all in the room, they start looking at each part of the requirement and then break these down into fundamental chunks."

The Agile framework allowed the firm to consistently meet deadlines, remain within budget, and more effectively satisfy client demands. The process has allowed it to deliver tangible results such as reducing the development time for client-facing webpages from six months to three weeks, reducing the number of steps required by analysts to complete reports by approximately one third, and increasing the overall speed of research publication by 18 percent. Agile has become fully embedded within Fitch Solutions releases, where it rolls out new functionality on its products every two weeks. Going forward, the firm will continue to tweak its development and delivery processes according to end-user requirements.

—JG

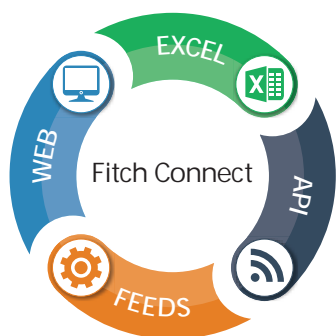**Fitch Solutions' use of the Agile methodology helped deliver it the win in the category of the same name.**

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The Agile framework allowed the firm to consistently meet deadlines, remain within budget, and more effectively satisfy client demands.

2018
American
Financial
Technology
Awards

VENDORS

Best Trading Infrastructure Provider

IPC Systems

IPC Systems wins the best trading infrastructure provider category at this year's AFTAs, taking the crown from last year's winner, Cobalt. It also won the best communication infrastructure provider and best partnership or alliance categories at this year's awards, held in New York on the evening of December 3.

Unigy 360, the company's trading ecosystem, featured a number of upgrades over the past year, including increased connectivity from analog to the cloud, greater integration between devices for traders on the move, laying the foundations for better metadata from voice communications, and various security upgrades.

One of the most significant recent enhancements from IPC is around security. Don Henderson, IPC's senior vice president for product, research and development, and IT, says security has been a high priority for IPC, particularly as critical information is traded within its ecosystem. But Henderson explains that the greatest innovation IPC has delivered is its initiative to enhance data generated by way of communication. He says this project will bring more strategic analytics to its customers and bolster Unigy's position in the marketplace. "We are focused on the digital transformation and for our customers to interface digitally. Today, voice is categorized as unstructured data and is hard to formalize. We will formalize the metadata to create structured, smarter data for our clients," Henderson says "Our customers built their voice data so we're building solutions so they can use it better."

Henderson adds that voice communication remains critical to trading, but that managing voice data is complex and has to evolve to become more digital so that firms can use it more efficiently. IPC is rolling out its data initiative during 2019 with beta testing happening now. Henderson says the data will be placed in a repository so that users can run analytics on it. IPC aims to create different feeds around the data but may also seek to partner with a third-party provider whose expertise is on analytics, as IPC's core business is around facilitating communications and trading.

IPC's other large project is expanding mobile access to Unigy 360, something customers in Asia and Europe are looking for. Henderson says the goal is to provide a more efficient workflow for clients who need to access their dashboards wherever they are but still have access to the same information. Unigy 360, as a cloud-based platform, can be accessed through desktops, mobile phones and tablets.

Henderson notes that it is initiatives like the firm's data project, its focus on security and mobility that make Unigy and Unigy 360 stand out in a competitive market.

— ED

IPC's second of three wins in this year's AFTAs was down to its cloud-based Unigy 360 offering.

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Unigy 360 featured a number of upgrades over the past year, including increased connectivity from analog to the cloud, greater integration between devices for traders on the move, laying the foundations for better metadata from voice communications, and various security upgrades.

VENDORS

2018
American
Financial
Technology
Awards

Most Innovative Third-Party Technology Vendor (Data and Operations)

Sentieo

Data—it's what fuels the buy-side engine. But in the modern day digital landscape, accessing and harnessing the right fuel has become increasingly more difficult, especially since the so-called data "explosion." Founded by former analysts in 2012, Sentieo has set out to bridge the gap between buy-side firms and the information they require to make the most judicious investment decisions. Due to the development of its research platform and its growing capabilities, it's no surprise that the New York-based firm has scooped the award at the 2018 AFTAs for the most innovative third-party technology vendor (data and operations).

Rishi Mohnot, vice president of business operations at Sentieo, explains that the Sentieo platform was built with the objective of solving buy-side analysts' workflow problems. Today, the technology allows clients to access millions of global financial documents, build customized portfolio models, extract value from large volumes of data, track activities across investment teams, and enable collaboration across workflows. The system sits on an extensive database that Sentieo claims holds over 20 million financial documents on over 64,000 firms globally, searchable through a browser using the firm's native desktop application or via a Microsoft Excel plug-in. "I think the reality is that we are building a platform for the entire buy-side investor workflow, but what really sets us apart today is how we handle documents and integration management," says Mohnot. "This includes the way we handle and process any documents you put into the system and making them searchable and intelligent, to how we handle your information in the form of your notes, your theses and your structured data."

At its core, the Sentieo research platform uses natural-language processing to sift through and extract value from multiple financial documents, including Securities and Exchange Commission filings, press releases, broker research, investor presentations, websites, earnings and internal databases. The search engine also includes a feature that detects sentiment by identifying who is speaking in a transcript, allowing linguistic data and portions of text to be more closely analyzed.

In the last year, the firm has also enhanced its table-extraction technology and expanded its Equity Data Terminal to incorporate all global regions, including data from Thomson Reuters and Factset. The last 12 months have also seen the introduction of Sentieo's Notebook, an integrated workspace where teams can work off the same documents, log activity and organize their research using any device, including a tablet or smartphone.

Going forward, Mohnot explains that the provider has set its sights on adding to its workflow enhancements, improving its artificial intelligence capabilities, and further developing its table-extraction features.

—*JG*

Victor Anderson, Evan Lubin and Daniel Berman

> **The Sentieo research platform uses natural-language processing to sift through and extract value from multiple financial documents, including SEC filings, press releases, broker research, investor presentations, websites, earnings and internal databases.**

Most Innovative Third-Party Technology Vendor (Infrastructure)

Kx

In an era where profit margins are thinning, banks and asset managers are looking to derive more value from their data to provide better returns, and they need to generate signals quickly in this competitive market. It is for this reason that Kx, a division of First Derivatives, stood out at the AFTAs, winning the infrastructure section of the most innovative third-party technology vendor category, thanks to its suite of services. Kx technology incorporates the kdb+ time-series database, which provides improved processing performance, in-memory computing, streaming analytics and operational intelligence.

James Corcoran, senior vice president of products, solutions and innovation at Kx, says the vendor recently helped clients build systems for trade surveillance, regulatory compliance and transaction reporting. Its platform is designed to assist with challenges associated with capturing, processing and storing huge volumes of real-time and historical data.

In the past year, Kx has continued to invest in making kdb+ faster and has added new features, including machine learning capabilities and Python integration. This has been done through kdb+ 3.6, the latest version of its database and analytics application.

Previously, kdb+ worked best with structured and time-series data, but the new version extends its capabilities to analyze text and different types of unconventional data. This allows developers to combine structured and unstructured data within the kdb+ database and analyze them both at the speed kdb+ is known for.

The integration with Python allows programmers working on machine learning applications to use kdb+, even without prior knowledge of the database. Similarly, kdb+ programmers can integrate Python into their applications. "We've also released our own native machine learning, feature engineering, and natural-language processing libraries, which opens up our platform to a wide variety of use-cases such as analyzing email, instant messaging and chat-room data for the purposes of communications surveillance," says Corcoran.

Kdb+ is also available on-demand, which is useful for clients wanting to run burst computing workloads, says Corcoran. This enables running any scale system on a cost-effective and elastic per-core-minute basis. Corcoran sees an increased demand for time-series database solutions as organizations now rely more on real-time data to inform, and in some cases automate, decision making. "We are also seeing increased cloud adoption alongside a move to develop applications using predictive analytics and artificial intelligence from the ground up," he says.

Looking to the future, Kx plans to leverage its new capabilities and extend that across its broader solution set.

—WSW

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> **In the past year, Kx has continued to invest in making kdb+ faster and has added new features, including machine learning capabilities and Python integration.**

VENDORS

2018
American
Financial
Technology
Awards

Most Innovative Third-Party Vendor (Trading, Risk and Research)

Visible Alpha

As pressure to generate alpha increases, financial institutions are more than ever looking to be more efficient in their daily workflows to be able to focus on the more important and value-added tasks. Investment research technology provider Visible Alpha provides investors with the ability to evaluate underlying assumptions analysts make on companies. This is combined with access to brokers' investment research, forward events calendar and information about past interactions with the firm. It is due to its platform that serves both the buy side and sell side that Visible Alpha takes home the award for the most innovative third-party vendor in the trading, risk and research category at the 2018 AFTAs.

Since it launched in February 2017, Visible Alpha has helped investment firms of various sizes and geographies become compliant with the revised Markets in Financial Instruments Directive (Mifid II), which went live on Jan 3, 2018. Scott Rosen, CEO at Visible Alpha, says the firm helps buy-side investors "cut through the noise" and maximize the value they receive from sell-side research providers. Through its platform, Visible Alpha is working to improve and increase collaboration between both sides of the industry when it comes to investment research.

"By helping investors leverage broker content more effectively, Visible Alpha helps the sell side with their core mission of servicing their clients. These efforts are enhanced by Visible Alpha's sell-side intelligence tools to help them better understand their own views in context," Rosen says.

During 2018, Visible Alpha secured $38 million in funding from institutions such as Goldman Sachs, Banco Santander, Exane BNP Paribas, Macquarie Group, Royal Bank of Canada and Wells Fargo. This is in addition to its existing investors—Bank of America, Citi, Jefferies, Morgan Stanley and UBS. It also received funding from HSBC.

Visible Alpha now has more than 600 content contributors to its Insights platform, which ingests sell-side models and integrates them into comparable views across analysts. This provides investment managers with detailed forecast data and unique analytics.

Rosen says the firm is currently focusing on further integrating Insights with Inbox, its research management solution that unifies content experiences across internal and external research, events and models. It is also working to provide tools to discover relevant insights and changes for investors based on their interests and focus, and will continue to grow its company coverage in Europe, the Middle East and Africa. Rosen says a bigger push into Asia-Pacific will also be a major focus in the coming months.

—WSW

Victor Anderson and Mark Hale

> **Visible Alpha now has more than 600 content contributors to its Insights platform, which ingests sell-side models and integrates them into comparable views across analysts.**

Best Cloud Initiative

Bank of America

How things change over time. In the early Millennium, particularly around the close of its first decade, much of the conversation around cloud was hesitant on the part of major banks. Not so much, any more. The rise of highly secure and relatively cheap cloud capabilities from the likes of Amazon, Microsoft and Google have powered this, but the most advanced institutions are well on their way toward implementing their own internal programs for cloud transformation.

Bank of America is one such institution, and wins the best cloud initiative category at this year's AFTAs. The bank has always been a technologically forward-looking business, but even in terms of the scale and size of firm-wide programs at tier-one institutions, Project Greenfield—now Bank of America Cloud—is impressive.

The scope of the project, which has been running for two years, and its impact, are impressive. By the start of 2019, the bank is aiming to host around 80 percent of its applications in its private cloud, and to achieve a 20:1 compression ratio in hosting—no mean feat, considering that before the initiation of the project, Bank of America operated approximately 60,000 physical machines in 36 datacenters.

Achieving this rate of migration means that the bank has had to move at least 3,000 operating systems per month to the new environment. Therefore, the fact that it has managed, in some cases, to exceed 8,000 per month speaks volumes to the skills and tenacity of the 200-strong workforce managing this project—at any time, there are between 12,000 and 14,000 systems in either a planning or execution phase, according to the bank.

"In order to successfully migrate applications to the cloud, it takes a governing body to help address capacity and demand, discuss opportunities or concerns, create action items and accountability measures, and ensure deadlines and deliverables are executed on properly," says Howard Boville, chief technology officer at Bank of America. "It is also critical to identify skill gaps and provide the necessary resources and training to ensure teams can support the migration strategy and manage the platform being used."

The numbers are staggering, but equally so are the effects—Bank of America estimates that the project has delivered $535 million in gross savings in 2018 through enhanced efficiency of operations, datacenter housing efficiency, and both process and hardware optimization. With around 65 percent of systems currently migrated, the bank is well on track for its 80 percent target in 2019—with the remaining 20 percent of systems that were not considered as being suitable for migration, constantly being renewed.

—JR

Bank of America's cloud project was the outstanding entry in this year's cloud initiative category.

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By the start of 2019, the bank is aiming to host around 80 percent of its applications in its private cloud, and to achieve a 20:1 compression ratio in hosting—no mean feat, considering that before the initiation of the project, Bank of America operated approximately 60,000 physical machines in 36 datacenters.

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2018
American
Financial
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Awards

END-USERS

Best Analytics Initiative

Credit Suisse

Artificial intelligence (AI) may be all the rage at the moment, but less-often mentioned is a subset-of-a-subset on the bleeding edge of technological development—deep learning. Here, Credit Suisse shines for delivering actionable insights based on its work in natural-language processing and deep learning, via its analytics platforms, and wins the AFTA for its efforts.

One of the major problems facing equities research analysts isn't necessarily information shortage—it's too much information. The volume of emails and notes both generated and received by staff on these teams is immense—in Credit Suisse's case, its Global Markets Equities Research Team has to deal with over 3 million emails and 500,000 meeting notes—but finding an efficient way to analyze these client communications has always been challenging.

Enter AI. The goal of the project was to deliver insights around four main areas: topic modeling, in which potential sales ideas could be generated around stocks or bonds that may be potentially of interest to clients; ticker tagging, in order to identify said instruments for future reference; contact-level sentiment analysis, to determine overall perception of products and services; and auto-summarization, which would enable the machine-learning algorithm to generate commentary on a client.

Implementing this required an element of trial-and-error at first, partly because this is breaking such new ground within actual implementations of machine-learning technology. "We tried various models, such as random forest and a few others, and we obviously wanted to give deep learning a shot because we had enough data to try this out," says Paras Parekh, head of the predictive analytics team within the global markets technology group at Credit Suisse. "It happens that the deep learning model works fairly well compared to random forest."

The work so far has resulted in the development of two dashboards which, the bank says, have generated "actionable insight." The first displays an email or meeting note which has been through the algorithm, cleaned and tagged appropriately, along with sentiment. The second displays time-series data at a contact level, and the top entities by mention, as well as trends by sentiment score. All of this, too, while the platform is still effectively being built.

"We're still fine-tuning the model. It's giving us enough insight, but there's still some work needed, especially when we're looking to find cross-selling opportunities," says Parekh. "But if we had to look for investment ideas for stocks that the client may be interested in, that's working quite well. We're also able to do a fair bit of entity recognition and trying to understand all the various entities involved for an individual or within a group at a client level or a macro level."

—JR

Victor Anderson and Paras Parekh

> "
> Credit Suisse shines for delivering actionable insights based on its work in natural-language processing and deep learning, via its analytics platforms, and wins the AFTA for its efforts.

END-USERS

2018
American
Financial
Technology
Awards

Best Compliance Initiative

Morgan Stanley

Morgan Stanley fights its way to the top of the pile in an intensively competitive category in this year's AFTAs, winning the best compliance initiative accolade for its work around its Disclosure of Interest Regulatory Reporting.

Since its introduction in 2013, the best compliance initiative category of the AFTAs has often been an interesting litmus test for what's been keeping people awake in the middle office during that year. The first award, for instance, was for a high-tech surveillance system at a time when much of the focus in the market was around conduct risk and market abuse, with the discussions around Dodd–Frank and the revised Markets in Financial Instruments Directive in full swing. Then, as the buy side began to feel the pinch, it shifted to the implementation of platforms designed to cope with fund management requirements under European rules.

Since then, the winners have tended to focus on specific issues or rules—such as Bank of America with its laser-eyed approach to the Department of Labor's fiduciary rule, or JPMorgan's Global Legal Agreements Portal. This year, that trend continues, with disclosure rules coming under the spotlight.

At the center of Morgan Stanley's work in this space are a number of functions and engines designed to streamline, automate and generally ease compliance with disclosure rules on a global basis, with over 100 jurisdictions automated to date. Rave, the rules engines, implements aggregation rules and provides an intuitive, workflow-based approach to visualizing rules; Drama reconciles changes to rules or data with the engine, allowing users to see the impact of any amendments; Prophet provides historical context around rules; while the Hestia function plugs the holes, so to speak, by automating amendments to address data gaps. Java annotation and Graphviz are further used to link code with documentation, ensuring that linked regulations are always the most current version. All of this is displayed through a user dashboard.

Processing such a vast amount of information requires a suitably robust back-end. The processing flow, Morgan Stanley says, sits on scalable, high-end architecture, while the calculations take place on Hadoop, allowing for hundreds of millions of records to be processed "in seconds."

The bank has also continued to invest in the platform, which utilizes the Agile methodology for development practices—and it shows in the numbers. The team delivered 150 percent more regulatory rule changes than last year, with a 50 percent time decrease for historical rule-change amendments.

—JR

Morgan Stanley emerged top in the highly competitive compliance initiative category, thanks to its work around Disclosure of Interest Regulatory Reporting.

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At the center of Morgan Stanley's work in this space are a number of functions and engines designed to streamline, automate and generally ease compliance with disclosure rules on a global basis, with over 100 jurisdictions automated to date.

Best Global Deployment

JP Morgan Asset Management

JP Morgan Asset Management (JP Morgan AM) wins the best global deployment category in this year's AFTAs, thanks to the rollout of its Global Equities Toolkit (GET), a platform designed to support the portfolio research and quantitative analysis functions underpinning the firm's portfolio construction activities. The New York-headquartered asset manager's Global Equities Research business manages more than $500 billion and is pivotal to the firm across a range of regional and cross-border equity investment strategies. GET provides a single point of access to real-time market data and sentiments with a range of embedded analytics supporting functionality for a large number of investment strategies and a set of reports and dashboards. It supports nearly 3,000 researched securities and features 20+ applications and a range of user tools, providing users with faster and more accurate fundamental and quant analysis. These include specific portfolio analytics, construction and management, alpha risk-modeling, back-testing and performance-monitoring applications with overlapping functionality.

GET's global deployment required the firm to map out different asset manager and analyst needs for supporting strategies, investment styles and thousands of securities that are traded on multiple markets, in multiple time zones and currencies. GET combines natural-language processing technology with more than 30 years of historical data, including micro- and macro-economic data from across the industry, and is used by the firm's portfolio managers, research and portfolio analysts, and global sector specialists, as well as external client portfolio managers. Each visualization and function was built as a reusable module, allowing individual users from different investment desks to build their own individualized dashboards, enabling the business to be faster and more agile when it comes to rebalancing portfolios, hedging or taking positions in covered equity securities. JP Morgan AM estimates that folding the applications and user tools into the GET platform has resulted in cost efficiencies exceeding 30 percent.

The deployment of GET has helped it to reduce its number of ad-hoc tools, while streamlining system access and minimizing the risks associated with manual data management. It describes GET as a "noteworthy technology leap forward, removing dependencies on legacy applications/systems and user tools," and is based on the latest JP Morgan enterprise-wide technologies, HTML 5 and REST for the user interfaces and micro-services/cloud-based services supporting scalability, while machine learning-based modules are being added to the platform incrementally as the firm looks to leverage the significant potential artificial intelligence holds for the asset management industry. Past winners of this category include State Street (2014), Nomura Securities (2015) and Northern Trust (2016).

—VBA

JP Morgan Asset Management won the best global deployment category for the rollout of its Global Equities Toolkit (GET) platform.

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2018
American
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Technology
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END-USERS

Best Data Management Initiative

JP Morgan Asset Management

Portfolio managers have to deal with tax lots—records of stock transactions and their tax implications, including purchase date and numbers of shares, particularly for those actively trading in exchange-traded funds (ETFs). As management of ETFs continues to grow, tax rebalancing has become a more time- and resources-heavy process.

JP Morgan Asset Management (JP Morgan AM) snags the best data management initiative from the previous winner, Deutsche Bank, thanks to the tax lot harvester application JP Morgan AM developed to help portfolio managers be more efficient with this process. Previously, the tax team for JP Morgan's portfolio managers spent up to seven hours per portfolio performing manual analytics on tax-lot data to devise optimal trades to execute during quarterly portfolio rebalancing.

Tax-lot harvesting is hugely data-intensive—each tax lot of a security needs to be analyzed before it is sold. For each tax lot, the firm needs to maintain several data points such as the date, cost basis, gain/loss, as well as in-kind indicator, among others. Also, there are factors that determine whether a tax lot should be relieved in kind or by using market trades. If not managed effectively, taxes can erode portfolio performance, and possibly create unnecessary tax liability for investors.

"It became clear that unless we did something, we would not be able to scale our ETF launches," says David Lin, head of beta technology, asset management, and head of global research technology for asset and wealth management at JP Morgan AM. "The availability of tax-lot information in the desk tools allows JP Morgan to consider and plan for tax impacts as part of the portfolio managers' daily process rather than rely on scheduled check-ins with the team."

The tax lot harvester was designed to handle large volumes of data, in this case, billions of tax-lot records, and apply various tax strategies to harvest gains or losses efficiently. Using the tax-lot harvesting tool, portfolio managers are able to consistently approach tax-lot management and generate reports in seconds, with greater accuracy.

JP Morgan AM created the technology to systematically optimize various rebalancing scenarios. Some of the steps require interacting with market participants and, based on the liquidity of the ETF baskets, the underlying transaction cost can impact some of the parameters used in the firm's optimization. "We have some ideas on how to solve this, and look forward to doing so in 2019," Lin adds.

This year, the asset manager plans to incorporate transaction cost into the optimization process, as well as add functionality to perform more "what-if" type scenarios to help in non-rebalance-related opportunities.

—WSW

JP Morgan Asset Management won its second AFTA of this year's awards for its outstanding data management initiative.

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Using the tax-lot harvesting tool, portfolio managers are able to consistently approach tax-lot management and generate reports in seconds, with greater accuracy.

Best Infrastructure Initiative

Northern Trust

Data retention and backups are crucial to operations of financial institutions, particularly if they are global, highly diversified and regulated in nature. One such example is Chicago-headquartered Northern Trust, a financial services company that serves corporations, institutional investors and high-net worth individuals, and has offices in 20 countries.

It invested in a secondary storage platform based on emerging hyper-converged technology— a software-defined IT infrastructure that virtualizes all the elements of conventional hardware-defined systems—allowing it to leverage the backup data on the device for DevOps and analytics, of which the latter particularly helps with General Data Protection Regulation (GDPR) use-cases. It is thanks to the Cohesity secondary storage solution that Northern Trust bags the best infrastructure initiative award at the 2018 AFTAs.

Valerie Pavlov, manager of enterprise storage and backup organization at Northern Trust, says one challenge the firm faced that Cohesity helped with was the complexity of the backup infrastructure involving solutions from multiple vendors. This is coupled with operational challenges related to the support of the environment, as well as long backup and restore times for large datasets. She adds that Northern Trust uses the pattern finder on the backup data for GDPR, which enables it to interrogate backup data residing on the Cohesity platform without needing an additional load on the production environment. "We are also looking forward to leveraging the ability of Cohesity to instantly recover and mount or clone backup data for testing and development purposes," she says.

Since Northern Trust successfully implemented the Nutanix hyper-converged solution for its primary workload, Pavlov says the firm decided to explore the same architecture for its backup and secondary data storage environments. It used Cohesity's native integration with NetApp and VMWare—solutions that allow for a server-to-storage virtualized infrastructure—to optimize its backup and restore processes. She says efficiency features like global deduplication, which is a specialized data compression technique that eliminates duplicate copies of repeating data, enabled Northern Trust to make the most out of its investment.

This year, Northern Trust will be deploying Active Directory integration, SQL server agent and cloud integration for long-term and archive storage. "Additionally, we are looking to more aggressively leverage Cohesity for our non-production workloads," Pavlov says.

As hyper-converged infrastructure grows in popularity, Pavlov sees a trend for tighter integration with software solutions, support for containers, cloud integration for disaster recovery, and the ability of hyper-converged solutions to support the hybrid cloud approach.

—WSW

Sanjeev Khati (Tata Consultancy Services) and Northern Trust's Valerie Pavlov and Demetri Mouratis

> "This year, Northern Trust will be deploying Active Directory integration, SQL server agent and cloud integration for long-term and archive storage.

Best IT Team

Charles Schwab Investment Management

Charles Schwab Investment Management's (CSIM's) Investments Technology team wins this year's best IT team category at the AFTAs, thanks to its development of a unified platform that reduced the need for the firm's portfolio managers to oscillate between SAGE, the firm's Strategic, Analytics, Generation and Execution platform, and BlackRock's iconic risk analytics, portfolio management and trading platform, Aladdin.

As the industry eliminates fees across passive products, CSIM has had to handle increasing volumes while reducing operating costs in order to maintain profitable product fee structures. Increasing portfolio manager productivity was therefore critical, especially in fixed income, where available inventory typically dries up within three hours of the market open. Portfolio managers need actionable intelligence to make informed investment decisions and realize efficiency gains when dealers present inventory. It therefore became imperative to eliminate the need for portfolio managers to continually switch between SAGE and Aladdin. The Investments Technology team of 15 supported 83 users—21 equity portfolio managers, nine equity research analysts, six traders, 18 fixed-income portfolio managers, 18 credit research analysts, five investment research users and six oversight personnel—and prototyped a unified platform supporting both SAGE and Aladdin, resulting in BlackRock's OpenAladdin offering. The Investments Technology team and BlackRock created a combined development team to develop OpenAladdin, the first iteration of which allowed SAGE to evaluate over 800 constraints across 150 issuers in minutes, enabling fixed-income portfolio managers to make more judicious investment decisions in massively reduced timeframes. The total AUM of CSIM's core products grew 17 percent between December 2017 and August 2018 without any need for a corresponding increase in portfolio management staff. "We attribute our success to strong alignment between our technology and portfolio management teams," says Manish Ghayalod, managing director, head of Investments Technology at CSIM. "We needed to ensure the portfolio management team had the appropriate scale and efficiency to support a rapidly growing asset base, so we simplified and integrated our technology environment, refined the end-to-end investment workflow, and improved collaboration within the team."

Ghayalod says the integration needed to happen at the API level so CSIM could leverage the computational power of Aladdin to quickly evaluate issuer constraints across the investment universe. "As BlackRock's flagship partner, we pioneered Aladdin's OpenAladdin framework to develop the necessary efficiency to maintain a competitive advantage," he explains. "It was critical for SAGE and Aladdin to function as a unified solution, where SAGE supports the custom aspects of the investment process and Aladdin supports the standard aspects."

—VBA

Charles Schwab won three categories in year's AFTAs, starting with the best IT team award.

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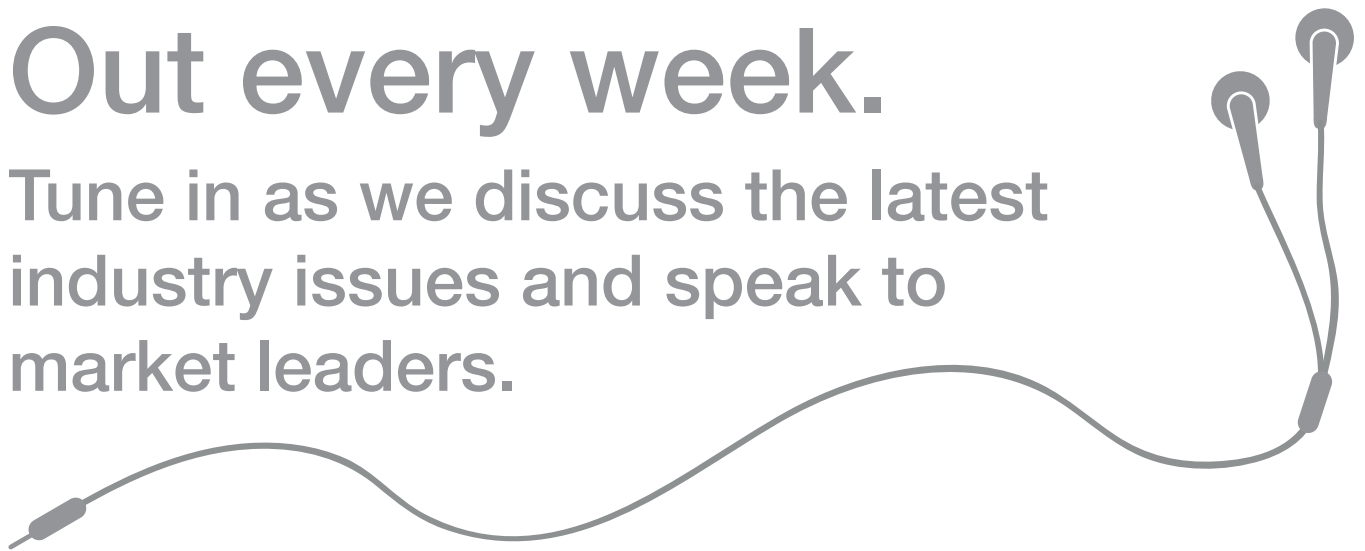
Best IT Integration Initiative

Schroders

The financial services industry is littered with integration projects that for many reasons have gone awry. And yet they are unavoidable occupational hazards that must be negotiated from time to time as the industry matures by way of mergers and acquisitions. Schroders, the London-based investment manager, wins the best IT integration initiative at this year's AFTAs, thanks to a project that entailed the integration of a research, investment decision-support and monitoring platform resulting from the mid-2016 acquisition of Brookfield Investment Management's securitized products team based in New York. The initiative was undertaken by Schroders' IT Integration team led by Catherine Hryszko.

The Brookfield investment desk specialized in managing mortgage-backed and asset-backed securities. It had therefore developed multiple proprietary research tools to assess the universe of securities and run them through various interest-rate path scenarios. The resultant multiple-scenario analytics enabled the business to make informed investment decisions.

The project involved the integration of Brookfield's research platform, the re-engineering of nine applications and associated processes, as well as the migration of the platform's underlying historical data. It spanned multiple business areas: investment, research, portfolio operations and data management, while Schroders used the Microsoft Azure Cloud for the first time to run labor-intensive Monte Carlo simulations.

Hryszko was responsible for developing the integration strategy and managing the team of business analysts, developers and testers, while the third-party engineering came courtesy of Devbridge Group working out of Lithuania. According to Schroders, the optimal team configuration emerged when a representative of each function—an analyst, a developer and a tester—was present in each of the regions (the US, the UK and Lithuania). This follow-the-sun delivery approach enabled fast implementation of changes and effective resource utilization.

Hryszko and UK-based analyst, Lucas Boone, were instrumental in driving the integration and adhering to the strict deadline. Hryszko used her financial business knowledge (she is a CFA) to fully understand the purpose of the tools and their interdependencies. As a result, 12 key business processes were not only migrated, but were also significantly improved. A new data warehouse and a separate datamart were created to facilitate the integration alongside 6,000 new lines of code with approximately 150 major releases. The delivery team was able to release changes within two hours where the usual processing time was two to three days, ultimately allowing the project to be completed on-time and under budget. Schroders' win in this category brings to an end a run of sell-side firms in the winners' circle, with Cowan winning the category in 2017 and Bank of America winning it in 2016.

—*VBA*

Schroders won the AFTA for the best IT integration initiative on the back of its acquisition of Brookfield Investment Management's securitized products team.

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Schroders wins the best IT integration initiative at this year's AFTAs, thanks to a project that entailed the integration of a research, investment decision-support and monitoring platform resulting from the mid-2016 acquisition of Brookfield Investment Management's securitized products team based in New York.

END-USERS

2018
American
Financial
Technology
Awards

Best Mobile Strategy Initiative

Bank of America

Running a global institution has never been a simple task. In the modern era, when employees and employers alike expect a certain degree of mobility in their day-to-day roles, extra wrinkles are added. How does a firm with tens of thousands of employees manage this task, and foster an environment that views the ability to work outside of fixed locations as critical? For Bank of America, the answer lies, at least in part, in workIT and Enterprise Digital Assistant (EDA), for which the firm has won this year's AFTA for the best mobile strategy initiative.

Each serves two key constituencies within Bank of America—for its highly mobile employees, EDA provides a mobile app for them to submit tickets, track the status of queries, approve requests and search the bank's knowledge base from cellphones and tablets. Meanwhile, workIT allows technical teams to work off-hours on tickets, to enable better responsiveness to internal clients, in use by over 800 staff. Over 9,000 transactions have been logged on the platform to date, the bank says.

Both apps work collaboratively with each other, using standard application programming interface (API) capabilities to integrate with other applications in the bank's technology ecosystem. More to the point, they work—and they work well.

"WorkIT, EDA and automation have reduced the average deployment time for automated software titles by 90 percent, from 10 days to one day, improving productivity and customer satisfaction," says Howard Boville, chief technology officer at Bank of America. "These digitization efforts have eliminated the need to swivel chair, reducing manual interventions, data reentry and points of friction across four systems."

On the platform and security side, the apps are designed to work across the iOS and Android operating systems, and make use of BlackBerry Dynamics for secure transport. Single sign-on, two-factor authentication and biometrics such as fingerprints and facial recognition are all used for security.

While EDA has already been rolled out to over 4,000 people within Bank of America's Chief Technology Organization, the bank has ambitious targets for expansion—it will be rolled out to more than 63,000 staff by June 2019.

"We want to create a consumer-grade experience for our employees while they are at work," says Boville. "We continue to look for opportunities to enhance mobility offerings for all bank employees whether that be notifying employees of pertinent information, providing technical support and instructions to increase productivity, and the ability to join virtual team meetings with people around the world."

—JR

Bank of America won the AFTA for its mobile initiative based on its workIT and Enterprise Digital Assistant strategies.

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> Both apps work collaboratively with each other, using standard API capabilities to integrate with other applications in the bank's technology ecosystem. More to the point, they work—and they work well.

Best Reporting Initiative

State Street Corporation

State Street Global Exchange, the trading facility owned and run by Boston-headquartered State Street Corp., wins the best reporting initiative category at this year's AFTAs, thanks to its ongoing work around addressing the Securities and Exchange Commission's (SEC's) Investment Company Reporting Modernization Rules, which came into force in mid-October 2016. This is State Street's second win in this category in as many years.

If possible, buy-side firms either outsource their entire regulatory reporting functions or at the very least lean on their service providers/partners for technology and operational support, as regulatory reporting functions, like so many other back-office processes, tend not to provide them with the opportunity of carving out a competitive advantage. For over three years now, State Street has worked on developing and expanding its response to the SEC's updated reporting mandates, especially around the two primary reporting forms: N-PORT and N-CEN. N-PORT requires registered investment companies to report information about their monthly portfolio holdings to the Commission, while N-CEN requires registered investment companies (with the exception of face-amount certificate companies) to annually report certain census-type information to the Commission. The State Street platform provides users with consolidated views of fund data and automates reporting processes—from data input to report delivery—while ensuring alignment and compliance with regulatory requirements. The service utilizes the firm's data warehouse (DataGX) to accept, normalize and store millions of data points across its client base. DataGX accepts not only data that State Street manages, but also data filed directly from clients and third-party vendors. The firm aggregates and processes this data, from intake all the way through to the final step of filing in XML format with the SEC.

According to State Street, what separates its service from others on the market is its ownership of the entire data review and validation process, enabling it to identify and address any process issues. The other differentiating factor, according to the firm, is its proprietary user interface (UI), an extension of its client information portal, my.statestreet.com. The UI offers clients the ability to directly communicate with their State Street support team during the reporting process. This collaboration along with any additional supporting documentation is tracked within the audit history functionality built into the platform, ensuring all process changes are accounted for. It also allows clients to customize their review process by setting threshold alerts on month-by-month changes and assigning reviewers based on their own criteria.

Past winners of this category include Morgan Stanley (2014), and Credit Suisse, which, like State Street, won the award two years on the bounce in 2015 and 2016.

—VBA

State Street won this year's best reporting initiative category for its work around addressing the SEC's Investment Company Reporting Modernization Rules.

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END-USERS

2018
American
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Best Risk Management Initiative

Barclays Investment Bank

One of the key features of modern banks that come across loud and clear in any submission to the AFTAs is the extraordinary scale that the most successful institutions operate at. The numbers that are tossed around casually by operations staff, in particular, are often the most remarkable for their sheer size—and, for those staff in question, their enormity.

Take Barclays Global Market Operations (GMO) as an example. The unit looks after around 40 exceptions processes—which the bank says are mostly structured in Microsoft Excel—which in turn generates 5 million monthly emails. As if that number wasn't large enough, try this on for size: The unit is also tasked with processing around 300,000 exceptions on a daily basis. Simply handling this in spreadsheets isn't an option. For this, Barclays needed Delphi. Working with the Technology unit, GMO helped develop a platform designed to reduce Excel dependency and email generation, while enhancing transparency in decision-making—after discovering that, frankly, there wasn't much available off the shelf.

"Delphi was conceptualized after a series of risk events within GMO with the management team not having clear transparency over risks and action owners," says Asis Tewari, vice president, strategy and optimization at Barclays Investment Bank. "We started speaking about due diligence capabilities with vendors and platform providers to resolve this issue. What was clear was that there is a glaring gap in the industry on exception management platforms specifically for investment banking. Delphi started as a pilot to address four different exception management use-cases and easy onboarding allowed for new types of exceptions to be onboarded quickly."

It integrates both home-grown technologies, such as an Angular5 grid, with external tech, including Tableau dashboard architecture, all predicated on Agile development and delivery, with the ability to onboard three distinct types of exceptions per day. "As we had a chance to build and design this product from scratch, it provided a blank canvas for us to incorporate design principles and layout, from the analysts on the ground up to the leadership team. The key objective is to drive operational excellence via efficient risk management by introducing behavioral and cultural change on the platform," says Tewari.

The growth of Delphi within Barclays has been impressive, with a demand list of over 100 further types of exceptions for on boarding. The platform is set to eliminate costs of over £2.4 million and remove over 400 internal applications. Looking ahead, the bank says it sees applications for Delphi's continued growth, by expanding into segments such as managed services oversight, investor transparency, and as a platform for a modular operations management team.

—JR

Barclays won the highly coveted risk management initiative category at this year's AFTAs, thanks to its Delphi exception management platform.

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Working with the Technology unit, GMO helped develop a platform designed to reduce Excel dependency and email generation, while enhancing transparency in decision-making—after discovering that, frankly, there wasn't much available off the shelf.

Most Cutting-Edge IT Initiative

TIAA

The use of predictive technologies to help financial institutions provide better services and products to their clients is growing, with the recognition that the outcomes of these technologies are only as good as the data that they are fed with. This is what TIAA, the Teachers Insurance and Annuity Association of America, aims to do with Next Best Action (NBA) and Next Connect, its predictive technologies that allow it to better recommend actions for clients and deliver the right services to the right people. It is for this reason that the retirement fund giant wins the award for most cutting-edge IT initiative at the 2018 AFTAs.

NBA is built on predictive analytics, a propensity model and a proprietary artificial intelligence engine. It uses data points across personal, financial, demographic and behavioral patterns to provide real-time recommendations. Rahul Merchant, senior executive vice president and head of client services and technology at TIAA, says these actions enable clients to better engage with TIAA and navigate options to help meet their financial goals. Recommendations might relate to services such as correcting a bad mailing address or missing web ID, advice or products. The Next Connect application allows TIAA to determine who to reach out to and when. It does this by extracting information about engaged clients and assigns them to one of six segments defined by TIAA. The firm's goal in this regard is to derive new insights for its clients and ultimately its business.

An important point is that these technologies are built on a foundation of robust client data, according to Merchant. "We know who they are, what information they give us, what products they have and what accounts [they have]. Over time, we accumulate information about each interaction with the client and use it to produce insights to better assist them across all channels," Merchant explains.

TIAA collects the data using a touchpoint master system that aggregates every client touchpoint with TIAA, be it via web, phone, email or paper. This single source of data is a key input for predictive technologies, Merchant says.

Moving forward, TIAA plans to add recommendations for NBA and improve its propensity model. It will also expand its Next Connect user base and gather data based on an increasing number of client interactions. "Ongoing insight and analysis is used to improve client segmentation and outreach recommendations, which are different for each segment. As a result, advisory teams will be able to better identify the right level of service for clients in each segment and provide that service efficiently," Merchant says.

—WSW

> "
> **NBA is built on predictive analytics, a propensity model and a proprietary artificial intelligence engine. It uses data points across personal, financial, demographic and behavioral patterns to provide real-time recommendations.**

INDIVIDUAL

2018
American
Financial
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Awards

Best Third-Party Technology Vendor CEO or CIO

Alap Shah, Sentieo

Alap Shah, CEO of Sentieo, a New York-based financial research platform developed specifically for buy-side analysts, wins this year's AFTA for the best third-party technology vendor CEO or CIO. The Sentieo story started back in 2012 when Shah and his brother, Naman, co-founded and bootstrapped Sentieo, while additional funding—approximately 20 percent—came from angel investors. In March 2018, Sentieo secured $6 million of additional funding, led by Clocktower Ventures and Long Focus Capital, along with a number of angel investor and investment management executives. More recently, it closed a $19 million Series-A funding round in October. Under Shah's guidance, the firm has grown to 150 full-time staff and its client roster has more than 600 firms, including six of the industry's top ten hedge funds (in AUM), more than a dozen Fortune 500 companies, and a number of investment banks and asset managers.

When it comes to startups, necessity is often the mother of invention, and in this respect, Sentieo is no different: Shah's experience as a former analyst was key to founding and developing the firm. After graduating from Harvard, Shah worked as an analyst at Viking Global Investors and in Citadel's Global Equities business. He worked with Naman to build Sentieo out of frustration with his own research tools, which he says were unable to process information on hundreds of companies on a daily basis. And so Sentieo was born, a single, integrated application underpinned by Thomson Reuters and Factset fundamental data that sits on users' terminals, featuring Excel, Evernote, chat and document search functionality. Its database covers more than 20 million financial documents from 64,000 global companies, while its search algorithms allow analysts to comb through in excess of 20 million financial documents to find keyword mentions and visualize their frequency, as well as tag and collaborate on key text in company filings, transcripts, broker research and news articles.

"In 2018, we continued to develop and refine our product offerings, and invested heavily in natural-language processing, machine learning and data science," Shah explains. "In April, we introduced Sentieo Transcript Intelligence Report, which provides automatic analysis on how sentiment and keywords for a given company have changed across quarters."

In December, Sentieo unveiled its Table Extraction suite, which, according to Shah, uses machine learning to transform financial tables into time series through a single click. "We've also continued to release a host of improvements to our core search technology," he says. "These enhancements further empowered our clients to augment research and information management abilities."

Past recipients of this award include IPC Systems' Neil Barua (2017) and Steve O'Hanlon from Numerix (2016).

—VBA

Daniel Berman accepted Alap Shah's award on his behalf.

> Under Shah's guidance, the firm has grown to 150 full-time staff and its client roster has more than 600 firms, including six of the industry's top ten hedge funds (in AUM), more than a dozen Fortune 500 companies, and a number of investment banks and asset managers.

Best Technology Executive, Buy Side

James Ferrarelli, Charles Schwab Investment Management

Institutions such as Charles Schwab Investment Management (CSIM) are certainly rowing with the current at the moment. The shift in investor appetite from actively managed portfolios, toward a preference for passive investment and exposure-based products has certainly been in the wheelhouse of providers such as CSIM, which can offer low-cost products to hungry clients—indeed, late 2018 saw some of the highest inflows for its exchange-traded fund (ETF) business. But all of this requires a delicate balance between products driven by demand and a technology backbone capable of delivering such offerings in an environment where even the slightest hiccup can be costly.

After all, to the average investor, it makes little difference whether they get their ETFs or index funds from CSIM, or Vanguard, BlackRock or any other number of competitors who would be all too happy to provide. Brand loyalty, these days, is primarily a function of two things—cost, and technological reliability, at least from a consumer standpoint.

Enter James Ferrarelli, who is tasked with keeping the lights on and the engine running at CSIM. As head of investment management technology, much of his focus has been on modernizing the technology estate at CSIM via a move to the cloud and hosted services. His tenure, which began in 2015 following long stints at Morgan Stanley Investment Management and JP Morgan Asset Management, has not only seen a 400-percent increase in cloud deployments, but also a reduction of well over 360 percent in on-premises vendor applications in favor of taking hosted solutions on a software-as-a-service basis.

In terms of modernization, Ferrarelli has also pursued an aggressive retirement strategy of legacy software, with what CSIM calls a "strong emphasis on fostering innovation" through deploying artificial intelligence and machine learning, and in automating end-to-end processes.

All of this isn't just admirable from a pure technology standpoint. Against the aforementioned backdrop of cost control, CSIM says, Ferrarelli has held expenses to one-third of competitors, despite a 500-percent growth in the size of the overall organization.

Technology heads, particularly on the buy side, are faced with extraordinary challenges today. They are required to be the perfect blend of business folk, with an eye on the numbers in their budgets and forecasts, while also having to be more conversant with and literate in the arcana of emerging technologies than ever before. Ferrarelli's track record at an organization which, in many ways, is leading the charge in the changing world of investment management, makes him the well-deserved winner of the best technology executive award for the buy side at the 2018 AFTAs.

—*JR*

James Ferrarelli accepted his award from Sanjeev Khati (L) and Aron Karp (R), both of Tata Consultancy Services.

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Best Technology Executive, Sell Side

Beatriz Martín, UBS Investment Bank

Beatriz Martín, who featured on the cover of the April 2018 issue of *Waters*, is this year's best sell-side technology executive, joining past winners, Jodi Richard (US Bank), Oliver Bussmann (UBS), Tim Wood (FBR & Co.), Edwin Marcial (Intercontinental Exchange), Steve Ellis (Wells Fargo) and Bob Greifeld (Nasdaq).

Born and raised in Madrid, Martín started her capital markets career as a graduate trainee at Deutsche Bank in 1996. From 1996 to 2004 she held a number of roles in structuring and trading at the German bank in its London and Frankfurt offices. From 2004 to 2009 she was managing director and head of Iberia fixed-income sales, having been promoted from the role of executive director in 2007. After her Deutsche tenure, she joined Morgan Stanley as head of European fixed-income bank solutions and was a member of its interest-rate and credit operating committees from 2009 to 2011, before moving to UBS in November 2012 as chief of staff under the wing of then-CEO, Andrea Orcel. Three years later, Martín was installed as the investment bank's global chief operating officer, although it was Orcel's move to Santander in September this year that led to her highest profile role to date: CEO for the UK. "Having held the position of UK COO for three years, the transition to the CEO role was probably smoother than if I had come from the outside," Martín explains. "That being said, the UK at the moment is going through significant political and regulatory changes, which by definition, presents some very real challenges for our UK business. Fortunately, with this position comes the opportunity to continue working with large numbers of dynamic and driven people, which stands our business in good stead regardless of the environment."

Martín cites a number of technology milestones that the investment bank has achieved during the course of 2018, chief among which is its UBS Flow toolchain. "This provides a continuous delivery pipeline from source code management through to automated build, test and deployment, as well as having a huge impact on how deployment is run, speeding up our risk-managed adoption of new technologies," she explains.

Other key developments Martín mentions include the firm's relationship with Microsoft Azure and the creation of UBS' Cloud Business Office, which will change the way the bank delivers technology and its ability to collaborate internally. "We have also set up the IB Innovation Lab and delivered the first successful POC in 2018," she says.

As for 2019, Martín has three primary objectives: to develop the firm's cloud-native digital solutions on Microsoft Azure; to capitalize on its collaboration with industry peers and fintech partners around smart contracts and communications; and increase the use of container-based technologies (Dockers and Kubernetes) to isolate applications from infrastructure dependency."

—VBA

Victor Anderson and Beatriz Martín

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Martín cites a number of technology milestones that the investment bank has achieved during the course of 2018, chief among which is its UBS Flow toolchain.

Concerns Mount as Trade Repositories Face Brexit Split

Months away from the UK's departure from the EU, much of the industry is still in the dark over operational requirements post-Brexit. As talks continue and the March 29 deadline edges closer, time is running out for trade repositories to prepare for a no-deal scenario. By Josephine Gallagher

The Brexit bell is tolling for many, but for trade repositories, there's a distinct sense of déjà vu.

In the event of a "hard" Brexit, counterparties obliged to report derivatives trades under the European Market Infrastructure Regulation (EMIR) would be forced to redirect their reports to either a trade repository domiciled in the UK or in the EU27. As a result, repositories have applied to the Financial Conduct Authority (FCA) or the European Securities Markets Authority (Esma) for operational licences in their new locations, having previously only been authorized by Esma.

For many trade repositories, establishing a new reporting entity is a familiar process in itself, but doing so within such a short window is no simple task, as history has already demonstrated during the EMIR go-live date in 2013.

"I suppose the reason why I am quite sensitive to that is because what we saw with EMIR was a very last-minute rush, whereby we had 1,500 accounts and the vast majority of those had to be opened in the last couple of weeks before EMIR went live, because the market was so late in getting itself organized," says John Kernan, senior vice president and head of project management at Regis-TR.

> ❝ "What we saw with EMIR was a very last-minute rush, whereby we had 1,500 accounts and the vast majority of those had to be opened in the last couple of weeks before EMIR went live because the market was so late in getting itself organized." **John Kernan, Regis-TR**

On July 12, 2018, Esma issued a public statement about the importance of trading and reporting firms to prepare for a no-deal Brexit, and that there were no assurances that a transition period would be agreed upon ahead of the deadline. The regulator emphasized that "the time required to analyze an authorization request depends primarily on the quality of the application file."

As part of the application process, trade repositories have to apply for authorization to their National Competent Authority (NCA) to establish a new reporting entity. In the lead-up to Brexit, repositories are now expected to be replicating infrastructures, migrating data to new systems, onboarding clients to the new entity, testing connectivity and hiring personnel to run it. Much of the onboarding paperwork and process will be similar to what was required for EMIR implementation over five years ago, but firms are having to meet an even tighter deadline this time around.

"That process may be streamlined insomuch as they won't have to redo things like know-your-customer and so on but it will still require signing new general terms and conditions, completing the account opening documentation and getting all of that

set up on time so they are all ready to go on April 1," says a source at a trade repository.

Last year saw the likes of the Depository Trust and Clearing Corp. (DTCC) file for identifier codes for a Dublin office, the London Stock Exchange Group's UnaVista apply for an Amsterdam-based trade repository and more recently in December, Regis-TR announced its application to the FCA for a UK entity. To date, these trade repositories are still waiting to receive authorization to operate in their new jurisdictions and it is unclear as to how long the process will take—but the FCA is considering applications from January 7 onward.

As an added layer of complexity to the authorization process, trading and reporting firms will be expected to establish a "meaningful presence" in their new jurisdictions, according to Esma's July 2017 guidance. In other words, trade repositories will have to create a new legal entity that includes the necessary technical resources, governance, procedures and meets outsourcing requirements, in accordance with their NCA.

Additionally, new firms must ensure they have complete "operational separation" from the existing

branches outside of their jurisdiction, in terms of resources, systems and procedures. But questions still remain over the wording of the guidance and how it should be implemented.

"Operational separation now comes in with the trade repositories in terms of the UK entity versus the European entity," says Alan McIntyre, senior business analyst and industry relations lead Europe at RegTek, who was the IT lead at the DTCC during its own EMIR implementation. "There is the same requirement there because that is part of EU law. It has to be sufficiently separate and that is going to be a challenge for them as well having to interpret exactly what that means and what resources can they share and what resources can't they share."

Another legal sore point when it comes to Brexit is data sharing. Questions still remain as to how that will work across two new legal jurisdictions and how counterparty firms can access their historical data.

The Data Dilemma

In a hard Brexit scenario, and in the absence of an equivalence agreement, trade repositories will not be permitted to transfer data from the UK to the EU27 reporting entity, and vice versa. Going forward, all historical reporting data that pre-dates Brexit will be stored on the EU27 trade repository and any counterparty hoping to access its old EMIR reports will have to register for an account with the EU entity, even if they only have a reporting obligation to the FCA.

"I would anticipate that in a hard Brexit, a client, or a group, that had reporting requirements both in the UK and in the EU, would need to be papered with both the EU and UK trade repository," says Chris Dingley, sales director at Chicago Mercantile Exchange Regulatory Reporting. "Continental firms that have his-

torically reported into UK-based repositories will also need to ensure continuity of access to data."

In September 2018, the DTCC released a fact sheet on its global trade repository onboarding process in preparation for Brexit. The firm also confirmed that any access to historical reports will need to be done so via an EU account with DDRIE, its Dublin-based trade repository, once authorized by Esma.

"Firms will have access to historical reports if they are onboarded to the trade repository where that specific historical data is stored," says a DTCC spokesperson. "If all pre-Brexit data is only stored in DDRIE, then an account at DDRIE will be required."

However, regulators' access to data is another contentious issue. It is estimated that the FCA sends around 70 percent of its transaction data for fixed income and equities to local NCAs and Esma, to provide a clearer picture of the stability of the EU markets and aid supervisory oversight. Similarly, the UK will no longer have the luxury of accessing EU trade repository data to track the derivatives markets and monitor risk, unless a memorandum of understanding between the UK and EU for EMIR reporting is established.

"You fragment all of this reporting across different jurisdictions," says a source at another trade repository. "You completely change the visibility that Esma has, because there are something like 50 NCAs that take data out of trade repositories currently. So, you completely fragment any of their ability to even access this data. That is a big risk for the regulator and something that they are now becoming alive to if you look at some of the reporting around the subject."

Brexit is set to complicate things further from a technical perspective. Counterparties and delegated report-ing firms will have to determine which trade repository they will have to report to when trading with multiple UK and EU based firms. In many cases, two separate reports will have to be sent to both jurisdictions and trade repository branches will not be permitted to transfer trade messages to and from the UK and the EU27.

RegTek's McIntyre explains that Brexit will disrupt the industry's efforts to improve data standardization and inter-repository reconciliation services between trade repositories.

"There has been a lot of work that Esma and the trade repositories have done to improve data standards, level one validations, level two validations, the regulatory technical standards re-write last year and that kind of thing, so they have made improvements there," he says. "But they are effectively about to take an axe to that and split that into two separate reconciliations."

SALIENT POINTS

- Trade repositories will have to establish a meaningful presence and ensure operational separation in their new EU and UK locations to receive regulatory authorization and continue to service clients across the two jurisdictions.

- In the absence of a transition period and in the case of a no-deal Brexit, from April 1, UK and EU trade repositories will be treated as separate legal entities and will not be permitted to transfer reporting data between the two jurisdictions.

- On December 13, 2018, the European Commission endorsed the SFTR technical standards, but given that it is not included in the UK withdrawal agreement, questions have emerged over the possibility of regulatory divergence between the FCA and Esma in the future.

Alan McIntyre
RegTek

Some sources spoken to for this story warned of potential pitfalls for trade repositories if they transmit trade reports between their own UK and EU entities.

While on the surface, this seems like a form of delegated reporting, the sources said, the issue is murkier. Delegated reporting effectively takes place when a senior counterparty sends a report to the repository, which then mirrors the report inside its own systems, creating a copy of the report that serves as the other counterparty's record, thus fulfilling EMIR's two-sided reporting requirement.

Where this other practice could fall down, they said, is that the trade repository would be sending the trade report to what is, in effect, an internal data-management entity, which would then create a new report to file with the EU or UK-domiciled entity. This type of data manipulation and inter-repository transmission across UK/EU27 borders, critics say, is counter to the trade repository's licence and could land those offering it in hot water with Esma or an NCA.

SFTR

On December 13, 2018, the European Commission endorsed the regulatory technical standards for the Securities Financing Transaction Regulation (SFTR), and reporting is set to go live across the EU in the second quarter of 2020. As it stands, SFTR is not included in the UK's withdrawal agreement, whereas EMIR and other regulations such as the revised Markets in Financial Instruments Directive (Mifid II) have been accounted for.

However, it is highly likely the UK will adopt the SFTR rules, as the FCA was a significant contributor to their design, but it is unclear whether it will look to tailor the rules to suit the UK markets.

"SFTR is seen as a huge burden on the affected firms," says Tom Pikett, business development manager at Trax. "If you can make that burden less in a certain area, does that make you more attractive as an area to do your business? Then potentially yes. It is a significant enough burden but as already mentioned the FCA is certainly one of the most forward-thinking regulators, and so it is a possibility."

It is expected that once the UK leaves the EU, all EU regulations will be drafted into UK law. As seen with Mifid II and EMIR, iterative changes and updates to technical standards are constantly made. But questions remain as to how many of these changes the FCA will follow and whether reporting firms have to adjust their reporting infrastructures

and data inputs to cater to two regulatory versions in the future.

"So I guess what we'll see from day one is you will have these two regulatory frameworks almost in perfect parallel with each other but over time one would expect to see them to some extent diverge, which means, in terms of our own development roadmap, we will have two different sets of development considerations to think about," says Regis-TR's Kernan.

Where Do We Stand?

As Brexit approaches, the hope is that the remaining trade repositories will receive authorization in time for the deadline. To date, some more than others have demonstrated progressive steps in distributing resources to their new locations and establishing separate trade repositories.

On the other hand, some have voiced concerns over the amount of progress made with the impending deadline just around the corner. Shuchika Kohli, a senior business consultant at Sapient, explains that because approval hasn't been given, "everybody is taking very little steps toward the proposed Brexit date of March 29, and they are trying to make minimal change to their system."

As the countdown continues, some firms will have to make more proactive decisions in allocating resources to continue servicing both jurisdictions post-Brexit. And now, as the market enters a new year on the back of uncertainty, there will be a greater demand for better transparency from reporting firms on the progress of their application and authorization.

"It's not transparent on where they are in terms of the application process and when that approval is likely to happen. But I think we are going with the assumption that it will happen in time, whether that is at the 11th hour or not," says McIntyre. **W**

Shuchika Kohli
Sapient

UNTAPPED POTENTIAL:
The Road to Semantic Heaven

There is a movement underway to establish universal standards and the semantic ontologies that make them sing. As the industry approaches semantic utopia, questions remain about what steps need to be taken to get there and whether all the work will be worth it in the end. Jamie Hyman has the answers.

To foster a deeper understanding of the benefits of semantics, what the path from here to industry-wide standards looks like, and the challenges data leaders face along the way, it may useful to examine a case study of sorts: the humble Legal Entity Identifier (LEI).

A global standard in its own right, the LEI was conceived after the 2008 financial crisis, but it took about four years for the industry and regulators to agree on how the identifiers would be obtained, paid for, governed and maintained. Many decisions had to be made surrounding a simple 20-character alphanumeric standard before identifiers could be issued. And even then, it took the revised Markets in Financial Instruments Directive (Mifid II) to amplify the message of the LEI, communicating the need for identifiers and, in many cases, making them mandatory.

Semantic ontologies, which precisely define data points and provide representation for how they interrelate, are traveling down a similar path. The data problem—where the underlying technology that drives the financial industry has been built up and is managed in silos, which results in repositories of data aligned vertically to their applications—is well-known. Mature standards exist, and there is a collaborative effort underway to improve, implement and adopt them. The technology required to make it all work is under development or already built, and there is near-universal agreement about the potential of semantics to unleash unprecedented data insights.

It's just a matter of getting there.

Regulatory Reformers

Much like the establishment of the LEI, regulators have the power to raise the profile of semantics, and stand to gain from the adoption of standards.

"Having financial organizations and regulators use a common language will be fantastic," says Georgia Prothero, principal data modeler at Schroders. "Currently, regulators issue new directives that inevitably require some sort of reporting and every organization then needs to spend time and effort understanding the regulation and generating data that supports it. Imagine how different it would be if the regulator provided a semantic ontology with clear definitions of the data they want and the relationships between that data. Millions would be saved across the industry in analysis efforts."

Immediately following the financial crisis, when regulations were being written, most regulators didn't have a chief data officer (CDO) or a data department, and policymakers wrote many of the new rules, with good intentions, but while ignoring the data aspect.

"Regulation, even within the same jurisdiction, from one year to the next, might require largely the same information, but cut in a different way, and with a different set of rules and requirements around it," says Gary Goldberg, CDO of Mizuho Bank, adding that this approach not only increases the complexity of compliance, but it makes the regulators themselves less efficient. "From a regulators' standpoint, it makes it harder to assess systematic risk because these reports submitted by different entities contain information that isn't additive. The data can't readily be aggregated."

Goldberg says that if many reports contain the same underlying data and aim to accomplish similar objects, they could be consolidated. Right now, he adds, regulators are attempting to deploy analytics to better understand risk, where there's exposure in the market and to ask intelligent questions, but the data is not available to support that approach.

"The perfect state for a semantic ontology is a consistent set of labels and definitions where the definitions are specific and accurate enough to ensure there's no ambiguity," he says. "A lot of the existing standards in the marketplace are very good, but they tend to standardize the container. Standardizing the labels helps to clarify the message protocol but how the container is populated varies and needs consistency."

For instance, if the key data that needs to be submitted to regulators could be uniformly described through semantics, rather than reports, banks could simply file that information, as opposed to filing reports, a process that ideally would be automated. In turn, the regulators could access that information, not simply to answer a question pertaining to a particular regulation, but to answer any question the regulators want to know.

"There are a small number of key data sets but you could probably represent those in an infinite number of possible variations," Goldberg says.

Quality Campaign

Efficiency is a big deal, but quality is a bigger deal, both for regulators and market participants.

David Saul
State Street

> "Imagine how different it would be if the regulator provided a semantic ontology with clear definitions of the data they want and the relationships between that data. Millions would be saved across the industry in analysis efforts." Georgia Prothero, Schroders

When asked what the industry has to gain by adopting semantic ontologies, David Saul, senior vice president and chief data scientist at State Street, puts it succinctly: "To get to the heart of it; it's data quality."

Poor data quality is an issue in and of itself, but more troubling, it is the kind of problem that compounds.

"In conversations I have with regulators, in multiple different countries, they tell me their biggest problem is data quality," Saul says. "If regulators can't trust the data they've received, when they try and aggregate that data and do their job, which is to reduce risk in the industry, starting with various pieces of questionable data and adding them together creates even more questionable data."

Whenever two parties walk away from a trade lacking the exact same understanding and interpretation of all the data fields, it leads to miscalculation and confusion. Saul says a lot of reconciliation work is one party saying to another party, "Oh, I thought you meant something else," and tying definitions down through semantics leads to precise calculations, the elimination of reconciliation and ultimately, vastly improved data quality.

"Having ontologies means that I can avoid translating between those different definitions, and I can do it using computer technology and automate the

process. I don't need to have a human being in the middle," Saul says.

A common standard would improve data quality by facilitating faster, better and smoother flow of information around the industry.

"Mature standards and ontologies make settlement operations less ambiguous, with fewer exceptions," Goldberg says. "There would be less complexity in business operations internally within organizations and between organizations. If we look beyond efficiencies, the consistent representation of data through a common ontology allows greater opportunities for analytics and data science. It's very hard to run modeling and machine learning against data that isn't consistent. Most data science teams spend a lot of time cleaning and standardizing data. We can instead spend the time focused on the models and the technology to drive value for customers and be more efficient in the process."

Process Meets Profits

The biggest potential payoff in implementing semantics is also the most ephemeral: the possibilities for insights

unlocked when widespread, workable semantic ontologies are in place.

"When we first took the interest-rate swap data and mapped it semantically and created that semantic map, and then we showed it to business operations people—these are the people who are heads down, pushing the transactions through on a daily basis—they could visually see the data and how it related to one another," Saul says, a view that "gave them all kinds of ideas through views of the data that they possibly might have gotten before, but they couldn't see them with the same degree of immediacy. To me, that's really exciting. That opens up business opportunities."

Jim Northey is a technical committee co-chair for the FIX Trading Community and recently became chair of Technical Committee (TC) 68, which authors, supports and maintains ISO 20022, a key financial services standard currently under revision with the goal of adding semantic capability. In the past, however, he worked for a large Chicago hedge fund. When describing the advantages ontologies bring, there is often a focus on post-

Jim Northey
FIX Trading Community

trade insights, but Northey warns against overlooking the benefits they can bring upstream.

"If I were a hedge fund and I had the right semantics person and the access to not just reference data but other forms of data in a semantic format, I could start to uncover relationships in terms of the underlying signals for trading. I would have a much more powerful toolset for discovering new relationships and signals that might help and inform my trading," he says. "Given the openness of the semantic model, it can be used as another way of integrating disparate data sources readily that might be much easier and more flexible and dynamic than doing it with our static database structures and existing tooling. That's another area that could permeate from trading all the way through the processing."

Matthew Rawlings, CDO for Bloomberg Enterprise Data, says another key benefit of semantics is that it allows firms to capture data not yet in their data model or worldview—data that is unanticipated.

"That's groundbreaking, because you're capturing information before it's needed and it's data that might be needed later. In the past, when I was doing this back in the 1990s, we struggled with performance and making things efficient, working on the computers of the day. Now, we can store so much data, we can go so fast—our problem is managing complexity," Rawlings says, adding that this is where the technology saves the day.

The flip side, Saul says, is that risk can be identified early via concentrations of activities in a particular currency or country that could prevent problems from the onset. "I'd like to believe that if we had this in place we could have identified Lehman Brothers' difficulties a lot earlier and maybe done something about them," he says.

According to Northey, banks and enterprise data providers are already using the toolsets, and although he sees "some challenges in the tooling area in

standardization," the tech and database structures are sufficient to get to work.

"There are learning curves. We're all still learning, and there is a level of expertise required to really operate some of these tools that you're just not going to turn it over to your normal reference data person at a bank. My concerns are around standardization across tooling, which we've always had as a problem, the level of inter-change between tooling and the level of knowledge and the expertise needed to actually gain some of these benefits," he says, adding that the movement is toward fewer workers who are more highly skilled. "Reference data often was hordes of people, just sifting through manually cleaning up data. We're starting to automate a lot of that now. I've seen enough real things being done in banks with this stuff to know that the time is right now."

And it's not enough to simply have the right people in place: They have to collaborate.

"It really comes back to, as much as you have some of these initiatives suc-ceeding, as long as they're succeeding in a silo, you're never going to get to that more promising future world where T+2 becomes T+0 and firms are saving billions of dollars in failed trades and middle- to back-office functions are completely streamlined. As long as all of these initiatives don't have one ring to bind them, we're really not going to get there. It's interesting to see which ones of these are actually going to pan out," says Matthew Bastian, director of market and business development and West Coast operations at Cusip Global Services. "It's natural in the early days of a hype like this, when everyone is running in the same direction, to see some initiatives that succeed and some that fail."

In Bastian's view, the failures are likely a project with no use case in mind—"a solution in search of a prob-lem"—and initiatives that take use case into account early are the ones with the most promise.

Matthew Bastian
Cusip Global Services

"Down the road, if the industry can find a way to coalesce around standards that link all of these up, that's where you're really going to see the rubber hit the road," he says, noting that there are good projects underway working from a proof-of-concept standpoint, "but as long as it's all not disintermediated and not con-nected the way it needs to be, you're just not going to see that revolution in the markets that people were talking about two years ago."

State Street's Saul says the industry is seeing amplified adoption of stand-ards because "we've gotten to a critical mass," and foresees continued build-ing upon initiatives as collaboration increases, resulting in standards that are more widespread and accurate.

Interestingly, collaboration and connection do not require all firms and regulatory bodies to use the exact same standards.

"Certainly, we see the rise of a lot of standards vocabularies cross-industry, and we certainly see industry-specific ontologies that are rising up. I don't think the goal is to ever get to one ontology for financial services. Different people have got different views of the world, they've got different purposes, and they've got different needs. We don't all need the same worldview. We play dif-ferent roles in the financial services industry," Bloomberg's Rawlings says. "The 'road to Damascus' moment for me is [when] we were working on the ISO 20022 standard and we were essentially creating a large canonical data model. At some point, the world moved on, and we're getting to the point now where people are saying you can have a shared vocabulary, but different organizations can have dif-ferent ways of using that vocabulary and can combine that data in different ways for different purposes."

Rawlings' view hints at what might be the biggest challenge for semantics evangelists: the people prob-lem. Revolutionary change requires

work, and the people necessary to do the work might need to be convinced that it's worth the effort. And while there seems to be consensus among data managers that the payoffs are worth it, there is significant work to be done.

"Every single piece of data, and there are literally thousands of them, has to be defined. That's why it's taking so long. And by the way, we'll not stop at a particular point in time. Every time someone creates a new financial instrument, we'll have to map that. The good news is we'll only have to map the differences," says State Street's Saul.

Mizuho's Goldberg has estab-lished a forum of banks and regulators to talk through the stand-ards in a data-focused—and not policy-driven—manner.

"Our aim is to start with an ini-tial proof-of-concept using a small number of attributes used for regula-tory reporting. Then we'll extend that data-object-by-data-object across the financial-services universe until we have a complete set. It sounds great, and it's very easy to say but the work to agreeing those definitions will take time. Getting clarity across even a single jurisdiction can be a challenge. But, when we consider a global stand-ard, there are a lot of conversations to be had," Goldberg says, and when they reach a consensus of definitions across all jurisdictions, they will need regula-tors to sign off and implement.

Data doesn't go wrong in a vacuum, he says; it goes wrong because a business process made it wrong, and not only that, right and wrong are contextual—what's right in one place can be wrong in another.

"A lot of the work that CDOs undertake in our own businesses is to get a common understanding of the data. That's complex enough in a large company. Trying to do that on a global scale across the marketplace will take time," Goldberg says. "But it's important enough that we need to proceed." **W**

Anthony Malakian

The Death of Blockchain (Hype)

As we turn the calendar over, the hype machine surrounding the blockchain industry is still strong. Anthony hopes that it will meet an untimely demise in 2019.

Did you hear about the block-chain?! Yes, better than the internet and bigger than the Beatles, it's going to change technology as we know it! Or ... it won't. Yeah, it probably won't. But damn, it sure does provide for a nice sales pitch, doesn't it?

Don't get me wrong, blockchain-powered platforms are interesting and will one day prove to be useful pieces of technologies, but right now the hype around them is overblown. A revolution like the internet, cloud technologies and machine learning? I think not.

As we ring in the New Year, maybe we can also sound the death knell for blockchain—at least the hype-machine that surrounds it. The advent of dis-tributed-ledger technology (DLT) was a case study in irrational exuberance. While there were always use-cases for DLTs, they became the embodiment of a hammer looking for a nail. T+0 settlement for US equities? Oh yeah, we can do that. Unparalleled security for the cloud? We've got you covered. High-speed trading without added latency? Sure, why not. Cure cancer? Go big, or go home!

Yet what we've seen is a whole lot of disappointment. Banks that were so eager to join one blockchain consor-tium or another, have staggered out of the room with little to show for their efforts. Highly touted proofs-of-con-cept were quietly swept away like dust in the wind. Even the lionized Blythe Masters has stepped down as CEO of Digital Asset Holdings, proving once more that you should not make idols in the worlds of crypto and blockchain.

We enter 2019 with little evidence that blockchains are truly better than traditional databases, en masse—same as it was when we entered 2016, 2017 and 2018.

For the October 2016 issue of *Waters*, I wrote a feature, *Blockchain: The Revolution Has Been Over-hyped*. Over two years later, I could easily use that headline once again to write another

> **We enter 2019 with little evidence that blockchains are truly better than traditional databases, en masse.**

feature on the same topic. So where does that leave us? Trust me, the hype is still there. This year you will read numerous press releases and articles proclaiming that some fintech startup has raised $x million to help build their version of a blockchain panacea. Blockchain still sells as a buzzword and venture capitalists are still listening.

But here are a few things to keep in mind in order to help you to fine-tune your blockchain B.S. detector. First, it's important to remember that in the last year, a plethora of industry "media" outlets have popped up to help promote the blockchain industry.

These publications are hardly inde-pendent and, as such, their coverage is often biased. Know the sources of your information. Furthermore, even for reputable mainstream publications, they can often get lost in the fog of tech hype. A major newspaper's finance reporters aren't as used to covering technology

and they can accidentally fall into role of carnival barker—it happened to me plenty when I first started covering finance (and later tech) over a decade ago at *American Banker* magazine.

And in a nascent market, it's not always easy to spot the fraudsters. Apparently, the blockchain startup CG Blockchain was created by Boaz Manor, the jailed former head of Canada's Portus Alternative Asset Management who, upon release, reportedly started this vendor under an assumed identity, Shaun MacDonald. It's an odd story that was first written about in *The Block*. The name of the startup caught my eye, though, because earlier in 2018, I had written a story about them. Tech giant FactSet had entered into a part-nership in February that would allow users of FactSet's order and execution management system to access CG Blockchain's products through the lat-ter's app store, BCT Fundstore. (As this story went to press, FactSet had yet to provide an update on the relationship.) I didn't speak with anyone from CG Blockchain; it's lazy, but quite frankly all that mattered to me was FactSet's involvement since that's what our read-ers would care most about. It's a lesson learned, and I've been covering tech at *WatersTechnology* for nine-plus years.

This is all to say that this is a confusing market that's still ripe for hype. While small steps will be made on the blockchain front in 2019, bigger than the internet this is not. Be wary of anyone telling you otherwise—or at least ask for some tangible proof. **W**

Replicating Traditional Financial Markets

As strides are being made to encourage greater institutional participation in the trading of cryptocurrencies, Wei-Shen ponders whether the crypto space will end up looking exactly like the traditional financial ecosystem.

Is crypto ripe for regulation?
For more information and readers' feedback please join the discussion at
waterstechnology.com

There is no doubt that there is institutional interest in the trading of cryptocurrencies or crypto assets. However, due to specific mandates, some strict regulatory regimes, and of course, missing key elements in the crypto space, not all institutional investors have been able to throw money at the crypto world.

This could change, though. As Hu Liang, co-founder and CEO at crypto-trading platform Omniex told me, for crypto to become a true asset class, participation from larger regulated institutions is "absolutely required."

Furthermore, there is already some work being done in several segments of the market to encourage institutions to participate. One of them is in custody, an issue we previously covered in December as the next major battleground for the crypto market.

Another is that the "Holy Trinity" of traditional institutional trading does not yet exist in the crypto market, said Tim Enneking, managing director at San Diego, Calif.-based fund manager Digital Capital Management. The "Holy Trinity" he described is the brokers, exchanges and custodians that currently exist in the established traditional financial ecosystem.

But in the crypto space, these roles have been blended, and predominantly at the exchange level. Coinbase for example, is targeting the institutional space with the launch of custody and prime services.

From the traditional side, Goldman Sachs has invested in digital asset custodian BitGo, and asset manager Fidelity announced that it will launch Fidelity Digital Asset Services, a company that will provide crypto custody and trade execution services for institutional investors.

We also learned that a group of central securities depositories (CSDs), which are specialist organizations typically responsible for holding securities such as shares so they can be easily

> ❝ The crypto market needs to look and have the exact same features as the existing financial ecosystem.

transferred, are looking into how their roles can be used in the crypto-asset infrastructure.

Walter Verbeke, global head of business model and innovation at Euroclear earlier said there are certain aspects of financial market infrastructures (FMI) and roles that CSDs, as a central body, play today, which could be used in the crypto market as well.

"Tomorrow, those FMI roles will have to be played as well. And some of those pieces of infrastructure and some of those FMI roles will fall more naturally into our remit for what a CSD does. It's very simple. What do we do as a business? Very simply, we provide safety and efficiency and that's what people look for. If you have that then, a traditional investor base—for example, pension funds, and investment managers—will feel confident," he said.

Euroclear is one of the 28 CSDs that published a paper through the International Securities Services Association (ISSA) highlighting how their roles are applicable to the crypto asset market.

Beyond that, Omniex's Liang said for cryptocurrencies to be truly recognized as a new asset class, custody, platform access, brokerage services, as well as back-office settlement, will all be needed.

An interesting point made by SJ Oh, a senior trader at Hong Kong-based digital asset brokerage OSL, is that crypto valuation does not exist. He compared this to the traditional markets, where if investors would like to know the value of a company's stock, they can look at its price-earnings ratio, or the company's earnings before tax, interest, depreciation and amortization, or other valuation ratios. In the crypto space, there's none of that.

It seems what the market is getting at for more institutions to participate in crypto-asset trading is that the crypto market needs to look and have the exact same features as the existing financial ecosystem.

Is there a point at all to the crypto space if it will one day end up looking like what traditional markets look like? I, for one, would like to find out. So, as usual, you know where to find me. W

Human Capital

FISD Parent SIIA Gets New CEO, Wasch Retires

The Software and Information Industry Association, parent organization of data industry body FISD, has named Jeff Joseph president and CEO.

Joseph has spent 20 years in strategic communications roles at industry associations. Most recently, he was president and CEO of Starlight Public Affairs, prior to which he spent five-and-a-half years as senior vice president of communications and strategic relationships at the Consumer Technology Association, was vice president of communications at the Biotechnology Industry Organization for six years, and was vice president of communications and strategic relationships at the Consumer Electronics Association.

Joseph says in a statement that "Data and information are the key currencies of the 21st Century economy," adding that he looks forward to furthering the "diverse needs and interests of its broad membership." Ken Wasch, current

Gary Manton

SIIA president and CEO, who founded the organization 35 years ago, will retire at the end of December.

Data, Analytics Vet Manton Returns to SAS

Gary Manton, who has spent two decades working in data management, analytics, and visualization technologies, has rejoined analytics and data management software vendor SAS, 20 years after his first stint at the vendor.

SAS has hired Manton as senior account executive, responsible for enterprise accounts in the Western US region.

Manton says his role will involve helping clients address data challenges, while harnessing artificial intelligence, machine learning and SAS' suite of analytics and visualizations to drive investment decisions.

He was most recently senior enterprise sales executive at Thomson Reuters, which he joined in 2009 as a result of the vendor's purchase of tick data management platform Vhayu Technologies, where he had served as director of sales and marketing. Before joining Vhayu in 2003, he served as COO and senior vice president of sales and marketing at startup analytics and visualization provider Visual Technologies, prior to which he spent three years as a marketing analyst and systems engineer in an earlier stint at SAS.

QuantHouse Taps Latency Vets for Senior Roles

Paris-based low-latency market data distribution and systematic trading solutions provider QuantHouse has appointed industry veterans Emmanuel Carjat COO and Denery Fenouil CTO, as the vendor expands its leadership team.

Carjat, who will be responsible for managing the company's operations to drive continued business growth, was most recently managing director of Carjat Consulting, and before that was founder and CEO of Atrium Network, which was acquired by Canadian exchange TMX Group in 2001, and subsequently bought by Intercontinental Exchange in 2017. Before founding Atrium in 2006, Carjat was a technical solutions manager at BT Radianz, prior to which he was a quality of service manager at network operator KPNQwest.

Fenouil, one of the original founders of QuantHouse, will focus on software and technology development. He was previously president of energy insulating materials manufacturer Enersens, and a board member of its parent, chemical company PCAS. He also served as CTO of ride-sharing startup Karhoo. Before that, he was vice president and technical director at McGraw-Hill Financial, which he joined via the vendor's acquisition of QuantHouse in 2012, where he as CTO he designed the vendor's low-latency market data technology. He spent several years as an academic at French universities, prior to which he was a security analyst at IBM and lead software engineer at Atos.

"We believe their extensive knowledge and combined experience will make great additions to the leadership team. As we continue to grow, it is important that we maintain the operational excellence that QuantHouse has become known for, and to do this we need to put the right people in place," says CEO and co-founder Pierre Feligioni, in a statement.

Jeff Joseph

Oanda Bags Data Marketing Vet Craig

Currency trading and data portal Oanda has hired Julie Craig as head of marketing for its SFB (Solutions for Business) division, responsible for building a marketing team and for the vendor's B2B initiatives. Her duties include marketing efforts, including demand generation, sales support, corporate positioning, and thought leadership initiatives.

She previously spent five years as vice president of marketing at big data search engine platform AlphaSense, prior to which she spent five years in the same role at Interactive Data's desktop division, eSignal,

Julie Craig

and eight years as director of marketing at Data Broadcasting Corp.

Based in San Francisco, Craig reports to chief marketing officer David Hodge.

Citi's Chen Joins HKEx for Post-Trade BizDev

Hong Kong Exchanges and Clearing Ltd. (HKEx) has appointed Cindy Chen as head of post-trade business development, clearing.

Chen will report to joint COO and head of clearing, Calvin Tai. In her role, she will identify new business opportunities and work with HKEx's customer and stakeholder base to develop the HKEx's clearing services.

She will also oversee the exchange's distributed-ledger technology project, a post-trade allocation and processing platform

The post-trade business development team, which was formed in mid-2018, is responsible for the development of HKEx's post-trade offerings across equity, fixed-income and currency markets.

Chen joins HKEx from Citi Hong Kong, where she was formerly the head of securities services. She has more than 20 years of experience in capital markets and securities and fund services with Citi in Hong Kong and New York.

ISITC Taps Fiserv's Iagatta for 2019–2020 Chair

Standards body ISITC has appointed Lisa Iagatta as chair for the two-year term spanning 2019 to 2020, replacing Erica Borghi.

Iagatta, who is currently director of account management for investment services at financial technology provider Fiserv, has been active within ISITC since 2012, most recently serving as vice chair, and also co-chairing its Reconciliation Working Group. She joined Fiserv in 2010 as senior business solution specialist for its advisory business, prior to which she spent almost 20 years in senior

Cindy Chen

roles at investment firms and vendors, including vice president of operations for global wealth investment management at Columbia Threadneedle Investments, senior business solutions strategist at Checkfree (which was acquired by Fiserv), director of market development at SS&C Technologies, vice president of operations for Eaton Vance Management International's high net worth business, senior business analyst at Putnam Investments, and unit manager at the Boston Company Asset Management.

As chair of ISITC, Iagatta will preside over board and member meetings, and oversee the organization's activities, while looking to expand membership and collaborate with other financial services and standards bodies.

Ex-Research Analyst Silitschanu Joins Token IQ

Scottsdale, Ariz.-based securities tokenization blockchain provider Token IQ has hired Phillip Silitschanu as director of strategic relationships, responsible for developing relationships with securities issuers, regulators, broker-dealers, and securities token offering (STO) marketing and strategy

firms, among others. Silitschanu spent the past nine years as research principal at his firm Lightship Strategies, prior to which he was director of European research at Aite Group. Before that, he was editor of Cerulli Global Edge at buy-side market intelligence provider Cerulli Associates, and an international corporate actions analyst at Brown Brothers Harriman.

Silitschanu reports to Token IQ co-founder and president Aleksander Dyo.

Kaizen New Hire to Head Trade Reporting Expansion

Kaizen has hired Chris Machin to head the development of the Mifir trade reporting extension of the regulatory reporting vendor's assurance service, ReportShield.

Machin has 20 years of financial services industry experience, beginning at Credit Suisse, where he headed various settlements teams, followed by a nine-year stint at UBS Investment Bank as the associate director of European emerging and international cash equity and fixed income, currencies and commodities settlements, and network manager. Most recently,

Chris Machin

Machin was head of client support at Simplitium, where he partnered with the London Stock Exchange to build APA TradEcho.

Kaizen's ReportShield testing service aims to improve price transparency by identifying data quality issues such as accuracy, completeness, and timeliness of the records published.

Ian Rennie, managing director of Kaizen, says it is "widely recognized" by the market that the quality of Mifid II reference data has not been up to standard since the regulation went live in January 2018. The Mifir reporting extension was built to assure senior management that a data validation assessment has been performed on their reporting data independent of authorized regulatory mechanisms, Rennie adds.

"The product will give firms a complete picture of the quality of their Mifir trade reports," he says. "The service will give firms the ability to identify where their reporting is correct and where it is incorrect, so they can fix issues where necessary. Moreover, it will also provide crucial feedback to the Senior Manager's and Certification Regime manager responsible for reporting within a firm."

Hamilton Trades Derivatives for Digital Currency

Steve Hamilton, the former COO of the London Stock Exchange's interest rate derivatives market, CurveGlobal, has joined Archax as head of regulation. The start-up plans to launch a digital securities exchange in mid-2019.

"What interested me about Archax is that the project here is not to create a platform for trading cryptocurrencies per se, but rather to build an institutional-grade platform, based in London and fully regulated here by the Financial Conduct Authority as a multilateral trading facility, focussed on digital securities," Hamilton says.

"This isn't new regulation for new financial instruments, although I am firmly of the belief that this will come given the retail involvement in the space, instead just using a new technology to solve real-world, real-economy issues, like raising capital and increasing liquidity in the financial instruments that the industry is comfortable with."

Archax's plans are to tokenize real-world assets using a blockchain through security token offerings, which means they have intrinsic value and generally fall under existing regulations.

"For Archax the key relevant UK primary legislation will be the Regulated Activities Order 2001 and the Financial Services and Markets Act 2000—both existing regulations. In terms of potential new regulation that may come to the market, I would point to the House of Commons Treasury

Phillip Silitschanu

Committee report on crypto-assets, particularly the conclusions and recommendations of the report. The work that goes on here with politicians, regulators and the industry in shaping how future possible regulation will impact the future of crypto will be extremely interesting, and I look forward to playing some part in the conversation," Hamilton says.

Archax is also planning its own security token offering, which it will use to tokenise a portion of its own equity.

Prior to CurveGlobal, Hamilton was trading business manager at DRW Trading Group and a senior associate at the Financial Services Authority, the forerunner to the FCA.

Blackstone Promotes Andersson

Market data veteran Cornelia Andersson continues working her way up the ladder at the Blackstone Group, most recently promoted to senior vice president, global head of research and market data, for the private equity, alternative asset management and financial services firm.
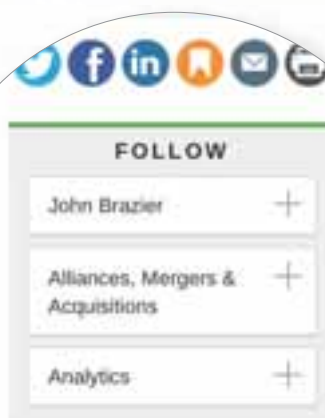
Andersson has been with Blackstone since 2007, when she was brought on as an analyst. She is based in London and has held several roles at the New York–based firm, most recently serving as vice president in the global corporate services group managing Blackstone's research team and overseeing market data services across all business units, globally.

Prior to Blackstone, Andersson was a project manager at Thomson Reuters (now Refinitiv) where she oversaw European private equity fund performance. Andersson received a master's degree in political science from Lund University in Sweden. **W**

Cornelia Andersson