



Fidessa's Mass Exodus

After a string of resignations and layoffs at Fidessa, some users brace for trouble

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The Public Interest

For the better part of three months, my colleague Rebecca Natale and I—with 90% of the hard work being done by Reb—spoke with current and former Fidessa staffers, as well as Fidessa clients and various other industry experts, to better understand what has been happening with Fidessa's suite of solutions in the year following the Ion acquisition. (See page 24.) In August, Reb broke the news about mass resignations at Fidessa. The two remaining questions were: Why were so many people leaving, and what would that mean for users of Fidessa's order and execution management platforms, its connectivity services, and its data and analytics tools?

Headcount reductions are an unpleasant side effect of many acquisitions, especially if there are significant overlaps and synergies between the merging firms. But this can also mean a fresh start and the ability to remove underperformers. Some of that clearly happened with Fidessa. But this mass exodus extends beyond the usual efficiency gains. Not only did multiple users of Fidessa's products talk to us about their concerns and the issues they're already facing, but Fidessa's employee representatives clearly stated that problems were arising with clients and further layoffs and departures would exacerbate the problem.

We chased this story hard because those still working at Fidessa want to understand what is happening inside their own company. Users of Fidessa's various platforms and tools also want to know, as well as banks and asset managers that might look to deploy a Fidessa product in the future. Furthermore, the sell-side and buy-side order and execution management spaces—in addition to the analytics and connectivity fields—are becoming increasingly competitive, all amid tremendous cost pressure and consolidation.

While our reporting clearly unearthed problems at Fidessa following the acquisition, they may be temporary as Ion sets the course it intended when it bought the vendor. And it should be said that Ion contends that service is already improving for the majority of users, as issues relating to platform stability are down 27%, while those relating to software quality are down 18%, according to the vendor.

As the editor of *WatersTechnology*, I believe it's imperative that we not only report on acquisitions when they happen, but also keep an eye on them after the ink has dried. At the end of October, Confluence Technologies bought StatPro and we wrote extensively about what that could mean. (See page 38.) It will also be important to see what it does mean once StatPro's collection of tools have been integrated (or potentially spun out) into Confluence. And we will also want to check back in with Ion, as one year from now things could be quite different—just look at what a year has meant for Fidessa. **wt**

Anthony Malakian
Editor-in-Chief

waterstechnology

Contents

1 **Editor's Letter**

4 **Lead News**

6 **New Perspectives**

14 **Open Outcry**

15 **News Desk**

16 **When Privacy Is Revealing**

Banks are showing interest in solutions based on homomorphic encryption, including for sharing information on cybercrime. Jo Wright takes a look at what this technology is, and if these solutions can be commercially viable.

20 **Unlocking the Value of Homomorphic Encryption**

There are claims that homomorphic encryption will transform the nature of data sharing. Here Josephine Gallagher explores some of the real-life applications in development and the main roadblocks to its adoption.

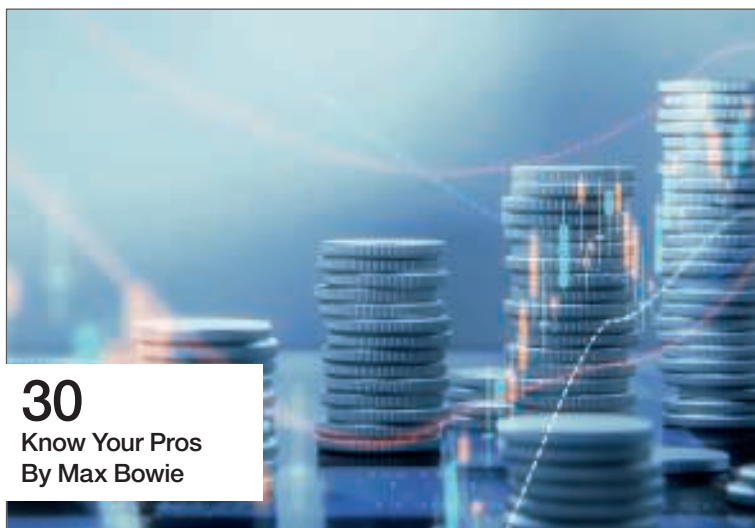
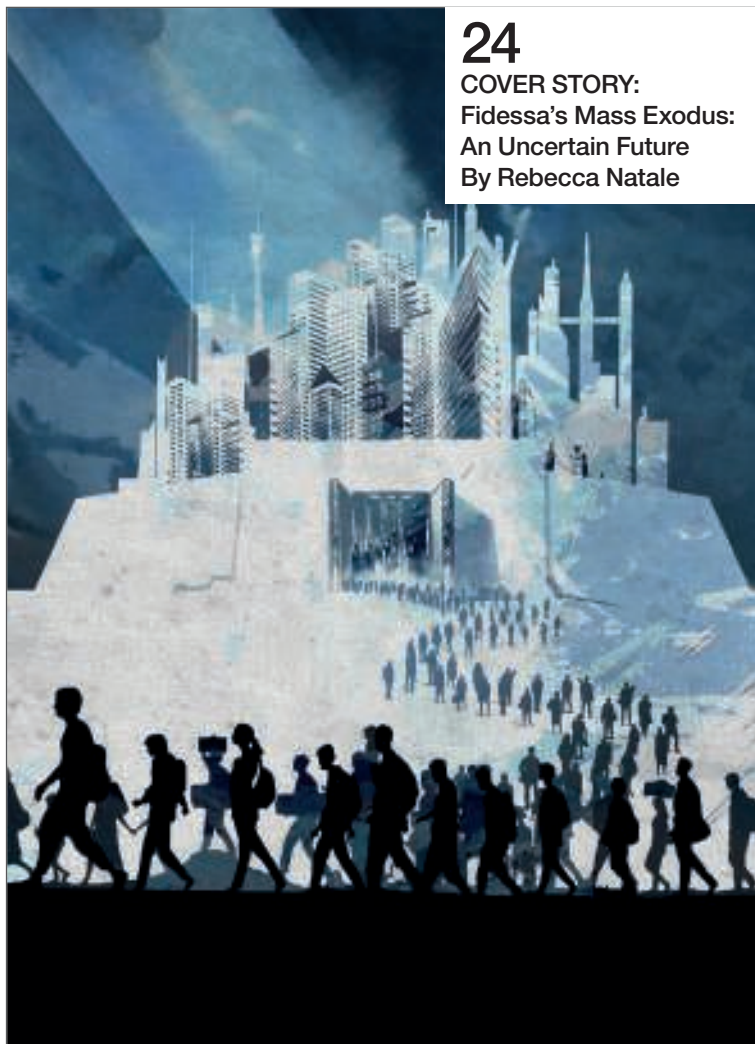
24 **COVER STORY: Fidessa's Mass Exodus: An Uncertain Future**

Around a quarter of Fidessa's staff have left the firm since it was acquired by Ion Group last year. The new owner insists customers have nothing to fear, but some claim service standards have slipped and are bracing for contract negotiations that could 'get ugly.' WatersTechnology spent three months speaking with current and former Fidessa employees—as well as executives at Ion, clients of Fidessa, and industry experts—to chart the prospects for a company whose software is part of the fabric of the global equity markets. By Rebecca Natale with additional reporting by Anthony Malakian

24

COVER STORY:

Fidessa's Mass Exodus:
An Uncertain Future
By Rebecca Natale



30

Know Your Pros
By Max Bowie

30 **Know Your Pros**

There's a big difference between what professional and retail investors pay for data. Brokers want to ensure retail clients don't get hit with professional fees, while exchanges want professionals consuming their data to pay the higher rate. The key is classifying these different customer types correctly. But, as Max Bowie discovers, that's not as easy as it sounds.

34 **AI in the Cloud**

As more firms are starting to expand their usage of AI, they are turning to the cloud to help scale up. However, there are important considerations before doing so. Wei-Shen Wong examines.

40 **Confluence & StatPro: A Sign of the Buy-Side Times**

Confluence has a big job ahead integrating StatPro's various analytics tools. WatersTechnology takes a closer look at the Confluence–StatPro tie-up. By Rebecca Natale, Josephine Gallagher, Joanna Wright and Anthony Malakian

42 **Chartis Research**

Setting the standard: making finance risk-aware.

44 **Cultural Appropriation: Private Equity Goes Quant**

Machines are helping venerable shops find under-the-radar performers and the factors that drive them. By Rob Mannix

48 **Max Bowie: Bringing an 'Edge' to the South Side**

49 **Jo Wright: The Jitesh Thakkar Case: A Scary Precedent**

50 **Wei-Shen Wong: Unspoken Experimentation**

51 **Human Capital**

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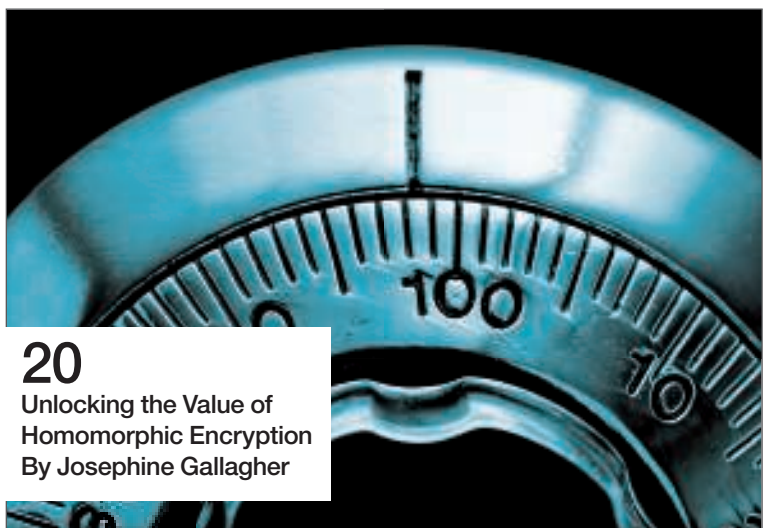
16

When Privacy Is Revealing
By Jo Wright



20

Unlocking the Value of
Homomorphic Encryption
By Josephine Gallagher



Blockchain's Evolution Could Complicate **Vendor Interoperability**

During the most recent CFTC TAC meeting, members discussed interoperability issues, as well as quantum encryption concerns. By [Anthony Malakian](#)



While wide-scale, cross-industry adoption of distributed ledger technology (DLT) has still yet to materialize, more targeted projects and proofs-of-concept are hitting the market. As much of the hype around DLT has washed away, this is a technology that will continue to be looked at and experimented with.

On October 3, the Commodity Futures Trading Commission (CFTC) held its latest Technology Advisory Committee (TAC) meeting. During it, the Distributed Ledger Technology and Market Infrastructure Subcommittee gave a presentation and then answered some questions. One of the more interesting questions posed

came from Erik Barry, head of client platform for prime derivative services at Credit Suisse.

Earlier in the presentation, Brad Levy, CEO of MarkitServ and a member of the subcommittee, estimated that it would be 2025 before the industry saw true, cross-border, industry-wide adoption of blockchain technology, though he noted that there are smaller implementations being rolled out today. But Barry wondered what would happen as blockchain—which we'll use as a catch-all for DLT—becomes more prevalent and it is spread across numerous vendors.

"If we look down to an alternate universe in 2025, and one CCP has chosen Hyperledger, another has

“I think it's no different than us looking at the cloud or any other technologies that are more centralized. Blockchain is fancy, it has a lot of hype right now, [but], again, it comes down to the results.”

Shawanna Hoffman, IBM

chosen Ethereum, and another has chosen Corda, DAML, AxCore—all of these different DLT providers that are active in the fintech space—what recommendations should we be providing to the Commission to not only lead the standard-setting internationally, but also between these different iterations of networks between different players in the industry.”

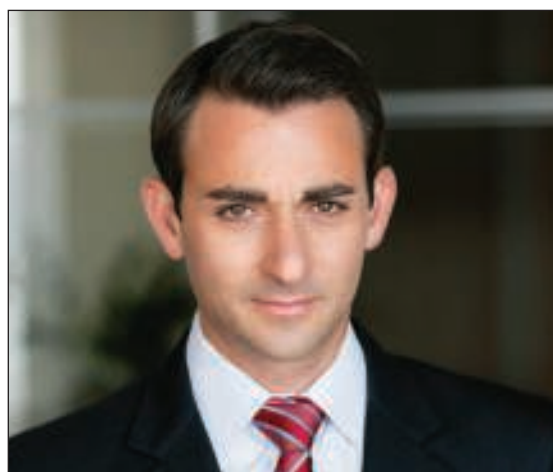
The concern for the Commission, Barry said, was to not play the role of “kingmaker” by forcing everyone to one platform, but he also worried about interoperability between the chains.

In Search of Standards

It’s a question that is gaining traction. Compared to the hype just a few years ago, blockchain’s actual development in the capital markets has been slow, relatively speaking. One potential reason for its stunted growth is the lack of standards when it comes to how these platforms are built and how they operate with one another and with legacy banking systems.

To answer Barry’s question, Levy said that firms will need to focus on the problem they’re solving for in the near-term; interoperability will (hopefully) work itself out later, when appropriate.

“Pay attention to everything—there’s that education element. And then, ultimately, there will be many, many—it’s very unlikely that there will be one; people talk ‘one,’ but it almost never lands there—and there will be four, five or six that develop globally and in each area with specialties, and there will be [interoperability] that will make sense over time,” Levy said. “We’ve always talked about interop and fungibility—it’s a ‘future’ concept—it never goes all the way there, but it gets sorted out, or filtered out, over time based on people really knowing the problem [they’re] solving and the momentum behind the solutions that are winning. And then those would be pushed to inter-



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Brad Levy, MarkitServ

operate—or not—depending on how the world evolves.”

Shawna Hoffman, global cognitive legal leader for IBM, compared it to cloud development. First, the capital markets embraced in-house private clouds, but eventually, public clouds—such as IBM Cloud, but also Amazon Web Services, Google Cloud Platform, and Microsoft Azure—have gained traction.

Today, these clouds are actually able to have some sort of interoperability as the largest banks, asset managers, and tech companies are largely choosing to go with a multi-cloud strategy.

“I think it’s no different than us looking at the cloud or any other technologies that are more centralized,” Hoffman said. “Blockchain is fancy, it has a lot of hype right now [but], again, it comes down to the results. What are the results we’re looking for and, really, what are the results we’re not looking for—what are those results that could cause havoc in the marketplace and cause havoc for the individuals?” she said. “So I would never recommend to put anything forth in regards to technology, itself, but more towards the results. **wt**”

Quantum Encryption Dilemma

While only loosely tied to blockchain’s development, there was one other interesting question that was raised that we wanted to address, as it’s something we’ve written about here at *WatersTechnology*: While quantum computing is still in its infancy, there are questions about quantum encryption and how blockchains could be affected.

During the TAC meeting, Alexander Stein, managing director at Two Sigma Investments, asked IBM’s Hoffman this question: “What are the best practices in anticipating the power of quantum computing? In a publicly-readable DLT, people may feel overly confident that today their data is not accessible, but with the advent of quantum computing, it’s all there.”

IBM has been on the of the bleeding edge of quantum development and encryption thanks to its IBM Q Network. While Hoffman noted that she didn’t have all the answers, she does recommend that firms start looking at quantum encryption today.

“That is an excellent question and one that keeps me up late at night,” she said with a light laugh. “I don’t even know



that I have the answer that you’re looking for, but as we are continuing to develop quantum encryption, we are having other companies that we’re seeing in the marketplace also doing the same.

She continued: “As much as possible today, we do recommend quantum encryption even now, because at some point, some bad actor is going to come into the system that has that capability and really wreak havoc around the world. So, not only when talking about blockchain, but talking about anything security-wise.”

Barclays: The Future of Post-Trade is a Common Utility Platform

Financial firms are pushing for a distributed market infrastructure model through efforts such as Isda's Common Domain Model and distributed ledger technology. By [Josephine Gallagher](#)

A Barclays executive says that as financial firms look to modernize post-trade processes, they are discussing the development of a common utility platform for industry-wide clearing and settlement.

"In terms of a long-term future state, I think there is a drive in the capital markets to look at financial market utilities," Lee Braine, director of research and engineering at Barclays Investment Bank, told *WatersTechnology* on the sidelines of Barclays DerivHack in London on October 17. The hackathon was held to allow participants to leverage the Isda Common Domain Model (CDM) to solve use cases around common repositories in post-trade processing.

"There is a drive towards a model where utilities are performing most of our post-trade activities and [if we can leverage] this mutualization of the cost, it will be a big benefit for the industry. Using standards is obviously the right path for that and so is using common utilities," Braine said.

However, in theory, large-scale adoption of a single unified platform would call into question the role of utility providers like the Depository Trust & Clearing Corporation (DTCC), which is responsible for the clearing and settlement of the majority of all global trades in equities, bonds and derivatives.

Braine said that the main challenge is around the type of model structure the industry agrees on and what responsibilities will be given to utility providers. One potential option is that the DTCC could function as a central counterparty that governs and maintains the distributed financial

market infrastructure, which could be built on distributed ledger technology (DLT). In this example, it could be a post-trade utility platform.

"Once counterparty firms have designed and developed their DLT initiatives, they may look for an independent third party capable of providing the operational processing necessary to manage the network and to oversee the participants on the network," Jennifer Peve, head of business development and fintech strategy at the DTCC, says.

The idea is that the DTCC would provide centralized governance over a decentralized technology platform. The firm would be responsible for the functionality, deployment, and testing of the DLT network.

"A key choice with distributed ledger technology is where to host nodes," Braine said. "For example, for a Day One go-live, the financial markets infrastructure could host all the nodes and the banks could just connect into them using existing interfaces and capabilities."

Standards and Tech Evolution

A major part of the drive towards more efficient markets was the publication of the Isda CDM 2.0 for interest rates and credit derivatives in March 2019. The model was developed to help create standards around derivative trade events and processes to improve automation and reduce the regulatory cost burden.

Braine said that data standards and adopting the CDM model are the first step in a multi-year roadmap. Later stages would involve the building of a common utility platform for



Lee Braine
Barclays

non-differentiated products on DLT or a similar technology. The appeal of using DLT is that it would enable data to be synchronized across the entire ledger allowing each member connected to the network via a node to view a 'single version of the truth' in real time.

At one point, blockchain, a subset of DLT, was thought to be the technology that would revolutionize the markets, but now it seems that firms are more interested in developing their own version and cherry-picking the functionality they would like to apply to new platforms.

R3's Corda is a technology that has evolved from these principles. Corda took its inspiration from the bitcoin blockchain, which was designed to support virtual currency transactions rather than core market structure processes.

Corda records, manages and synchronizes financial agreements between financial institutions. Other examples include the evolution of Ethereum, where data privacy functions have been built into versions of the technology, and JP Morgan's digital coin, which only allows for the sharing of hashes between members on the permissioned network.

"It's the difference between a 'full fat' version of a blockchain, where you fully replicate the data at every node, versus a much lighter model where you only share hashes," Braine said. "So people are already traveling down that route to customize the original classic blockchain design into something that is more appropriate for the non-functional requirements of financial institutions." **wt**

Commerzbank Pilots DLT Prototypes

The bank's research and development arm, Main Incubator, has trialled blockchain projects, including settlement of commercial paper in T+0. By [Hamad Ali](#)

Commerzbank's research and development arm, Main Incubator, is currently engaged in handing over distributed ledger technology (DLT) prototypes to the bank.

According to Matthias Lais, founder and managing director at Main Incubator, his team will be working to guide the bank so the implementation of the technology runs as smoothly as possible.

"Currently we are in the process of handing the DLT prototype over to Commerzbank," Lais says. "We have the proof that the technology works and that there is demand from our customers for such a solution—that is what counts. Going forward, Commerzbank will scale out the technology for wider adoption. Following this process, it will be in a position to offer relevant products to its clients."

The incubator has carried out nine DLT-based pilot projects with different partners. The most recent project, called the Euro Commercial Paper pilot, took place in January 2019 and involved manufacturer Siemens and automotive giant Continental. During the pilot, Main provided the Corda-based blockchain that supported a test transaction between the two firms: processing a money market security with a term of three days on the blockchain for the first time.

"Normally you have settlement time of T+2, and this was [settled in] T+0," Lais says. "This was a prototype, but the transaction was real. So there was a commercial paper issued and bought by the investor. Three days later, the money was paid back."

The transaction was carried out in Luxembourg rather than Germany due to legal restrictions. "A global certificate in a physical form is not mandatory in



A number of Commerzbank departments are in the process of adopting the prototypes

Luxembourg for such transactions" as it is in Germany, Lais says.

He says Main is discussing with regulators the obstacles to such projects, and on how to potentially improve processes in the best interest of pushing forward initiatives like this one.

Lais says several departments in Commerzbank are in the process of taking over the prototypes.

"The next few years will be about making the whole thing work for our clients," he says. "This, of course, depends on several factors, including regulations and the development of interoperability standards."

Main Demands

The Main Incubator was established in 2013, and began operating in 2014 as the research and development department of Commerzbank. Developers at the incubator work on prototypes for several technologies, such as blockchain, quantum computing, robotics, biometrics, cloud, and artificial intelligence.

"Main Incubator in its function as a research and development unit can

execute transactions more freely than others from a regulatory perspective," Lais says.

Among Main's other DLT projects was one in November last year to carry out a live commercial paper transaction on the Euro Debt Solution application in collaboration with R3, ING, Natixis and Rabobank. Commerzbank provided the pilot framework, software and distributed ledger network for the trade, as well as regulatory advice.

According to Lais, Main Incubator was the first research and development unit among German banks to focus on DLT, noting that other financial institutions have since started working on their own DLT projects. The advantages of

“The next few years will be about making the whole thing work for our clients. This, of course, depends on several factors, including regulations and the development of interoperability standards.”

Matthias Lais, Main Incubator

this technology are disintermediation, Lais says: it could replace institutions that bring trust to transactions, as blockchain is inherently trustless; increasing speed and efficiency; and cost savings from cutting out third parties.

Lais could not say how long it will take to fully implement the prototypes in Commerzbank, but says that he would like to see Commerzbank as the first to implement DLT on a large scale.

"Someone will bring it to the market on a scale, that's for sure, and I would love to see us to do it," he says. [wt](#)

CME, Google Join Forces for Cloud Market Data Access

The partnership will allow existing and potential subscribers around the world to access all CME Group data via a connection to Google Cloud. By [Max Bowie](#)

CME Group is making real-time market data from all its marketplaces available via Google Cloud in a bid to expand its client base and the reach of its data by using a new connectivity model to simplify data access for end users.

“We are putting all our real-time data into Google Cloud, and converting all our Market Data Platform (MDP) channels into a Google service called Pub/Sub, so anyone can access them via Google from anywhere on the planet,” says Adam Honoré, executive director of data services at CME. “The specific use case for this is how do we take advantage of native cloud services to lower the barrier to accessing our data. ... We are creating a low-cost global transport solution for all our market data.”

The initiative responds to customer demand to address the costs of transport, data ingest, compute power and storage. “We’ve done some work on compute and storage, and now we’re tackling transport, and ingest cost is on our roadmap,” Honoré says.

Proprietary Clout

While financial markets connectivity has traditionally been the exclusive domain of specialist extranet providers, Google touts impressive credentials of its own: “We have the largest proprietary network in the world, and we continue to expand on that,” says Tais O’Dwyer, global director of financial services strategy and solutions at Google Cloud.

“Google Cloud has 20 regions [regional collections of datacenters], 61 zones [distinct compute, storage and networking resources across those



Adam Honoré
CME Group

regional datacenters], 134 network edge locations, and is available in more than 200 countries—plus, we’ve opened seven new cloud regions since 2018. When you think about the scale and ability to handle massive amounts of data, that’s part of our DNA. Our network and datacenters around the world have been designed to handle enormous amounts of data ... at lightning speed,” she adds.

To enable the service, Google deployed a direct connect into CME’s datacenter in Aurora, Illinois, allowing CME to push data into its cloud, from where it can be accessed anywhere in the world with a connection to Google’s cloud. As a result, anyone with an existing license agreement for CME data and a Google Cloud account could connect to CME data within a day, using code from CME for connecting to Pub/Sub, Google’s cloud-based enterprise messaging middleware. New subscribers can license CME’s data via the exchange’s self-service entitlements portal.

“We maintain physical hubs in regions around the world, but we’re

now extending that to anywhere with access to Google Cloud. We’ve expanded our network and capabilities with the same level of service across the world, while lessening the pain and cost of getting it there,” Honoré says.

Pricing Flexibility

The initiative’s cost structure also represents an experiment for CME: Though users must pay the normal fees for the data itself, instead of paying fixed charges for leased-line connectivity or rack space and cross-connects in datacenters, CME will charge a \$1.49 fee per hour to access its data. While cloud access removes the need for dedicated backup and replay feeds, this model also provides the flexibility of being able to turn access on and off as needed.

The offering addresses the needs of both existing and potential clients: “We want to extend our global reach for direct connectivity. Clients say they want more direct relationships with the exchange. ... But we also want new customers, so we want to make it as easy as possible for people to consume our data,” Honoré says.

The target client base for the new service runs the gamut of financial markets participants, though Honoré says it is initially aimed at firms with existing expertise in dealing with CME’s binary data format, such as software vendors, firms based outside the US, and those using CME markets for hedging.

“If you look at the ability Google has to provide real-time data around the world, this will generate interest from firms that don’t currently participate on CME’s marketplaces,” O’Dwyer says. [wt](#)

DTCC Explores Gatekeeper Role for DLT Networks

Post-trade company looks to stay ahead of DLT curve with plans to act as CCP for firms trading on permission-based blockchains. By [Josephine Gallagher](#)

As financial institutions consider the value of distributed ledger technology and its potential to trade and settle tokenized assets, the Depository Trust & Clearing Corporation (DTCC) wants in on the action.

Jennifer Peve, head of business development and fintech strategy at the DTCC, tells *WatersTechnology* that the market structure firm is interested in acting as a central counterparty for trading networks that are built on permission-based blockchains, a subset of DLT. Peve says the firm is looking to work with industry participants that are signing up for DLT networks, including those interested in trading and settling digital assets. In these cases, the DTCC would seek to function as a third-party firm that governs and maintains the platform, rather than having the provider run the technology once it's built.

"Once counterparty firms have designed and developed their DLT initiatives, they may look for an independent third party capable of providing the operational processing necessary to manage the network and to oversee the participants on the network," Peve says.

The DTCC is keen to engage with industry firms to discuss the type of service or role it would play. According to Peve, the DTCC could be responsible for the governance, functionality, deployment, and testing of the platform. She adds that it could manage, replace or execute code for smart contracts, as one example.

Governance Model

The latest plans follow the *DLT Governance Networks* whitepaper, published by the DTCC and Accenture in



Jennifer Peve
DTCC

September 2019, which discussed how the partnering firms have developed a governance model for operating an enterprise-wide DLT initiative, covering critical functions, adoption, security, risks, and regulatory compliance.

The paper points to the DTCC's position in the industry as a central regulated entity for clearing and settlement, and that it can provide a governance framework and principles for highly regulated, trusted infrastructures. The framework addressed approaches to managing activity, connectivity, software changes, contractual agreements and settlement for all participants on the network.

However, as the technology evolves and more challenges begin to emerge, the DTCC will aim to fine-tune the governance model; this could include having an open-source concept for developing DLT networks, or a forum for sharing industry ideas.

"We are open to the industry working with us to further refine the model and share ideas around how to create a more robust multi-governance model," Peve adds.

In early September, the DTCC announced the development of its DLT governance tool, DLT AdMon, which enables clients to view ledger activity and performance when connected to a node on the DLT network. The tool was developed with open-sourced code from the Hyperledger Explorer module.

Lessons Learned, New Deadlines

This initiative is growing out of the DTCC's own experience with DLT, as it replaces its Trade Information

Warehouse (TIW) system with a blockchain-based platform jointly built by IBM, Axoni and the industry consortium R3. The TIW platform, which handles the \$12 trillion credit derivatives market, is one of the most ambitious industry-wide blockchain projects to date.

The implementation has faced several delays over the years, mostly because the technology is so complex. The TIW deadline has been pushed to March 2020 due to client requests, as the DTCC braces for a series of far-reaching global changes from Brexit, the Commodity Futures Trading Commission's review of its swaps regulatory framework in the US and the re-architecture of the DTCC's North American data center, impacting the US and Canada's swaps reporting.

Peve says a core challenge of the technology are its ability to run complex processes, such as the structuring of credit events for credit default swaps. Performance capabilities have long been cited as one of the main barriers to the adoption of DLT for large-scale, multi-party implementations. But as the TIW project evolves and industry firms continue to provide feedback, Peve says that the DTCC continues to learn the best applications for the technology.

"Over the course of the deployment and interim UAT [user acceptance testing] environment, we have developed an understanding of which processes are better suited to on-chain versus off-chain, because those types of decisions ultimately impact performance, a key consideration when evaluating suitability for production," Peve says. [WT](#)

Bureau Van Dijk Rebuilds Risk Management Platform

Bureau Van Dijk's Compliance Catalyst has been rebuilt ahead of plans to move the platform to the cloud, as well as navigate the EU's fifth anti-money laundering directive. By [Rebecca Natale](#)

Bureau Van Dijk, which is owned by Moody's Analytics, has launched the full-scale rebuild of its risk management platform, Compliance Catalyst. Next year, the vendor plans on moving the offering to the cloud.

Several customers have been testing the revamped product in beta since August, and the new tool features automated and enhanced customer due-diligence screening for anti-money laundering (AML), know-your-customer (KYC), and anti-bribery-and-corruption (ABAC) rules. Also, an instant KYC company report and risk preview are now available before users begin their detailed risk assessment processes. Once the subject company is matched to its data in Orbis—Bureau Van Dijk's database with information on more than 310 million companies, which sits at the heart of its risk tools—the platform will generate a visual report of the company, screened against government watchlists and adverse media, as well as provide a summary of relevant compliance data.

Other new key features include out-of-the-box risk models that can be structured based upon a customer's most common use cases. The redesign, says Ted Datta, director of governance, risk, and compliance solutions, follows the “fail fast” principle.

“If you're about to onboard a client, even in the prospect phase, we see clients wanting to do that very quickly—in a couple of seconds, light touch,” Datta says. “Is there a red line on this business? That means there is no point investing the time it takes to run a full KYC service [over] three or four weeks.”



Plans to move to the cloud

Compliance Catalyst is more desk-top friendly after the rebuild as it was broadened to appeal to a range of users, from compliance experts to novices.

Additionally, baked into the product are added dashboards and event-driven alerts, which use machine-learning algorithms to contextualize adverse news and help reduce false positives, and it has streamlined the workflow for reporting real flags—such as changes in ownership—to higher-ups. Overall, the revamp should make the platform simpler to use and more intuitive.

“Compliance today is moving to be more operational, more about competitive advantage for lots of firms. That was probably the biggest thing we wanted to do,” Datta says.

Cloud and AMLD5 Plans

Though the updates add both scale and speed, Bureau Van Dijk plans to move the platform onto the cloud next year. By taking steps to simplify the application now, Datta says, the coming move will allow the firm to manage larger portfolios faster and more easily.

While Moody's and its various components already have platforms that are cloud-enabled, the company prefers to move platforms to the cloud on a case-by-case basis based on client demand, rather than go with a big-bang, all-at-once approach.

Big picture, though, Datta and his product teams are keeping an eye on a whole host of compliance, regulatory, and governance themes, where flexibility will be beneficial. As a data provider as well, Datta is watching the conversation around open registers for ultimate beneficial owners (UBOs), the tangential and sometimes overlooked

relationships between company owners and third parties.

In July, the Financial Conduct Authority (FCA) held its Global AML and Financial Crime TechSprint, for which Bureau Van Dijk, in conjunction with teammates such as Citi, DataRobot, and Companies House, the UK registrar of companies, took home the gold. They attempted to solve for the EU's fifth Anti-Money Laundering Directive (AMLD5), which kicks into gear in January 2020 and will require all regulated companies to report discrepancies in UBO data to Companies House.

The team, which named themselves Citadel, wrote in their presentation: “The datasets we were given for the FCA TechSprint, we were able to go through that, and we found out that 60% of the UBOs didn't exist in the Companies House database. Secondly, the 40% that did exist, there were an additional 27% discrepancies. Now it's a dataset, but what we do know [is] there are about 350,000 UBOs missing from the Companies register right now.”

They developed a strategy around privacy-enhancing technologies, which allow people to share data anonymously among multiple participants. From a risk perspective, they could share things like reports on suspicious activities, customers' transaction data, and client data such as who their UBOs might be.

“Monitoring these UBOs might have implications for how the data is used and how multi-participants can collaborate on data,” Datta says. “You can think about how things like blockchain and distributed ledgers potentially have roles to play in these kinds of environments.” [WT](#)

Alt Data Providers Struggle to Stand Out

Adopting an optimal and sustainable business model, as well as staying on the cutting edge of analytics, are two hurdles still to be overcome by alternative data providers looking to keep their heads above water. By [Rebecca Natale](#)

The industry loves alternative data—or, at least, it loves to talk about it.

The alternative data market is booming; according to [alternativedata.org](#), the alternative data industry is projected to be worth \$350 million in 2020, up from \$183 million in 2016. It's a market that includes behemoths like Bloomberg, Refinitiv and FactSet, to exchanges like Nasdaq, to financial institutions like State Street, to boutique shops that offer a very niche dataset.

It's a challenging environment even for the savviest of tech firms. Just look at Thasos Group, which earned acclaim on the buy side thanks to its assortment of geospatial data, but, as *Business Insider* first reported, the vendor was forced to fire two-thirds of its staff and its CEO, Greg Skibiski, resigned. There's a delicate balancing act that needs to take place between acquiring new customers, but making sure that the product doesn't become commoditized.

When it comes to building a business model, the main challenge faced by firms is proving their datasets are unique, says Gary Read, CEO and chairman of Import.io, an alternative data firm that specializes in web data extraction.

"At what point does alternative data actually stay at alternative data? And at what point is it considered mainstream because everybody's using it? The more successful [vendors] become, the less differentiated their product is," he says. "If you go sell the same dataset to 500 hedge funds, then great. But now hedge fund 501 says, 'Why would I want this? Everybody has already got this.'"

In an effort to solve that challenge, Import.io is structured seemingly a bit backward, in that, there's no shopping



Vicky Sanders
RSRCHXchange

cart of available, off-the-shelf datasets for sale by the company. Instead, their customers—often data scientists and equity research analysts—come to them with their own ideas of what specific datasets they want to unlock. From there, Import.io uses natural language processing and web-scraping technologies to gain insights into, for example, retail and real estate market trends by tracking store openings and closings, price fluctuations and travel patterns.

A Complex Mix

Bill Dague, head of alternative data research at Quandl, headed Nasdaq's alternative data team until the stock exchange acquired the data company in December 2018. He notes that while it's ideal to have a business model where hedge funds come in with bespoke challenges to be solved for, that model is not necessarily practical for all data players. Some barriers to the approach are rapidly changing investor needs and, to put it simply, "you don't know what you don't know."

"Investing is an information game," Dague says, and both investors and data vendors need an information edge to stay ahead of the competition; how you go about creating that edge is, essentially, what determines winners and losers. But both agree much of alt data will become just like mainstream market data. That isn't to say we'll run out of interesting things to measure, Dague says, but future innovation might lie in how they're measured, analyzed and used to generate diversified insights.

"We think of ourselves as chefs, where it's [about] the ingredients you put in," Dague says. He points to hype cycles, which can be a key ingredient in a recipe for alpha. As an example,

there was craze around geographical data and satellite imagery that recorded foot traffic at large shopping centers and the number of cars in parking lots to measure the health of certain stores and companies.

It didn't turn out to be the best indicator, but when applied to factories, the story changed. Using the same methods, there were more valuable investing insights to gain when it came to measuring the number of employees showing up to work, if that number was rising or falling, or whether they were often working overtime.

With most of the obvious sources of alternative data already largely tapped in the US, Dague says Quandl is fielding more requests for data related to markets in Europe and China, and the company's roadmap will look to meet that demand.

More to Come

RSRCHXchange, which is a cloud-based marketplace for unbundled financial research owned by Liquidnet, uses a handful of alternative data providers as research providers on its platform. Its co-founder, Vicky Sanders, says there's even different sets of challenges in selling to a traditional manager, versus, for example, a quant fund.

"There are some fairly well-developed quant funds who consume a significant amount of regular data as well as alt data, and they have a rigorous process for sourcing, curating, analyzing and testing the relevancy of that data," she says. Because quant funds are already using much of this data, the question becomes, How can you prove that your dataset is going to be more influential and additive to their performance when they back-test? [WT](#)

SmartStream Goes to Market

With Fresh Air

Sibos 2019 was a significant event for SmartStream Technologies, marking the official launch of SmartStream Air, the firm's cloud-native, AI-enabled reconciliations platform that is set to shake up the reconciliations industry. Victor Anderson caught up with Air's chief architect, Andreas Burner, and two of SmartStream's product heads, Linda Coffman and Nadeem Shamim.

At the Sibos gathering in London in late September, SmartStream finally lifted the veil on the product it had been talking about for the best part of a year: SmartStream Air, an artificial intelligence (AI)-enabled reconciliations platform designed to allow users to manage their reconciliation needs on an *ad hoc* basis, while simultaneously significantly reducing reconciliations processing and configuration times. Andreas Burner, chief innovation officer for blockchain and AI at SmartStream Technologies and head of the firm's Innovation Lab in Vienna—responsible for Air's conception and incubation—confirms that a number of large SmartStream clients have already extensively beta-tested the platform, with some preparing to implement it in a live, production environment. "This is the birth of all our AI and machine learning products," Burner explains. "We've been working heavily in this area for the past 18 months and now we've productized it through SmartStream Air—our first real AI product. We have been working with clients on it with their data and it has worked really nicely during our beta tests."

Burner, who describes SmartStream Air as a "really simple" application, explains that it allows clients to drop large numbers of records into it and, within a matter of seconds, it reconciles the data discrepancies within those files. "The demos show that you can do it within three or four seconds, even though you might have 25,000 records," he says. "We have tested it on 500,000 records and it's super-fast."

When Burner and his team designed the machine learning functionality underpinning SmartStream Air, they specifically focused on speed, accuracy and the imperative that it had to be what he calls "white-box AI", allowing users to understand how and why results were produced. "That's really important in the financial industry," he says.

Reconciliation Hurdles

To fully appreciate SmartStream Air's value proposition, it helps to frame it in the context of the various reconciliation challenges facing capital market firms. According to Burner, the industry is saturated with large, monolithic platforms that typically support a broad range of reconciliation functions from cash to digital payments, although what SmartStream is now preoccupied with is the growing need for faster, simpler systems that support *ad hoc* reconciliations and don't require days or weeks to configure for one-off-type tasks. "We introduced SmartStream Air because it fills the gap for an *ad hoc* reconciliations system," Burner explains. "Once a user subscribes, they get their username within an hour or two, and they can immediately start to upload their data. SmartStream Air also allows users to save configurations so that they can do daily recs if they want to."

Burner confirms that SmartStream has also embedded its AI and machine learning technology within many of its existing products, and that initially they will focus on the most acute operational challenges and clear-cut use-cases. "We always look for the biggest use-cases for our clients," he continues.



Andreas Burner
SmartStream



Linda Coffman
SmartStream



Nadeem Shamim
SmartStream

"Reconciliation is a big one because there is lots of data, lots of know-how, lots of exceptions, and lots of manual work that needs to be done. Cash and liquidity is also an interesting use-case because the prediction of cash and liquidity is really important for banks. Traditionally, their ability to predict cashflows and liquidity using analytics tools was a real challenge, although now we have machine learning, which is more precise and provides more information."

Real-Time Functionality

Nadeem Shamim, head of cash and liquidity management at SmartStream, says that the firm's clients are always on the lookout for technology support around their cash and liquidity functions, not only on an intraday basis, but increasingly in real time too. "In the past, it was a challenge for firms to calculate an accurate position on their nostro accounts for their daily liquidity needs," he says. "We have been delivering solutions to meet those needs for a number of years. Now, the focus has moved on

to looking at cash positions on a real-time basis, a natural progression after the financial crisis of 2007–08.”

Another issue facing industry participants with respect to their cash and liquidity management is accurately forecasting when payment flows and receipts are likely to occur during the course of the day, as alluded to by Burner. Firms might know that payments and receipts will occur on a particular day, but figuring out when exactly they will transpire during the day in question has always involved a lot of guess-work and experience, an issue SmartStream is now addressing. “We have been using machine learning and predictive analytics in a proof of concept to predict when actual payments will settle and delivering a timestamp for each forecasted flow,” Shamim explains.

The benefit accruing to clients on the back of SmartStream’s real-time cash and liquidity functionality allows them to observe and maintain the integrity of their capital buffers and the costs incurred if and when those buffers are breached. “If you are able to predict where the trough will be, you can manage the flow of payments and maintain the balance within the buffer,” Shamim says. “If my prediction is that all my payments are going out at 11:00am, for example, and all my receipts are likely to come in three hours later, is it necessary for me to make all the payments at the earlier time? Could I control the flow and stay within the buffer instead of leaving a large available balance in the account to meet my payment obligations? Continuous breaches of my intraday lines could trigger the Prudential Regulatory Authority requiring me to increase the buffer, which in turn means increased costs.”

Free Solo

SmartStream is synonymous with reference data, thanks largely to the Reference Data Utility (RDU), which was launched a decade ago and is designed to provide capital markets firms with accurate and timely securities reference data. The RDU’s initial joint-venture structure included three large investment banks—Goldman Sachs, JP Morgan and Morgan Stanley—although Linda Coffman,



vice president of product management for the SmartStream RDU, confirms that it is now wholly owned by SmartStream. “I think it was an important initial step to have the utility launched by the original stakeholders, but as we began to evolve and the products matured, it was a natural step to be fully owned by SmartStream,” she explains. “This move allows us to add some cohesiveness between the different products within SmartStream, including the Innovation Lab, AI and our data quality program. It also allows us more flexibility to pursue products that can benefit other segments of the market.”

The primary focus of the RDU was initially tier one sell-side institutions looking for reference data support for their listed derivatives operations, which at the time was a significant challenge for them, given the dearth of readily available and reliable securities reference data. According to Coffman, SmartStream is now rolling out support for additional asset classes—equities and fixed income—a move likely to increase interest in the RDU from smaller players, including the buy side. Improving the quality of the data residing within the RDU using AI technology is also a significant focus for the firm. “We have a

great data quality program already running in the RDU,” Coffman explains. “We have a team devoted to ensuring the best data in the market. Now that we are part of SmartStream, Stephen Koch, SmartStream’s global head of data quality, has started mapping out plans for how we can leverage our SmartStream AI expertise and apply it to our data quality program.”

Driven by Data

According to Coffman, a case study carried out by SmartStream found that one tier one bank was able to reduce its exceptions by 85% by using the RDU. “Clearly, data quality is key to what we do,” she says. “We’re a data-driven company and so data is one of our foundations.” Coffman explains that a key business driver for SmartStream is reducing operational and technology costs for its clients, which it achieves by providing what she calls a “complete data management service,” including feed and exception management support. “Time-to-market and scalability are other factors, although data quality is by far the main reason why we get initial phone calls from firms—they’re either experiencing data quality issues or their data is incomplete,” she says. [WT](#)

OPEN OUTCRY

What the key figures in fintech are saying this month

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“The fact of the matter is, we have a lot of work ahead of us. Being completely honest, we have a lot of work ahead of us in terms of understanding how to best integrate all of these contributing units into something that ultimately needs to benefit the client.”

Mark Evans, Confluence

» see page 38 for full feature...

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“Banks have all of this data about you and they want to use that to build these AI models. They want to be able to use that data in a way that is legitimate, they want to market to you in a way that is based on how you are behaving and what your needs may be, but they don’t want to expose that data to someone that doesn’t need to see it.”

Wendy Belluomini, IBM

» see page 20 for full feature...

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“This gives us the muscle of providers like Amazon Web Services and [Microsoft] Azure, and allows the big players like AWS to use our proximity to tap into locations in downtown business districts.”

Jeremy Diamond, MetroEdge

» see page 48 for full feature...

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“Users always say that if exchanges simplified their rules, they’d get paid on time. I suspect very few people are cheating. Most people want to be compliant and pay when they should pay, but aren’t in a position to hire people to make it work—there are a lot of resources involved.”

Bill Lee, Interactive Brokers

» see page 30 for full feature...



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“When you are dealing with a

whole set of new people who are in charge of managing the clients, who don’t know the clients, don’t

truly understand the connectivity, don’t have the relationships yet, don’t even have the ability to navigate through their own firms yet properly, you’re going to get hit on two ends. First, the people themselves probably don’t know the information they need to know and—second—they’re not as capable of communicating upwards what is told to them. So the fact we lost a major layer of connectivity between the firms as a result of this attrition over the last six to 12 months—I think that has essentially caused this lack of transparency around releases.”

» see page 24 for full feature...



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“Some banks will share a lot to identify criminal activity, while others are still risk averse. So we thought that if we leveraged a technology like homomorphic encryption and were able to obfuscate the data and get the answers we need for further investigations, we could get the banks to share more.”

» see page 16 for full feature...



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“Services like transcribing, taking audio and being able to pull that data—a lot of those things are easily available at our fingertips, so being able to leverage the public cloud to its full potential and then to deploy that relatively easily across our business is what I see as the next step in where we want to take this.”

» see page 34 for full feature...



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“Today, you can answer questions like: is this company winning on Amazon? But also you can understand, are Amazon private-label sellers moving into a category? And if so, how successfully?”

» see page 44 for full feature...



NEWSDESK

WatersTechnology's roundup of headlines that hit the wire this month from around the industry

Anna Starts Work on Crypto Identifiers



Emma Kalliomaki,
Anna

The Association of National Numbering Agencies (Anna)—the global body that oversees issuers of standardized instrument codes—has established a task force to work on harmonizing standards for the identification of crypto assets.

Anna's managing director, Emma Kalliomaki, says the organization is responding to an increasing number of requests from market participants who want to know where they can obtain International Securities Identification Numbers (Isins) for assets such as securitized tokens and cryptocurrencies.

Anna is the registration authority for the Isin code, an International Standards Organization-approved identifier for securities. The Isin is mandated for use in trade and transaction reporting under regulations including Mifid II, among other uses.

The task force has already conducted its first meeting, Kalliomaki says.

Symphony Pivots to Market Solutions and Workflows



David Gurle,
Symphony

Symphony Communication Services has unveiled a rebrand of its messaging and collaboration platform, dubbed Symphony 2.0, which the company hopes will reposition it as an end-to-end market automation and workflow platform.

The company announced new components, including customizable workspaces, filtered smart notifications, and Elements—pre-built, off-the-shelf developer tools for creating bots and integrating applications—as well as the Symphony Community Pod, which gives clients' counterparties access to the platform.

Over the past five years, the company has evolved into a B2B marketplace on which users can message, market and build tools, said Symphony founder and CEO David Gurle, speaking at the vendor's annual Innovate conference in New York in October. However, he said, the company recognizes that the strategies that got it this far will not necessarily work over the next five years, particularly as the pace of regulatory and technological change quickens.

Symphony chief product officer Ken Yagen says the move is the logical next step for the company: "Chat is the cornerstone around which we built this, so it was a natural evolution to go from there to more collaboration tools. The workflows came naturally because we built it as an open platform."

Microsoft Trials CAT Tool with Broker-Dealers



Microsoft is now
piloting the service

Microsoft is close to completing a service aimed at helping broker-dealers comply with the consolidated audit trail (CAT) regulation.

Lee Bressler, director and US capital markets lead at Microsoft, says the firm is currently carrying out pilots

of the project with broker-dealers.

The CAT, a trading database mandated by the Securities and Exchange Commission, is intended to help regulators track all US activity in listed equities and options.

"CAT is coming into force very soon. It is going to be in six different phases over a three-year period, and that is not a lot of time for the broker-dealers to have a solution in place that they have tested and that they know will comply with the regulations," Bressler says.

He says the offering will gather the data required by the regulator and then submit it to the centralized system overseen by the Financial Industry Regulatory Authority.

MarkitServ Delays Credit Rollout for TradeServ

Last September, MarkitServ, IHS Markit's post-trade processing business, launched a cloud-based platform called TradeServ, which first went live with FX for non-deliverable forwards. TradeServ has now processed roughly 1.4 million NDF trades for clearing and 34 financial institutions are active on it for FX, says a spokesperson. The plan was to launch credit on the platform in the first half of 2019, but that rollout has been delayed. MarkitServ is not ready to announce a new launch date at this point, but indicates it will not happen this year.

Liquidnet Launches New Business Unit

Liquidnet is building a business line to run alongside its equity execution and fixed-income businesses. Set to be rolled out next year, the new unit, dubbed Investment Analytics, will bring the company's last three acquisitions—Prattle, RSRCHXchange, and OTAS—under one roof. The firm has begun piloting some of its new technologies with several asset managers, combining Prattle's experience in natural language processing, OTAS' use of machine learning in structured market data, and RSRCHXchange's investment research platform.

SAP to Launch Data Lake for End-User Analytics

SAP is planning to launch its Data Warehouse Cloud, which consists of a data lake that capital markets firms can use to support decision-making and analytical workloads. It is the first data management product to be offered on the vendor's Hana Cloud Services platform. "The SAP Data Warehouse Cloud... provides an elastic data lake and data connectivity for analytics with flexible consumption-based pricing," says Stuart Grant, head of capital markets at SAP.

When Privacy Is Revealing



Banks are showing interest in solutions based on homomorphic encryption, including for sharing information on cybercrime. [Jo Wright](#) takes a look at what this technology is, and if these solutions can be commercially viable.

Encryption is like phone networks, or railways, or plumbing—it's a huge part of our daily lives that we very seldom think about. Encryption protects the most personal information we share online in interactions with our bank, our doctor, our friends, and when we shop, and stream video, and store our photos in the cloud.

All firms encrypt sensitive data—from competitive data to personally identifying information (PII) about individuals—that has to be protected at rest or in transit. Regulations like the General Data Protection Regulation (GDPR) make the misuse of PII a very expensive mistake for financial institutions to make.

Fortunately, modern encryption standards like the Advanced Encryption Standard (AES) are extremely robust. But no matter how seemingly unbreakable, they are not perfect. Imagine getting an encrypted email. When you open it, it's just a weird, unreadable scramble of characters. If you wanted to read it,

you would have to decrypt it, leaving it in the clear for as long as it took you to absorb and react to the information you receive. For the duration of the processing, the data is vulnerable. And, moreover, it's exposed to whoever is processing it.

How to process data without having to reveal the data has been a concern of cryptographers for decades. And now technology companies and banks are (often quite secretly) working on an encryption scheme called homomorphic encryption (HE), with a selling point that sounds almost too good to be true: What if you could perform computations on ciphertext (an encrypted document) without having to decrypt it first?

"Today, there are industries—especially those that are heavily regulated—that have the challenge that on the one hand, they want to do

collaborative data science, but on the other hand, have various security and privacy challenges stopping them," says Alon Kaufman, CEO and co-founder of Duality Technologies.

Duality is a cryptography and data science company that is working on bringing homomorphic encryption to firms in financial services, insurance, retail, healthcare and the automotive industries.

"These industries see a lot of value in working together on data, but can't just go and do it freely," Kaufman says.

Certainly for financial firms, the possibilities of this technology appear endless. Banks could pool data with competitors for analysis or offer personalized services without having to reveal clients' personal information. Cloud customers could store data remotely without having to trust that the cloud service is managing the data

securely. You could store very sensitive data in your Dropbox or even on your phone. This month, *WatersTechnology* took a closer look at some of those use cases. (See page 20.)

Duality has been working closely with the Cyber Defence Alliance (CDA)—a non-profit anti-fraud alliance of banks including Lloyds, Santander, and Deutsche Bank—piloting a solution leveraging homomorphic encryption for cybercrime and fraud detection.

Maria Vello, CEO of the CDA, is excited about the possibilities of homomorphic encryption. She thinks it could make banks more comfortable with joining fraud investigations. The CDA tries to get banks to share information about cybercrime to look for patterns, but has found that many are reluctant to open up, for reputational, economic, and legal reasons.

“Some banks will share a lot to identify criminal activity, while others are still risk-averse. So we thought that if we leveraged a technology like homomorphic encryption and were able to obfuscate the data and get the answers we need for further investigations, we could get the banks to share more,” Vello says.

One exploit at a bank is just one of the thousands of hacks that happen daily. But what if you could find similar incidents across five or six banks, proving that there is a pattern of crime that might amount to large-scale instances of fraud, information loss, and monetary loss—the kind of numbers that make law enforcement sit up and take notice? And what if, crucially, you could share all this information with peers and competitors without revealing sensitive data?

“If one bank goes to law enforcement and says, ‘We are seeing this type of fraud’—well, no one has enough capacity to follow that up,” Vello says. “So law enforcement might say, ‘This is not significant enough; there are not enough victims.’ But if we suspect there is a new fraud scheme emerging, we can say we have a bigger case [where] we are seeing it across multiple banks. The interest from law enforcement goes up if we can build a bigger case and make it actionable.”

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“Some banks will share a lot to identify criminal activity, while others are still risk-averse. So we thought that if we leveraged a technology like homomorphic encryption and were able to obfuscate the data and get the answers we need for further investigations, we could get the banks to share more.” Maria Vello, CDA

The CDA has tested a proof-of-concept with Duality that would enable banks to share information on criminal activity. They have been working with synthetic data so far, identifying the fields they want to search to find cases of fraud.

“You never get the broad data back, you just get the computations,” Vello says. “No one knows the questions you are asking, no one knows what you are querying.”

For example: There could be a phone number that is suspected to be linked to a case of fraud. The CDA could ask the banks for their records, look for that phone number and see if it is linked to a particular name or address.

“All you are going to get is numbers, computations. But you would know which bank to go to for the information and its propensity for sharing information,” Vello says.

Duality’s Kaufman says banks could collaborate on anti-money-laundering and know-your-customer (AML/KYC) processes, as well as fraud cases.

“This is relatively simple data science, running simple queries on models. But one bank could run the model on another bank’s premises without disclosing, for example, who is the suspect [in a fraud case].”

The CDA and Duality took part in the Financial Conduct Authority’s TechSprint this year, and presented on this concept.

A Brief History of HE

Homomorphic encryption might sound like science fiction, but it’s not a new concept. When the seminal RSA algorithm, still one of the most widely used encryption schemes in the world, was theorized back in the 1970s, its creators noted that it had some

homomorphic properties. Two of RSA’s developers went on to ask, what could one do with a scheme that was fully homomorphic? That is: Could there be an encryption function that permits encrypted data to be operated on without decrypting the operands?

This problem was answered in 2009 by IBM researcher Craig Gentry, whose doctoral dissertation put forward the first fully homomorphic encryption scheme. Gentry wrote in his abstract that, “such a scheme allows one to compute arbitrary functions over encrypted data without the decryption key.”

Gentry’s breakthrough was a major event in the cryptography world. Kurt Rohloff is now CTO and co-founder of Duality, but in 2009, he was running research projects in high-performance computing and data analytics funded by the Defense Advanced Research Projects Agency (Darpa), the research arm of the US military.

Darpa gave Rohloff money to form a team to take homomorphic encryption from theory to practice with a software and hardware implementation. “So I can honestly say that I have been building this technology, implementing and applying it longer than anyone else in the public space,” Rohloff says.

Fully homomorphic encryption has not made its way into commercial applications because it comes with a high computational overhead. It was billions of times slower to run computations on ciphertext than plaintext in 2009 when Gentry published his thesis; although companies like Duality and IBM say they have reduced runtime greatly, many commentators, like security guru Bruce Schneier, say fully homomorphic encryption is not really possible.



Alon Kaufman
Duality
Technologies



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“The underlying math hardness properties of the lattice-based crypto systems, which are the underlying infrastructure of HE, are believed to be quantum safe, meaning that they cannot be cracked easily by quantum computing devices.” Kurt Rohloff, Duality

Rohloff, however, says this is a misperception—homomorphic encryption is “very practical, very feasible for high-value problems,” he says.

He points to his own work on the Darpa-funded project as proof. His project delivered scalable, secure voice over IP (VoIP) conferencing on ordinary iPhone 5S handsets and over commercial data networks.

“We basically improved runtime performance of HE by six-plus orders of magnitude every six months for that six-year period,” Rohloff says.

Rohloff says he and Duality’s other co-founders, Vinod Vaikuntanathan and Shafi Goldwasser, believe in the commercial viability of HE.

“We have collectively drunk the Kool-Aid on the high value and potential impact of this technology,” Rohloff says.

Vaikuntanathan and Goldwasser are professors of computer science at MIT, and Goldwasser won the Turing Award—the computer science world’s equivalent of the Nobel Prize—in 2012. She co-invented zero-

knowledge proofs, which remain one of the most revolutionary technologies for verification.

Speed and Standards

Duality is not alone in marketing homomorphic encryption for commercial use. Microsoft, IBM, Google, and others all have solutions around this form of encryption. Researchers with these organizations say they have sped up work with HE using various techniques. One way is to use open-source libraries like Palisade (which Rohloff helped to develop and Duality still leverages) or Microsoft’s SEAL.

Flavio Bergamaschi, senior research scientist at IBM, says his team has performed an homomorphic encryption experiment on real data with a bank. They proved they could run 256-bit encryption and it was only 50 times as slow as it would have been running the computations in Python on plaintext.



(See the accompanying feature on HE on page 20.)

Bergamaschi predicts HE products will really emerge over the next year.

The CDA's Vello says that in partnering with Duality, they have had some issues with the length of time a query took, but the developers are progressively decreasing runtime. She says Duality has promised it can deliver it at 10 times faster in the first quarter of next year.

"I think the evolution of this technology and the transformation of encryption is at a point now where it is going to increase at a very steady rate," she says.

Companies in this space also like to point out that HE is futureproof, as it is robust against quantum computing. Gentry's scheme for fully homomorphic encryption is based on "ideal lattices," a concept in number theory. Lattice cryptography is a family of crypto schemes whose security derives from

these complex algebraic structures. It probably takes a math degree to understand this, but what the layman can grasp is that lattice cryptography is so complicated that even a quantum computer cannot break the cipher—or at least it cannot as we understand quantum today.

"There has been a lot of anxiety about the prospect of advanced quantum computing devices breaking traditional crypto systems like RSA, for example," Rohloff says. "And there has been a push in the security community, in the crypto community, to define what is called post-quantum crypto standards."

The basic premise of encryption is that security is derived from hard math problems, he says: If you can show the difficulty of breaking a cryptographic system is at least as hard as solving a problem, then you know that the crypto system is secure. The problem that defined RSA (factoring) is believed to

be crackable by quantum computing, Rohloff says.

"But the underlying math hardness properties of the lattice-based crypto systems, which are the underlying infrastructure of HE, are believed to be quantum safe, meaning that they cannot be cracked easily by quantum computing devices."

At the same time, collaboration among firms exploring homomorphic encryption is growing, particularly to develop standards. Duality has led these standardization efforts, with Rohloff and Vaidkuntanathan heading the formation of a consortium that includes government bodies like the National Institute of Science and Technology (NIST), academics, corporates, and tech firms including Intel, Microsoft, IBM, Google and Inpher.

"We have been having two meetings a year for the past several years, and we have draft standards that mostly define protocols and security settings," Rohloff says.

The standards define protocols (how the keys are generated, for example); security parameters like the size of the keys; and the API standard—what it looks like to call a crypto library.

"That third one is not so much for security as it is to make the libraries interoperable. So people can design once and not have to re-engineer as libraries evolve, for example," Rohloff says.

Duality is applying homomorphic encryption in other industries, too, doing work on genomic data, for example. Rohloff would like to see HE become so much a part of life that it becomes boring, in the way that AES is now.

Kaufman says that in an increasingly data-driven world, where regulators and individuals are worried about data privacy and ethical AI, homomorphic encryption can enable collaboration without compromising on security and without companies giving up their IP.

"This is going to be a critical technology going forward," Kaufman says. "It is becoming practical, and with the rise of standards and the advancement in AI, the ability to use this data and derive value from it without disclosing it—that is highly critical." 



Kurt Rohloff
Duality
Technologies

Unlocking the Value of Homomorphic Encryption

There are claims that homomorphic encryption will transform the nature of data sharing. Here [Josephine Gallagher](#) explores some of the real-life applications in development and the main roadblocks to its adoption.

Imagine the ability to perform computations on data that, until now, had been unobtainable due to global regulatory regimes. Data privacy and protections laws—most notably the General Data Protection Regulation (GDPR) in Europe, implemented in May 2018—enforce strict rules around data sharing and ensures that those who access personal information are authorized to do so. But what if there was a way to unlock the value of data without actually viewing it or falling afoul of the law? Enter homomorphic encryption (HE).

According to a recent report by the World Economic Forum, homomorphic encryption sits within a family of emerging privacy enhancing techniques (PETs), ranging from differential privacy, federated analysis, zero-knowledge proofs, secure multi-party computation, and lastly, homomorphic encryption.

HE is garnering increased attention because it is cryptographic primitive—or, to put it

simply, a building block—allowing firms to share encrypted data with one another and perform computations on the data, without having to decrypt it. As a simple example, firm A sends its encrypted data to firm B, and similarly, firm B sends its encrypted data to firm A.

Both parties then merge their own encrypted data and perform homomorphic computations on the combined dataset through a common set of instructions built into each firm's analytics tools, to make sense of the encrypted data and derive value from it. Once completed, each party can decrypt the insights from the process using their dedicated encryption keys. *(For a detailed explanation of homomorphic encryption and its origins, see page 16.)*

Although this technique is very much in the early stages of being applied to

commercial applications, it could tackle some of the industry's most pressing problems and unlock the doors to an unlimited supply of data.

"It addresses one of the biggest paradoxes, which is the 'need to share' versus the 'need to know,'" says Flavio Bergamaschi, a senior research scientist at IBM Research Laboratory and the leader of the group developing IBM's Fully Homomorphic Encryption (FHE) technology.

As homomorphic techniques start to mature, many projects will look to move from development stages into production over the next 12 months, according to sources at both Microsoft and IBM. Today, some of the most significant use cases are still being worked on with banks in meeting rooms and behind closed doors. For this piece, *WatersTechnology* spoke to

specialists in homomorphic encryption, legal experts, and research teams at some of the biggest tech companies in the space to see where the privacy technique is being applied.

Inpher

According to Jordan Brandt, CEO and founder of Inpher, the types of use cases for homomorphic encryption can be categorized into intra- and inter-organizational constructs, and consortia applications. Intra is when a firm seeks to leverage all of its internal data located within various business lines, but have been prohibited from doing so due to restrictions on data sharing.

Inter-organizational is when two or more companies want to pull their data together to build more sophisticated analytics or technologies for, say, tackling financial crime, by applying artificial intelligence (AI) to combined, massive datasets to detect patterns. Cooperation between counterparty firms has also opened up the possibility for firms to build more refined algorithms and AI models by training them with large shared datasets.

“We are finding that there is a very high value in machine-learning applications because they are so hungry for more data,” Brandt says. “The more data that you can feed into these algos, generally the smarter that they get and these [homomorphic encryption] technologies create an ability to provide more data without having the privacy or security concerns of exposing any individual personally identifiable information.”

There have been ongoing discussions about the need to combine resources and intelligence to combat terrorist financing. A major barrier to this has been the reluctance to share sensitive data with other entities. Now the hope is that large consortia, including private companies, industry bodies, governments and regulators, can use homomorphic encryption to prevent unlawful financial activity and defend against the growing number of sophisticated cyber-attacks.

Currently, Inpher is using HE to explore trade-surveillance applications for regulatory authorities, where they

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“The more data that you can feed into these [machine learning] algos, generally the smarter that they get and these [homomorphic encryption] technologies create an ability to provide more data without having the privacy or security concerns of exposing any personally identifiable information.”

Jordan Brandt, Inpher

can run analytics on trades in order to identify anomalies, such as insider trading, without having to view any of the trader or investor’s personal information.

“Privacy computing or encryption can enable [users] to run forensics and pattern matching on encrypted datasets to identify if there is suspicious trade behavior without actually exposing any of this individual investor information,” Brandt says. “And then if they do identify within a certain probability [that an illegal act had occurred]—for example, there was a bad actor involved—then they could subpoena the specific data that they need to identify with that organization or organizations.”

The firm is working with several clients—including JP Morgan, which led a \$10 million Series A funding round for Inpher in November 2018—to leverage internal and external shared datasets that fit into the intra- and inter-organization categories.

Microsoft

While Inpher is a startup gaining traction, some of the biggest tech companies in the world are also very active in this space.

Microsoft is in the middle of developing a platform to allow clients to perform secure computations on the cloud, often referred to as edge-based inferencing. Clients can use its software development kit and Microsoft SEAL, an open-source homomorphic encryption library, to encrypt their data and transfer it to the cloud where they can leverage machine-learning analytics tools. Once completed, the client can return the encrypted data to its on-premise systems to decrypt the information.



Jordan Brandt
Inpher

According to Kim Laine, a senior researcher at Microsoft Research, the tech giant is close to releasing a private preview of the platform. The idea is to initially make the platform available to clients working on proofs of concept to see how it can be deployed in real-life scenarios. It will also be available free of charge to clients with a subscription to Microsoft Azure.

As one example, Marcello Benati, a senior business innovation and strategy leader at Microsoft Research, says this solution could be used by hedge funds for portfolio analysis. In this scenario, the hedge fund could encrypt an aggregate of its client data and send it to the cloud to derive insights on portfolio performance, allowing clients to view the insights that apply to them and compare them with the average performance of portfolios in the hedge fund.

Today, Microsoft offers some homomorphic capabilities via its Microsoft 365 E5 platform. Firms can run basic analysis on data in Excel spreadsheets without employees having to view it.

“So, in E5 you can do things like bring your own key, things like attribute-based access control, role-based access control, and those sort of analytical homomorphic capabilities,” says Lee Bressler, US capital markets lead at Microsoft.

IBM

Another major mover that is actively working with a broad net of multi-industry firms using homomorphic encryption is IBM. The enterprise technology company is currently developing a range of data privacy and security solutions to protect against the misuse of data. As part of these plans,



Marcello Benati
Microsoft



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“Banks have all of this data about you and they want to use that to build these AI models. They want to be able to use that data in a way that is legitimate, they want to market to you in a way that is based on how you are behaving and what your needs may be, but they don’t want to expose that data to someone that doesn’t need to see it.”

Wendy Belluomini, IBM

IBM is piloting projects with banks to secure the process in which they can share AI models without having to share the underlying data within the models. This would mean that institutions could combine, trade, or outsource models to third-party firms to enhance their functionality.

“Banks have all of this data about you and they want to use that to build these AI models,” says Wendy Belluomini, director of AI and cognitive software at IBM. “They want to be able to use that data in a way that is legitimate, they want to market to you in a way that is based on how you are behaving and what your needs may be, but they don’t want to expose that data to someone that doesn’t need to see it.”

Another potential use being explored is the ability to analyze sensitive market data or potentially



Wendy Belluomini
IBM

pull data from multiple exchanges and providers onto a single cloud repository and enable clients to run analysis on the combined resource.

Still, while this type of encryption could transform how firms share and leverage data, it is not without its challenges. Not only is there a need for the encryption technology to mature to allow for viable commercial solutions to appear on the market, but a long-term regulatory framework has yet to be determined.

The Roadblocks

Cost and speed are two of the biggest challenges holding homomorphic encryption back. However, some firms such as IBM believe that the technology has reached an inflection point on performance, and others still think there is a tradeoff to be had at

this early stage as third parties look to take on the computation of the data for clients.

“With homomorphic encryption, the pure idea is that I can outsource workloads to a third party,” Inpher’s Brandt says. “So, I can encrypt my data and put it in [for example] Amazon Web Services to process it for me, and they can give me the results back. The challenge from the commercial point of view is that the increased computation time and increased cost to compute the data while it is encrypted often counters any economic advantage that I have of using a third-party cheaper service to do the computing.”

He adds that other types of privacy techniques such as multi-party computation (MPC) can operate much faster, but that each use case and application is distinct. Secure MPC is a cryptographic protocol that divides and distributes the data of each party participating in the computation, which means that no individual can see a complete version of the data inputted.

When it comes to all privacy-enhancing technologies, the main question is, how secure is it? With homomorphic encryption, it is designed to guarantee the security and privacy of the inputted data



where other third parties cannot decrypt the data or have access to the underlying data. However, when it comes to simple computations, it does have security flaws because if the calculation is too simple, one party could potentially deduce the value entered by another party.

“That is something that is known as calculating the privacy budget that is independent of the encryption method, where it doesn’t guarantee that the output is not revealing anything about the input data,” Brandt says. “You can think of the encryption method as securing the process and guaranteeing that an adversary or some party cannot decrypt the data or access it, but the output itself can reveal something about the input data.”

On the other hand, as AI and algorithms become more complex and harder to explain, applying them to encrypted technologies could create a whole new paradox. Today, homomorphic encryption effectively operates like a black box to some extent where algos process the encrypted data and churn out a result. How exactly that result comes about is not apparent and it is not possible to validate, as there is no access to the full dataset.

Combining that with AI subsets such as deep neural networks and machine learning could create a whole new range of challenges that firms will have to overcome.

It’s fair to say that there are still many questions to address in order for homomorphic encryption to gain a footing in the capital markets, one of which is regulation.

Gray Area

When it comes to data-sharing regulations, the transferring of encrypted data is something of gray area. Rules in the space vary widely from jurisdiction to jurisdiction, with GDPR being one of the most progressive cross-border rules to date. Today, GDPR restricts the transfer of personal data to countries outside of the European Economic Area (EEA). This rule applies to all firms, entities, and business lines that process personal data from within the EEA. The question is, are you GDPR compliant when transferring encrypted data?

In one example, IBM’s Belluomini poses this question: “Let’s suppose I share an encrypted file with you across a border that you didn’t have the key for. Have I really given you anything?”

As encrypted data can only be accessed through a permitted key, there are remaining uncertainties as to how regulators will react to sharing encrypted data across international borders, particularly as other global data protection laws follow in the footsteps of GDPR, such as new proposals in Australia, as well as in the US in California and New York.

“Since the technology is just getting to a proof-of-concept stage to do that, I don’t think the regulators have looked at it all that much, but there are definitely going to be discussions about it,” Belluomini adds.

Currently, GDPR recognizes some privacy methods for transferring data. For example, truly anonymized data is still regarded as GDPR-compliant, however recent studies—such as a paper published by Imperial College London in July 2019—reveal that even encrypted data could be reverse-



Lee Bressler
Microsoft

engineered by using large datasets to re-identify the personal characteristics removed.

Although GDPR is written as technology-neutral, it seems that more clarification and guidance is required to understand whether homomorphic encryption is a fully valid and compliant method of sharing data.

Others are convinced that the regulators are looking for industry firms to lead on the topic. According to Jake Jacobson, partner for financial services at consultancy EY, global lawmakers are promoting innovative breakthroughs and new ways to secure data.

“One thing that we are seeing in the past 24 months is that regulators are now pushing rather than tapping the breaks,” Jacobson adds. “So, they are sponsoring fintech and regtech events. They are putting innovation out front as a key agenda item, which then kind of gives the banks the permission to go explore and come up with new innovative ideas and come back to seek comment and guidance from the regulators.”

But bringing in the regulatory conversation might be putting the cart before the horse. Homomorphic encryption still has a long way to go before it sees wide-scale adoption in the capital markets. While breakthroughs are happening, especially when it comes to latency, as it pertains to finance, the technology is still in the PoC stage. It will likely take a year or two before more tangible rollouts will be seen, and that’s by the most progressive estimates.

Still, there’s a reason why so many in the field of data science are excited about the possibility of homomorphic encryption—and that excitement is shown in the research and development spend by the likes of IBM and Microsoft, as well as upstarts like Inpher—and that is because it could open up whole new avenues of data exploration by combining datasets. In actuality, it could potentially revolutionize how regulators actually surveil the market—so maybe they won’t be quite such a roadblock, after all.

The future possibilities are limitless, even if right now there is a limit. **wt**

Fidessa's Mass Exodus: An Uncertain Future

Around a quarter of Fidessa's staff have left the firm since it was acquired by Ion Group last year. The new owner insists customers have nothing to fear, but some claim service standards have slipped and are bracing for contract negotiations that could 'get ugly.' *WatersTechnology* spent three months speaking with current and former Fidessa employees—as well as executives at Ion, clients of Fidessa, and industry experts—to chart the prospects for a company whose software is part of the fabric of the global equity markets. By [Rebecca Natale](#) with additional reporting by [Anthony Malakian](#)

The banker winces and shifts uncomfortably in his seat. He has just been asked about service standards at Fidessa, following the trading technology vendor's \$1.9 billion acquisition by Ion Group last year.

"We're lucky we implemented the software when we did. They've become a little bit slower to deliver on some of the things they promised," he says, choosing his words carefully. Then he pauses and offers his explanation for the dip in standards: "They have fewer people."

That's putting it mildly. According to multiple estimates, roughly a quarter of the workforce has left the UK-based company since the deal went through—roughly 400 people, though it could be more. Some were made redundant—Ion CEO Andrea Pignataro had made no secret of his plans to wield the axe—but the majority simply walked away, citing a three-month delay in the payment of 2018 bonuses, or a growing distrust of the new owners. (See *Box: The Bonus Issue*)

So it goes with acquisitions, of course, and one New York-based analyst—a long-time observer of Fidessa—argues the company was "bloated."

But now some customers are starting to complain.

A second Fidessa user says the post-deal departures have claimed "close to 100%" of the people his bank had previously dealt with, resulting in a breakdown in communications and service quality. He gives the example of a recent patch release—the bank had not been told in advance—that had an impact on some of the bank's own customers.

"When you are dealing with a whole set of new people who are in charge of managing the clients, who don't know the clients, don't truly understand the relationships yet, don't even have the ability to properly navigate through their own firms yet, you're going to get hit on two ends. First, the people themselves probably don't know the information they need to know and, second, they're not as capable of communicating

Ion was warned of the danger. In July, during a round of redundancies in the UK, Fidessa staff who had been appointed to represent their at-risk colleagues wrote to management, stating that clients were already complaining of degradation in the quality and quantity of service, and that the scale of the departures was affecting morale and delivery. "Further redundancies will worsen the situation," the letter said.

In the end, 70 UK roles were eliminated of an originally planned 80, continuing the exodus that had started months earlier.

Any dips in service may ultimately be short-lived squalls—a side-effect of Ion's attempts to knock Fidessa into the leaner, meaner shape it wants—but some users of the software are bracing for a storm.

WatersTechnology can reveal that Ion has already revised Fidessa's standard contracts, extending the length from two years to a minimum of three—with discounts on offer for clients who sign up for five or seven years. The contracts are understood to include new features that limit Ion's liability. Customers who sign will also agree not to withhold payments if the service deteriorates.

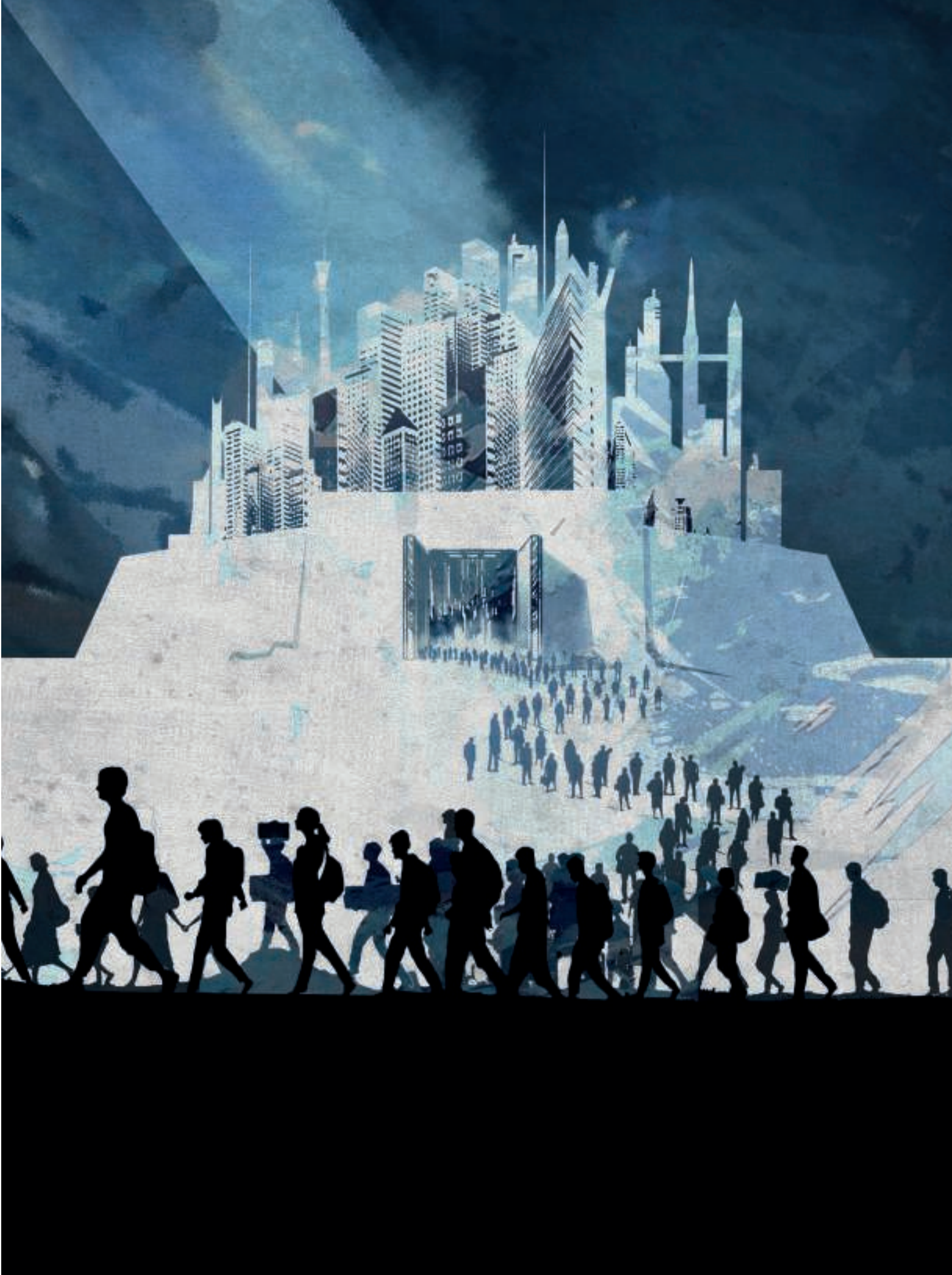
"I do expect those conversations to get a little ugly," says the second customer. "Fidessa's obviously a leading system on the Street, so there's no question [Ion] will be looking to further monetize it."

If the conversation gets too contentious, the user says his firm will push back, and may ultimately switch the vendor off: "We'll explain to them that they don't have as much leverage as they might

“The fact we lost a major layer of relations between the firms as a result of this attrition over the last six to 12 months—I think that has essentially caused this lack of transparency around releases.” *Fidessa customer*

upwards what is told to them. So the fact we lost a major layer of relations between the firms as a result of this attrition over the last six to 12 months—I think that has essentially caused this lack of transparency around releases," he says.

And he repeats the claim that Fidessa has become less able to react to customer concerns, reporting "an absolutely clear drop in terms of reactivity to client-specific issues. ... It seems like they've lost the ability to distinguish between a general issue and an urgent issue that needs to be resolved because it's putting our clients at risk. We've had some issues that have been sitting with them for months."





think. They will either buy that or they won't, and then it'll put us in a position to either say we're good and will continue to move forward, or that we're going to be looking at alternatives."

All of this is familiar to the New York-based analyst. Ion has grown through acquisitions, with some of these deals seen as a chance to give the target an aggressive makeover. The bet may be that customers would rather endure these brief ructions than try to replace the technology.

"Ion has always believed the only way to find what is intolerable is to step over the cliff edge. They have found they always can step back and recover—or indeed discover a 'new tolerable,'" the analyst says.

To tell the story of the stresses now facing some Fidessa users, *WatersTechnology* spoke to 16 current and former Fidessa employees, as well as 18 people from other companies that were acquired by Ion, clients of companies that use Fidessa and other Ion-acquired platforms, and various other industry participants.

Ion insists any service issues are not widespread, and internal metrics appear to bear that out—at least partially. Between October 2018 and August 2019, issues relating to platform stability

are down 27%, while those relating to software quality are down 18%, according to internal KPIs that Ion released to *WatersTechnology*.

In an effort to stay ahead of the curve, meanwhile, some of Fidessa's staff savings will be ploughed back into research and development (R&D). Domhnall McCormack, Ion Markets' COO, tells *WatersTechnology*. As an example of rapid innovation, Fidessa recently released a product designed to fill the gap created by Bloomberg's exit from its Sell-Side Order and Execution Management System (SSEOMS) business.

"Customer service and satisfaction have improved—that's a fact," McCormack says.

From Startup to Entrenched

Fidessa matters because the system is part of the fabric of the global equity markets. At the beginning of 2019 the company claimed its suite of products was used—in varying capacities—by 85% of the world's tier-one financial institutions. Its trading network connected 6,300 brokers and investment managers, and was processing more than \$26 trillion worth of transactions each year.

It services a range of needs, from custom enterprise solutions—such as analytics tools, market data services, and multi-asset trading capabilities—to a fully hosted, end-to-end trade lifecycle management platform. But it is best known for its order and execution management system (OEMS) and global connectivity solutions.

"Fidessa is certainly a leader in the sell-side EMS space," says Brad Bailey, research director for consultancy Celent's capital markets division. "I don't know where we draw the line, but they're particularly strong in futures, options and equities."

This is seen as one of the reasons for Ion's interest; the firm's prior portfolio of products was strong in the fixed-income markets, with equities a relative weakness. The

The Bonus Issue

As 2018 wrapped up, Fidessa was just beginning its journey under new management, and many employees, sources say, were optimistic.

But as the calendar flipped over to 2019, bonus season was approaching. Whispers and worries turned concrete on February 13, two days before the prior year's bonuses were slated to be paid to employees. An email from Ion's European head of human resources, Jill Powell, which was seen by *WatersTechnology*, told Fidessa staff they would have to wait to receive their bonuses until April due to trouble merging systems "not only for Fidessa, but a number of other companies into Ion."

"Unfortunately, while a lot of people have worked very hard to meet the February pay run target, I regret to inform you that this will not be possible and it now looks likely that where applicable, and subject to individual performance considerations, the 2018 variable compensation will be paid in April," the email said.

April passed quietly. More resigned. By the time bonuses were ultimately paid—in May, making April the second target missed—the number of departures was in the hundreds.

"Acquisitions are challenging, and Fidessa was a fairly large acquisition. Some of the integration had some hiccups," McCormack says. "[The bonus issue] was one of the hiccups that we had."

Five sources directly suggest the increased attrition may have been seen as an acceptable side effect of the delayed bonuses, but say the late payment claimed senior managers as well as more expendable staff.

"A lot of people resigned in February when they weren't paid, and then when they weren't paid in April, which was the second expectation set, more people went," says a senior executive who resigned, in part, due to the bonus delays. "When they finally realized they'd screwed up, and they did finally pay it to a number of people, a number of other people left anyway because there was no trust left."

Fidessa deal positions it to become a one-stop shop, with Bailey reporting “tremendous demand” for this kind of multi-asset service, particularly from cost-constrained sell-side banks.

“Ion is one of the major owners of trading solutions, especially in fixed income. So the Fidessa acquisition gives them a lot of touch points into the sell side with—potentially—a very cross-asset offering. They’re now a major force across several key asset classes,” he says.

If market participants buy that pitch, they may be able to reduce the number of vendors their trading businesses depend on—and, potentially, the all-in cost. But they will also be relying more heavily on Ion. And the services they buy from the fast-growing fintech conglomerate can’t easily be switched off or replaced.

This is deliberate, says a senior technology executive at a tier-one bank: “They’re strategic in their acquisitions in that they look for products that are seen as being entrenched.”

Out the Door

The big question, in Fidessa’s case, is “how entrenched?” If users suffer during the restructuring of the company, at what point does the frustration of staying put outweigh the toil of moving on?

The first departures from Fidessa came early last year, once it appeared likely the company would be acquired, but they picked up pace this year.

In April, *Financial News* reported that Pignataro intended to cut as many as 660 jobs across both the Ion and Fidessa workforces to remove overlaps and reduce annual costs by \$50 million. The firm also insisted it would retain the “best talent,” including senior managers, according to the report.

Of the 400 or so employees who have left, most have been resignations—about 300, according to sources—and many were long-serving members of the team that helped make Fidessa a London fintech darling. The remainder were laid off.

According to an internal note from December 2018 seen by *Waters Technology*,

Fidessa’s headcount at the time was 1,589, including 20 contractors.

All of the Fidessa sources interviewed for this article are or were, at minimum, managers. Of the former employees, all voluntarily resigned. Each had their own reasons for leaving, but they echoed one another on several key issues, including lapses in the payment of bonuses, a lack of direction for the business going forward, and an increasingly unhappy workplace—the net results of which might be burdens that Fidessa’s users have to shoulder.

One of those leading the restructuring of Fidessa is McCormack, who joined Ion in July 2018 after a near 12-year stint at UBS. He held a number of senior roles at the Swiss bank, finishing as global head of technology for foreign exchange, rates and credit (FRC). He could “get shit done,” says a former UBS employee, who worked under McCormack.

As head of FRC technology, McCormack was responsible for about 750 staff. He also oversaw the bank’s relationship with Ion and its products. During the Mifid II period, the former UBS employee says, Ion was not delivering particularly quickly. To that end, “Domhnall was the man you could wheel in there, and he really would kick ass.”

“It’s quite ironic that he’s now jumped the fence, and he’s on the other side,” the source adds. “I guess that’s one of the attractions for [Ion]—they saw he was quite combative when it came to getting stuff done and getting tough projects out the door.”

At Ion, one of those tough projects has been the Fidessa deal. In July’s redundancy process, McCormack was the one responding to employee representatives. The process kicked off with a letter informing the reps that around 10% of Fidessa’s global workforce would be made redundant—80 roles were at risk in the UK—because “operating synergies” had been identified. Though the bulk of Fidessa’s staff is UK-based, *Waters Technology* could not confirm how many redundancies were ultimately made in other locations.

Timeline

February 21, 2018: The boards of Temenos and Fidessa announce in a joint statement that Temenos has agreed to buy Fidessa for £1.4 billion in cash.

April 3, 2018: Reuters reports Fidessa postponed its shareholder vote following talks of potential rival bids from Ion Group and SS&C Technologies.

April 20, 2018: Ion submits its £1.5 billion proposal hours before the deadline set by the UK takeover panel, and the offer is accepted by Fidessa shareholders. SS&C did not submit an official bid.

April 20, 2018: Temenos issues a statement saying the group did not revise its offer, nor would it, and the proposed acquisition would lapse on April 28, 2018, in accordance with terms.

July 25, 2018: The Financial Conduct Authority approves the deal.

August 1, 2018: Ion receives valid acceptances of more than 90% of Fidessa’s ordinary share capital.

August 3, 2018: The UK’s Competition and Markets Authority clears the merger.

August 14, 2018: Ion announces dispatch of formal compulsory acquisition notices to Fidessa shareholders who have not yet accepted the offer. The transfer of remaining Fidessa shares takes place on September 26, 2018.

Sources: Media Reports and Fidessa’s website

In a July 9 response, employee representatives argued that because about 100 people had already left the business since mid-April 2019, “you appear to have substantially achieved your requirement for the headcount reduction.”

The letter added that clients were already complaining that service was suffering, and that the number of departures was affecting morale.

“There is evidence (e.g., clients complaining about degradation in the quality and quantity of service), that the recent attrition in numbers will have a deep and lasting adverse effect on the company’s (former Fidessa) performance and perception in the market place. Employees have examples where the number of staff who have left is already creating bottlenecks and affecting morale and delivery. Further redundancies will worsen the situation,” the letter said.

One former senior manager who worked in development shares that perception: “It makes it incredibly difficult to succeed at what it is you need to get done, because you’ve lost the people, you’ve lost the experience, and the net result is you’ve got very little chance of success.”

The back-and-forth continued throughout the month, in letters and meetings. Representatives suggested alternatives to redundancy, such as part-

time and job-sharing arrangements, voluntary redundancies, or retraining and redeploying staff. Management responded that redeployment may be considered on a case-by-case basis during upcoming consultations, but that the other options were “not practical.”

In two documents dated July 11 and July 17, reps expressed concerns that the process and management itself were too opaque, that at-risk individuals had been predetermined—which would be against UK labor law—and that they had not seen evidence of what exactly defined the businesses’ “synergies.”

McCormack assured reps that a standard process was in place across the entire group, which he said worked well and was not rushed.

“Employee representatives will always express concerns, and that’s part of their job,” McCormack says. “But we were very transparent with them. And in the end, there was general satisfaction with the process.”

By July 29, 90% of at-risk meetings had been completed, McCormack said in a document with the same date. The meetings had begun three working days earlier, on July 24, and first dismissals were slated to begin on August 7.

But it wasn’t just about the leavers. At one point in the process, employee representatives claimed there was “widespread concern amongst staff that the criteria laid [at the beginning of July] do not stand up to scrutiny and as such are unfair and arbitrary, opaque, contrary to the legislation and guidance ... [and that] to continue down this route risks creating suspicion and disquiet amongst the 90% of employees to be retained.”

Because disgruntled employees may give a slanted view of the inner workings of a company, *Waters Technology* sought a wider sample of perspectives—and a comparison with other big, fintech firms—by analyzing staff satisfaction scores on employer review site Glassdoor. com. (See Box: *Glassdoor Scores*) The average score for a selection of 15 trading tech peers of Ion and Fidessa was 3.7 out

“These things are like a tanker, aren’t they—it will take a while for the tanker to stop. Or, maybe it never will. Maybe these guys know what they’re doing and everything will just carry on working with less cost and everyone will be happy.”

Former Fidessa employee

of five. Fidessa scored 2.6; Ion averaged 2.4 (it has two entities on the site).

Because Ion has grown through acquisitions—and serial restructurings; Ion Group, as a whole, has over 7,000 employees—its score may be dragged down by a disproportionately large number of former employees.

The Writing on the Wall

Keeping sufficient talent within the company will be crucial to Fidessa’s users. Ion’s existing expertise is in fixed income, commodities and FX; Fidessa specializes in equities and derivatives trading. Sources say that if enough institutional knowledge walks out the door and is not adequately replaced, support for the equities product will drop off.

A former developer at Fidessa believes the quality of the firm’s software has remained largely unchanged since the acquisition—for better or worse. But,

the developer says, “I don’t think there has been much time for such things to change.”

“Going forward, taking into account the recent attrition, I do think certain areas will start to suffer, and they might find it harder to maintain the quality and support customers have come to rely on,” the developer adds.

This is where the new contracts may come into play. Fidessa’s previous standard contracts ran for 24 months, with 12-month rolling periods, meaning a client could cancel at any time within 90 days of the two-year mark, but past that, the contract automatically rolled over for another year, and so on. Per Ion’s restyling, contracts will now be offered on fixed three-, five- and seven-year terms, with discounts offered for signing for longer timeframes, three sources with knowledge of the restructuring say. Now, if a client signs a three-year deal, they are tied in for three years, but if no cancellation is made within 90 days of the three-year mark, the contract automatically renews for three additional years. Another key change is that payment must now be made annually in advance, as opposed to the former quarterly model.

In addition, Fidessa’s liability is subject to a cap, and any invoices issued in accordance with the contract must be paid without any “fees despite” mech-



anism—a term Ion uses—meaning “if you sign for seven years and the service goes down the toilet over time, then you can’t withhold payment as a means of protest or recompense,” says an ex-Fidessa employee who worked in sales.

This is a common feature of the deals Pignataro has closed at Ion, says the New York-based analyst.

“He rewrites contracts with existing clients and is not happy if it does not involve brinkmanship—otherwise, he has not found his optimal position,” the analyst says. “He rigorously extracts additional and new economic benefits from existing contracts from his whole ecosystem.”

It may result in friction with some users, but the strategy is intended to find the frontier at which Ion’s stakeholders extract most value, while ensuring the company continues to function. Private equity firm Carlyle Group took a stake in Ion in 2016, a deal the analyst sees as a natural fit: “Pignataro is a scientific, unemotional businessman. Private equity loves him.”

A Balancing Act

Redundancies and strategic changes are natural after any acquisition. And Pignataro made it clear that Ion would look to trim the workforce in order to make Fidessa more efficient and to help better integrate Fidessa’s offering within Ion’s stable of services.

Virginie O’Shea, a research director at consultancy Aite Group with experience in tracking financial technology developments in the capital markets sector, says there’s no “right way” to conduct an acquisition, but the most successful combinations should share some characteristics, such as similar technology stacks and the firms’ DevOps strategies.

“The dangers posed by acquiring a small firm into a much larger one is that the firm’s staff no longer feel in control of their product development roadmap—feeling like a cog in a machine—and therefore they leave, and the firm loses intellectual capital,” she says.

Execution risks are also flagged by Dirk Goedde, an analyst with Moody’s Investors Services—but only in the generic sense. He sees the Fidessa deal as a “good strategic shift” and notes that Ion has completed deals worth a total of around \$7 billion in the past decade, so the firm has significant experience at acquiring and integrating new companies.

At the time of the deal, Ion Trading held a B2 credit rating from Moody’s. In early September, Moody’s downgraded the rating one notch to B3—placing it in the middle of the speculative grade segment. One trigger for fluctuation in a Moody’s rating, says the analyst, is how much leveraged debt a company has.

“That was one of the reasons why we decided to downgrade the company,” Goedde says. “The de-leveraging was slower than our expectations from the initial acquisition in 2018. [Another] precursor was it was weaker than we expected as the company had performed dividend payments.”

‘We Want Them to Step Up Their Game’

Fidessa was founded in 1981 as Intercom Data Systems—later renamed royalblue group—and the platform it sold was known as the Fidessa multi-asset trading platform. After the 2007 acquisition by royalblue of LatentZero, the combined entity became known as Fidessa due to the brand equity built through the OEMS. It was a four-decade slow burn for the company, but it has since become entrenched in equities and derivatives, thus what made it so appealing to Temenos and then Ion.

Whether the platform continues its decades-long rise will hinge on how employees react to changes being made inside the company, and how customers react if the service changes.

In speaking to *Waters Technology*, the second Fidessa user is reacting already.

“We definitely want to see them challenged. We want them to step up their game. We believe they have the ability and the resources, and they do

have a level of talent and capability there, so we want to see them challenged to do that. We also want them to know it’s not safe to assume—just because you acquire the number one vendor solution in this space—that things will stay that way. You have to maintain a certain service level,” the Fidessa user says.

And one former long-time senior manager says clients are right to be anxious.

“I think it’s a bit intangible right now because the service is still functioning for them, so they’re not necessarily seeing a day-to-day impact at the moment. These things are like a tanker, aren’t they—it will take a while for the tanker to stop. Or, maybe it never will. Maybe these guys know what they’re doing and everything will just carry on working with less cost and everyone will be happy. But I think the evidence is that’s not the direction of travel.”

The story of Fidessa, on one hand, is measurable, hinging on numbers and figures, dollars and percents. The flip side is less tangible, and maybe most important: It’s also a story about culture, people and the ways things change—almost imperceptibly at first, but then, all at once. **wt**

Glassdoor Scores

Fidessa: 2.6 (326 reviews)
Ion Group: 2.1 (138 reviews)
Ion Trading: 2.5 (272 reviews)
[weighted average: 2.4]

Axioma: 4.2
Calypso: 3.3
Charles River: 3.3
Eze Software: 3.4
Factset: 3.8
Finastra: 3.9
FIS: 3.5
FlexTrade: 4.4
IHS Markit: 3.4
Linedata: 3.6
Murex: 4.2
Numerix: 3.4
Simcorp: 4.0
SS&C Advent: 3.5
Statpro: 3.0
[average: 3.7]

Source: Glassdoor.com
Data current as of October 31, 2019

Know Your Pros



There's a big difference between what professional and retail investors pay for data. Brokers want to make sure any retail client doesn't get hit with professional fees, while exchanges want to ensure that every professional consuming their data pays the higher rate. The key is classifying these different customer types correctly. But, as [Max Bowie](#) discovers, that's not as easy as it sounds.

Everyone's heard of Know Your Customer (KYC), but what about Know Your Subscriber or Know Your Professional—the need for an institution to understand not just how many internal staff or external clients are consuming data it licenses, but who those individuals are, and whether they should be paying full-price professional rates or lower, non-professional fees.

For any firm with a mix of institutional and retail client bases, the difference can have a significant impact on the firm's overall data budget. And getting these designations wrong can incur costly penalties.

For example, CME Group charges \$105 per month for professional access to each of its marketplaces—CME, CBOT, Nymex, and Comex—a total of \$420 per month per professional access for all four markets. In comparison, a non-professional trader would pay only \$1 per month for top-of-book data from each market (or \$3 if they take all four in

a bundle), and just \$5 per exchange for market depth (or \$15 as a bundle).

“We handle reporting for several firms that have institutional and wealth management and retail businesses, and want to understand their professional and non-professional usage,” says Barry Raskin, managing director at consultancy Jordan & Jordan. “Market data is usually reported centrally, and is often handled by central finance departments who are under all sorts of pressure to keep costs down. The whole of market data is usually under that function. So having a good handle on your users and whether they are pro or non-pro is critical to keeping costs down, because you don't want to pay professional fees for non-professional users.”

However, determining whether an individual should be classified as a professional or non-professional user

is easier said than done. Not only do definitions vary by exchange, they can also be counterintuitive. Just because an individual is a retail investor trading their own money does not automatically mean they'll be recognized as non-professional. If they hold a professional financial certification, or if they registered their account using a business address or email, they may be deemed a professional investor, and therefore be subject to higher fees.

Last year, Desjardins Securities (Disnat), the discount brokerage business of Desjardins Group, one of Canada's top 10 financial firms, encountered this challenge as part of a project to migrate away from legacy platforms run by Nexa Technologies. Disnat acquired the Nexa business from Penson in 2013 prior to the service provider's collapse.

The objective of the acquisition was to protect the platforms it had been using, but ultimately to wind down and close the legacy Nexa tools, and bring all technology management in-house, and establish direct relationships with exchanges for market data certification, says Richard Tardif, expert advisor for markets technology at Desjardins. In addition, the firm planned to have Disnat take over functions such as market connectivity, front-end development, building an entitlements system, and performing monthly reporting.

As a smaller firm, rather than devote senior data execs or hire dedicated staff to perform repetitive number-crunching tasks, Disnat outsourced much of its market data management function to New York-based consultants and service provider MDMS.

Laying Down The Law

After about a year, as the firm started reporting, it realized the importance of reporting professional and non-professional usage, Tardif says—not only because of the cost differential, but also to avoid the need to dig up client records years down the line if the firm found itself subject to an exchange data audit. He warned management that exchanges will assume everyone is a professional unless the firm could prove otherwise, adding that in the event of a dispute, it might have to pay professional fees plus any retroactive fees.

Since the legacy Nexa toolkit—which has since been wound down—did not include any tool for performing in-depth analysis to differentiate professional and non-professional users, MDMS introduced Disnat to D8A Force (pronounced “DataForce”), a New York-based software vendor founded by Avinaash Bhuvaneshwar, a former market data executive at Nomura, Goldman Sachs, and Credit Suisse, who set up the company to address the pro-vs.-non-pro issue.

“When I joined Nomura as exchange relations manager, I started attending FISD and Sifma industry meetings, and everyone was talking about pro and non-pro. Nomura had no skin in that game, because it has no retail business, and I wanted that conversation to end so we

could talk about more relevant things, so I started doodling ideas. When I bounced them off friends in the industry, I realized this was a big thing. So in December 2015, I left Nomura and founded D8A Force,” Bhuvaneshwar says.

The resulting KYP (Know Your Professional) platform uses artificial intelligence (AI) to determine whether a customer—for each exchange, recognizing the differences in exchange policies—should be reported as a professional or not. On day one of an implementation, KYP can process a firm’s entire existing subscriber base automatically in a fraction of the time it would take manually (estimated at up to 10 minutes per subscriber), and maintain that as new clients are onboarded.

At the start of 2018, D8A Force started working with MDMS. Bhuvaneshwar wanted to focus on the larger end of the market, while MDMS wanted to tackle more modest clients. Their agreement allows MDMS—with support from D8A Force—to use KYP to service retail brokerages with fewer than 100,000 accounts.

As a result, Tardif says Disnat is now in control of its data spend, which is not just good practice, but in practical terms gives the firm a clear picture of what’s in its entitlement system, and the ability to match exchange data invoices on a user-to-user basis, whereas Nexa billed in a blended rate for all services, so it was hard to understand how much data on its own was costing the firm.

In addition, having greater control over data usage means the firm has been able to reduce real-time data usage and fees for clients who don’t need it. Now, on a monthly basis, Disnat re-challenges users who consume real-time data but don’t trade a lot, enabling the firm to slash

“At the definitions level, there is still dissatisfaction about some cases. For example, an executive assistant at a bank may be registered with regulators but does not trade as a professional—but if they answer an exchange’s questions correctly, they would probably be classified as a professional. And there has always been confusion when dealing with family trusts.” Tom Davin, FISD



Tom Davin
FISD



Barry Raskin
Jordan & Jordan



Weijian Zeng
Prosperancy

the number of users of real-time data—either because they didn’t use it, or because using it would have designated them as a professional user.

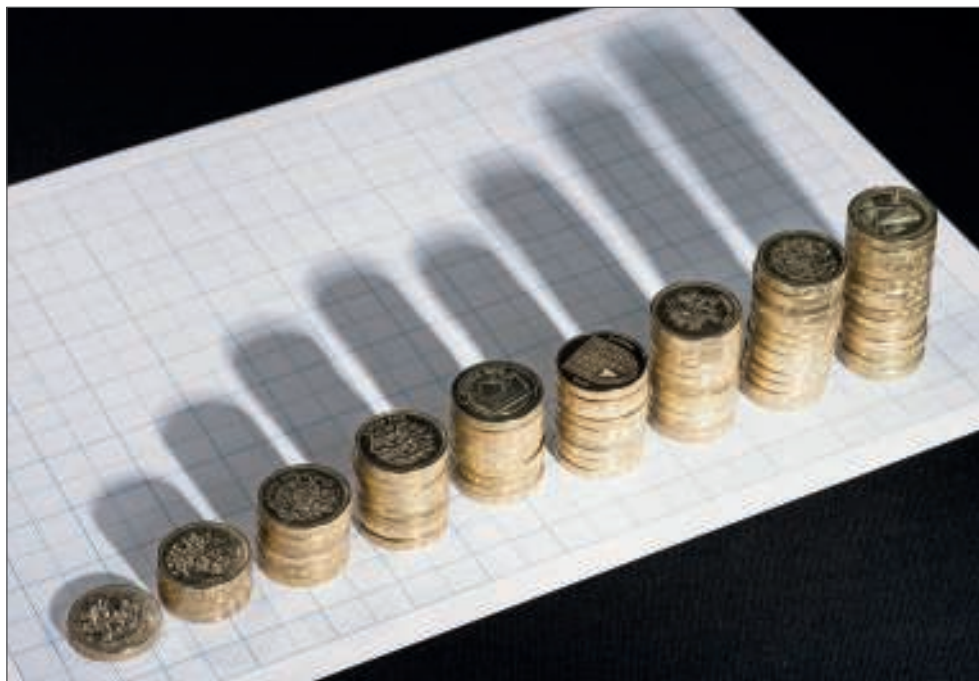
While the firm hasn’t calculated the savings—or savings from audit-cost avoidance—he says that around 20,000 customers may consume real-time data. Of that number, the KYP tool verifies that Disnat correctly classified 90% of users, and it also helps with the remaining 10% gray area that need extra work to ensure they are properly designated.

D8A Force isn’t the only specialist player in this space. New York-based Prosperancy is a service provider set up in 2016 specifically to address the pro-vs.-non-pro classification issue. The company was founded by Weijian Zeng, who had previously worked as director of broker products and director of data management at Enso Financial Analytics, and as a senior developer at Interactive Brokers.

In those prior roles, he met Sara Banerjee—then director of data strategy execution at SIX Financial Information, who had worked at SIX and its predecessor, Telekurs, since 1989. With Banerjee’s experience of data issues, and Zeng’s technical expertise, the two joined forces and created the KYS (Know Your Subscriber) platform.

Industry Input

Like Bhuvaneshwar, Zeng became familiar with the pro-vs.-non-pro issue—and Banerjee—as a result of her involvement in data industry association FISD’s working groups addressing the topic. FISD managing director Tom Davin notes that even with industry-wide participation, the issue’s complexity means it has



“Users always say that if exchanges simplified their rules, they’d get paid on time,” Lee says. “I suspect very few people are cheating. Most people want to be compliant and pay when they should pay, but aren’t in a position to hire people to make it work—there are a lot of resources involved.”

Bill Lee, Interactive Brokers

remained unsolved since it first emerged along with the internet boom.

“Back in the 1980s, a non-professional getting access to real-time data would have been prohibitively expensive. But when the internet came into being, and online brokerages began offering trading over the web, there was essentially no connectivity cost for non-pros,” Davin says.

However, the dot-com crash and, later, the post-credit crunch financial crisis may have contributed to exchanges’ laser focus on non-professional usage. “It may have made exchanges more focused on compliance where professional users might be signed up as non-professional. If an online brokerage has millions of users and an exchange suspects that some of those are actually professional users, that’s a significant amount of money.”

Now managing director of Prosparency, Banerjee concurs that



Bill Lee
Interactive
Brokers

the issue has come to the fore in recent years as a result of the growth in online trading, and the need for brokers to verify thousands of clients to ensure compliance with exchange data policies, using still-largely manual processes based on honesty statements. Without an automated tool to perform this validation, firms simply can’t keep pace with the requirements of their data providers, she says.

KYS uses machine-learning algorithms to categorize subscribers into professional and non-professional groups using a rating scheme—or a “probably” category, where gray areas still exist—by comparing data on individuals captured from public sources and social media against the rules of information providers and exchanges.

Prosparency has seen up to 20% of some firms’ user bases unclassified or flagged as potentially misclassified.

“When you’re dealing with tens of thousands or hundreds of thousands of subscribers, having a conversation with each one isn’t possible,” says Joe McAlinden, director of operations at Prosparency. “We measure our success in terms of the time saved. It depends on the size of a client’s team, but if a firm has to go through 15% to 20% of its clients manually, it could take weeks or months. But 90% of that work can be alleviated by our product. Then the client has to go back and have a conversation with their customer, which can be difficult, especially if they’ve been untruthful—for example, the job they reported doesn’t match what they listed on social media.”

It may seem ludicrous, but multiple sources report instances of individuals who list their profession as a trader to impress others, and put themselves at risk of having to pay professional-level fees, while also increasing the compliance burden for their brokers.

Prosparency’s clients range from large to small brokerages, as well as information providers trying to identify professional users misclassified as non-professionals. The vendor counts ICE Data Services and Interactive Brokers among its clients.

ICE declined to comment for this article, though ICE Data Services president and COO Lynn Martin has said previously that “companies like Prosparency ... help us gain better insight into the types of subscribers utilizing our market data and trading platforms.”

Not So Trivial Pursuit

This kind of insight is crucial for data providers and consumers alike. To a large firm, the cost differential can seem trivial until an exchange claims an error going back three years and someone tallies the cost multiplied by, say, 1,000 clients over 36 months, and then the firm has to go back and investigate customers claims and how they would qualify under the exchange rules, says Bill Lee, senior market data advisor at Interactive Brokers.

Suddenly, the costs aren’t so trivial anymore, and exchanges can be (justifiably) aggressive about enforcing

their fees, but sometimes seemingly without an appreciation for the amount of work required by brokers.

“Users always say that if exchanges simplified their rules, they’d get paid on time,” Lee says. “I suspect very few people are cheating. Most people want to be compliant and pay when they should pay, but aren’t in a position to hire people to make it work—there are a lot of resources involved.”

Also, blame can be laid on both sides of the fence, he adds, citing cases where an exchange auditor will say a user should pay professional fees because their address is that of a brokerage firm, but who works in a non-trading role at a different, non-financial company that leases space in the same building. “I don’t think any of that is malicious, but much of it is contentious,” he says.

To prevent issues from arising—which, if a large firm is found to have wrongly classified users over a period of time, could prove costly—Interactive Brokers has set up an 11-step process specifically to ensure it is classifying professional and non-professional users correctly. First, when a client opens an account, the firm runs the usual KYC checks required by regulators.

Then, it takes the information provided by the customer and runs it against its own client data to look for similarities, such as using the same email address, or the same family name as listed on other accounts. Then it provides the data to Prosperancy, which checks it against 140 global data sources, and delivers a determination of whether a user should be reported as a professional or not.

“If everything else fails and we cannot determine whether they are a pro or non-pro, we contact the customer and ask them more pointed questions, or have them make changes. If someone calls themselves a trader on social media when they are not, we tell them to change it,” Lee says. This isn’t always a deliberate attempt to mislead brokers and exchanges—or a costly way to impress others on social media: “Sometimes, people have left a job but keep their old job title on LinkedIn, so they would be determined to be a professional.”

Beyond social media and LinkedIn, capturing the data to validate an individual’s status is a challenge in itself. D8A Force, for example, uses a database of residential addresses to verify whether the address of someone claiming to be “non-professional” is a home or business address, and databases of companies to be able to validate the employer information supplied by a client to see whether they work for a financial services firm. In addition, the vendor has created its own data sources, such as a database of roles and occupations that are “professional,” as well as patterns of activity that would suggest an individual is a professional rather than a purely retail investor.

None of this data is scraped from websites, Bhuvaneshwar says, adding that after founding the company, he spent six months wrangling data to ensure it was compliant. “Our lawyers review the terms of each data source we use to make sure we’re compliant. For the first few months, I probably spent more on lawyers to make sure the data—and the way in which we get the data—was compliant. I didn’t want to solve one compliance problem only to cause another.”

Ultimately, if a firm cannot satisfy itself that a client falls into the non-professional designation, it will treat them as a professional consumer of data.

Definitely, Maybe

It’s not just the criteria that a client must satisfy to be designated non-professional that are a challenge for brokers. Exacerbating the issue is the fact that criteria vary by exchange and region. To this point, exchanges are reported to be working on “fairer” models. For example, NYSE has proposals to introduce three new tiers of fees for the SIP consolidated tapes that better reflect usage and value of the data, rather than specifically determining who consumes it, on the assumption that certain classes of investors will require one type of data, while others can make do with a different level of data.

Still, while there are efforts taking root to address these challenges, the



Sara Banerjee
Prosperancy

industry still lacks any standardization around these criteria that would make it easier for firms to accurately report to any exchange they might trade on.

“Different exchanges have different rules about who is professional or non-professional. While in Europe, they tend to look at how the data is used, and whether it’s your personal money being invested, the US has rules that if you work for a regulated firm, you’re a professional,” Lee says.

Where this becomes an issue, others say, is that you could work in any role at that regulated firm—from a senior executive who may or may not actually consume data as part of their job, to IT support staff who deal with data systems but don’t consume the data itself, to a janitor—and still be deemed a professional investor when trading your own account.

“At the definitions level, there is still dissatisfaction about some cases. For example, an executive assistant at a bank may be registered with regulators but does not trade as a professional—but if they answer an exchange’s questions correctly, they would probably be classified as a professional. And there has always been confusion when dealing with family trusts,” says FISD’s Davin.

However, Davin remains optimistic about the industry’s ability to solve the pro-versus-non-pro challenge. “I think there are a lot of opportunities to automate these compliance efforts for everybody’s benefit so that exchanges should be getting the correct amount of fees from the get-go, and brokerages don’t have any lingering compliance issues,” he says.

In the meantime, as the industry continues to work towards standards for defining pro-vs.-non-pro, vendors like Prosperancy and D8A Force can create something of a proxy standard. In June, Desjardins’ use of KYP was certified by Canadian exchange TMX Group under its audit program. “We want to get the KYP software certified by exchanges,” says MDMS president Scott Villa. “Then others can use it, and exchanges and the industry can be on the same page.” [wt](#)



Joe McAlinden
Prosperancy

AI in the Cloud

As more financial institutions are starting to expand their usage of AI, they are turning to the cloud to help scale up. However, there are important considerations before doing so. Wei-Shen Wong examines.



In an environment that has left financial firms grappling with thinning margins amid rising costs, data has become more important than ever. But simply possessing data is not enough. The key is gleaning insight from it—leading firms to explore and experiment with artificial intelligence (AI) for a variety of reasons.

The problem often comes down to size: Various forms of AI—such as machine learning and the sub-discipline of deep learning—tend to require large datasets for training and to deliver accurate, actionable insights.

Enter the Cloud

“It just doesn’t make any sense” to not leverage the cloud when using AI, said Victor Alexiev, head of incubation (D10X) for Asia-Pacific at Citi Ventures, while speaking on a panel at the inaugural Waters Asia conference, held on October 23 in Singapore. Financial institutions still rely heavily on bulky, legacy systems, and that

creates something of a talent problem as top AI engineers do not want to wade into the world of Cobol programming. By tapping into the cloud, banks can bridge that gap, Alexiev said.

“If you tell a good engineer to work on something from the late 80s or early 90s, they will probably look at it as a step back in their career,” he said. “So, you need to enable them to feel like they are current and they are moving with their industry as well, and cloud is definitely a very big part of the future.”

He added that for certain institutions and certain types of processes and datasets, a hybrid model could work better. As for Citi Ventures, he said its strategy is to develop AI products and solutions as fast and as safely as possible. And as firms become increasingly comfortable with security in the cloud, adoption rates will

also grow in order to help firms to better experiment with AI.

One major bank that is blending AI and cloud is HSBC, which is implementing a large-scale project that will use machine-learning technology to measure the quality of its data, as was first reported by *WatersTechnology* in April. The technology will also use granular details to link correlated data together.

The firm pulls information from multiple systems across several business lines and jurisdictions—no easy feat. The data will be shown on data quality dashboards where users can view critical data elements and identify the real value of the data that the system aggregates.

HSBC’s data management teams are using AI to index and tag data from trillions of transactions and external sources to build a reusable golden source of data.

The second phase of this transformation project entailed the bank migrating the data to a cloud-based data lake for a variety of use cases, one of which is to leverage new technology to accelerate operational processes and create new capabilities, such as building a client intelligence utility on the cloud. The platform, which is part of a wider client services project called Phoenix, will use AI through collaboration partners, to develop more advanced algorithms and capabilities to predict client needs.

Cloud Benefits

Despite security concerns, financial institutions find it hard to ignore the benefits of using the cloud, and how it can impact them, as well as their engineers and data scientists.

Johnson Poh, head of group enterprise AI at Singaporean bank UOB, who spoke on the panel at Waters Asia, told the audience that there are a few benefits of using cloud to advance AI capabilities.

He said leveraging cloud capabilities allows data scientists and developers to see the end-to-end implementation pipeline. “In other words, this is from infrastructure, up to the context of delivering all your visualizations, software, as well as the front-end product. You’ll be able to oversee each and every phase, right from data ingestion, data storage, and data processing, as well as analytics and machine learning, under the context of developing the software and end product,” he said.

It also allows financial institutions to empower data engineers, as well as their existing data engineers, data scientists, and machine-learning engineers to develop the AI product in an agile and nimble fashion.

The second benefit is in the construct of using AI services and capabilities, he said. “If you want to scale up the use of AI, a lot of times, you build a lot of algos and models in-house. But in fact, a lot of these implementations can also be driven by the use of AI solutions and services offered in different forms. That platform as well will allow us to scale our AI capability in an agile fashion,” Poh said.

And if there is a need for data ingestion, data analytics, and AI-driven solutions in

“If you want to scale up the use of AI, a lot of times, you build a lot of algos and models in-house. But in fact, a lot of these implementations can also be driven by the use of AI solutions and services offered in different forms. That platform as well will allow us to scale our AI capability in an agile fashion.” **Johnson Poh, UOB**

real time, cloud is “extremely relevant and efficient as well.”

While Jason Lee, banking, technology, data and derivatives associate general counsel at JP Morgan Chase in Singapore, agreed with the benefits of using the cloud, he added that there are issues, like security, to deal with.

He said his bank is pursuing a hybrid cloud strategy, using a mix of private and public cloud. It will also, in some instances, consider an on-premise solution.

“We have to think about cybersecurity and how secure our data is, and how that data is managed. That’s the key for us in terms of how we balance the benefits of the cloud,” Lee said.

Another factor is the organization’s recruitment strategy, Lee added. “We are now bringing in a generation of technologists who are familiar and comfortable working on the cloud. So, part of it is also trying to get the right people in, and making sure that you offer them the treatment that allows them to perform to the best of their ability, to the benefit of the firm,” he said.

AI-ing It

As the challenge of managing data becomes a bigger problem to solve, buy-side firms can no longer go without implementing AI—and that increasingly means machine learning—that will help ease the burden of data management and analysis.

Using AI helps buy-side firms to scale and carry out complex tasks more effectively, said Jas Sandhu, head of global equity execution algorithms at RBC Capital Markets during an AI and automation panel at TradeTech Europe on

April 24. “Its capabilities can be used to decode inputs or accelerate dimensionality reduction techniques,” he said.

But going it alone is hard, leading to more firms turning to third-party experts—which have already done the heavy lifting of using cloud to deliver their services—for assistance. For example, JP Morgan Asset Management is looking to leverage cloud providers’ advanced AI toolkits built into virtual environments, according to Ashwin Venkatraman, head of equity trading execution technology at the firm.

“Services like transcribing, taking audio and being able to pull that data—a lot of those things are easily available at our fingertips, so being able to leverage the public cloud to its full potential and then to deploy that relatively easily across our business is what I see as the next step in where we want to take this,” Venkatraman said.

UBS, too, recently partnered with Cloud9, a cloud-based provider of trader workflow and communication technologies. Together, they are in the final stages of a proof-of-concept (PoC) on the use of AI to help automate front-office functions.

The PoC is to develop virtual turrets and offer real-time transcriptions of conversations between traders and clients. Chris Purves, head of strategic development labs at UBS, said at a breakfast briefing on September 10 that the technology will use natural language processing (NLP) techniques to transcribe voice from multiple languages into text.

Developments like these that blend AI and cloud are fueling cloud providers’ product development roadmaps to cater to increasing demand from firms.

Scott Mullins, worldwide financial services business development lead at Amazon Web Services (AWS), said during a recent Waters Wavelength Podcast that even before the advent of cloud, the terms “machine learning” and “AI” weren’t new. “They were leveraged in financial services, specifically in capital markets on the machine-learning side quite well. But it took a series of investments from organizations from the standpoint of capital and being able to have the infrastructure that supported it,



Johnson Poh
UOB



Scott Mullins
AWS



Jason Lee
JP Morgan
Chase



“

“Services like transcribing, taking audio and being able to pull that data—a lot of those things are easily available at our fingertips, so being able to leverage the public cloud to its full potential and then to deploy that relatively easily across our business is what I see as the next step in where we want to take this.”

Ashwin Venkatraman,
JP Morgan Asset Management

but also having a team of data scientists to actually be able to do machine learning,” he said.

Amazon SageMaker is one of AWS’ answers to the data scientist scarcity. The fully managed service allows firms to get models into production faster with less effort. It covers the entire machine-learning workflow from prepping the data, choosing an algorithm, training the model, optimizing it for deployment, up to making predictions, and taking action.

“A lot of our capital markets customers are using machine learning to lift up their traditional data analytics. Trade sur-

veillance, anti-money laundering, fraud detection, and most of what we’ve done in the industry are rules-based algorithm exception reports. You run an algorithm and look specifically for spoofing, or marking the open or close. These are the premises for the rules to run through and see what exceptions are spit out. Then I’ll have a human looking for false positives and then picking out what to investigate,” he said.

These days, institutions are turning away from exception-based reporting and looking toward anomalies instead, Mullins said. By leveraging the cloud, firms can work quickly through datasets and the AI can continue learning from different scenarios to identify those anomalies.

Google, too, is ramping up its AI data tools to simplify a data scientist’s workload in an effort to cater specifically to buy-side firms.

Sufyaan Kazi, asset management lead for Google Cloud Platform in the UK, said in April that not all asset management firms it has engaged with have access to a data science team. “Increasingly, we are working with asset management firms to provide tools and capabilities for parsing and understanding alternative

datasets without necessarily having to build machine-learning capabilities from scratch,” he said.

Google’s Cloud AutoML enables inexperienced developers with a suite of machine-learning products to train models. It allows asset managers with limited data science expertise to create models along three primary areas: photographic analysis, text classification, and translation.

Developers can incorporate Google’s pre-built APIs directly into spreadsheets, applications, or workbooks without needing to have thorough knowledge or understanding of machine learning.

This development is by no means an indication that data scientists’ roles will be replaced. If anything, these types of services will serve to augment their current workflows. Octavio Marenzi, CEO at consultancy and research firm Opimas, said while using cloud services makes it easier to get data, and store, analyze and manipulate it, data scientists still need to have a sense of that data’s purpose.

Still, it comes back down to whether firms are open to hosting their data, or parts of their data in the cloud. And if some firms still have doubts about that, regulators are even more concerned.



Octavio Marenzi
Opimas



Worried Regulator

The European Banking Authority (EBA) released new guidelines on outsourcing, as a result of worries of high concentration of cloud services limited to the big three cloud service providers: AWS, Microsoft Azure, and Google Cloud Platform.

The new guidelines, which came into force at the end of September, replaced the existing 2006 guidelines and some 2017 guidance on cloud outsourcing.

Under the new regulatory guidelines, financial firms must maintain a register of all their outsourcing arrangements. Paul O'Hare, a partner in law firm Kemp Little's commercial technology team and leader of its outsourcing practice, told *WatersTechnology* that firms were already required to maintain a register of cloud contracts.

This requirement has now been expanded to all their outsourcing arrangements. Also, the requirements now apply to any firm that falls under the EBA's mandate. Among those impacted are banks and hedge funds, as well as payment and electronic money institutions, except for insurers.

The EBA addressed its worries of high concentration risk among cloud ser-

“Increasingly, we are working with asset management firms to provide tools and capabilities for parsing and understanding alternative datasets without necessarily having to build machine-learning capabilities from scratch.”

Sufyaan Kazi, Google

vice providers in its final report on the guidelines. It said that regulators need to be able to identify the concentrations of outsourcing arrangements at service providers, especially concerning critical or important functions.

These may, “if the provision of the service fails, lead to disruption of the provisions of financial services by multiple institutions. If service providers, for example in the area of IT or fintech, fail or are no longer able to provide their services, including in the case of severe business disruption caused by external events, this may cause systemic risks to the financial market,” the report said.

While regulators around the globe are likely to increase their scrutiny of

cloud providers—not to mention the use of machine learning models, which are often described as black boxes—the pairing of AI and cloud is only growing, and fast.

As a result, firms must closely examine where they stand in terms of AI development, cloud usage, how these things blend with their legacy systems, and how the firms will look to future-proof their organizations in order to make themselves more nimble in the face of changing market conditions and technological advancements.

CitiVentures' Alexiev said the key right now is to differentiate between the early stages of the development process and when it's being brought into production.

“Yes, there are a lot of things to consider whenever you're building a product, but it's not very good to make all of these decisions up front, and then have all the checklists and checkboxes ticked, and everything tied up, and then start making things. It's very important—especially with AI—you will learn as you build,” he said. “If you're worried about building something with streaming data in production with all the data pipes established, it will take quite a long time to actually get ready to start.” [WT](#)



Victor Alexiev
Citi Ventures

Confluence & StatPro: A Sign of the Buy-Side Times

Confluence has a big job ahead integrating StatPro's various analytics tools. *WatersTechnology* takes a closer look at the Confluence–StatPro tie-up. By [Rebecca Natale](#), [Josephine Gallagher](#), [Joanna Wright](#) and [Anthony Malakian](#)

These days, the buy side faces no shortage of obstacles. Margins are tightening, costs are rising, regulations are hitting, and investor preferences are changing. Simply put, it's a rapidly changing world for asset management. Then there are the vendors—and maybe there are too many of them.

Rumors had been swirling for the last four months or so that StatPro, a cloud-based UK vendor that offers portfolio analytics through its SaaS-delivered tools, was up for sale. On October 29, those rumors became reality: Confluence Technologies, a US-based provider of automation software for investment managers, announced its acquisition of StatPro for £161.1 million (more than \$207 million) in cash. Backed by private equity firm TA Associates,

Confluence will take the London Stock Exchange-listed StatPro private.

According to some sources, this deal came as a bit of a surprise. While StatPro was known to be on the auction block, the speculation was that it would be a State Street, JP Morgan, Northern Trust or one of the other larger banks that have alternative investment services to add the performance analytics specialist to their portfolio. Confluence, though, made for a natural fit thanks to its US-focused risk and regulatory suite of solutions, and their desire to expand into Europe.

Alleviating some of the buy side's pain points, and allowing their now-combined client base to focus on

innovation, are the rationales for the deal, Mark Evans, CEO of Confluence, tells *WatersTechnology*.

“We approached each other, more or less. We’ve been talking forever,” Evans says of the two companies. “It just became absolutely, glaringly obvious that we should be joined. It’s all about data at the end of the day; that’s our view. They have a great creation and curation in the front and middle office, and we have great curation and delivery in the back office. It was just one of those the-time-is-right things.”

StatPro, led by founder and CEO Justin Wheatley, had been busy itself in the acquisition arena. In July, the



company bought Milan-based ECPI, an environmental, social and governance (ESG) research and index business. In 2016, the company bought InfoVest, a South African software provider specializing in data warehouse, ETL and reporting software, as well as advanced risk metrics specialist Investor Analytics. Perhaps its biggest deal, though, was the 2017 acquisition of fixed-income analytics service provider UBS Delta, which is still being phased into StatPro's flagship software, Revolution.

"It's a mosaic," Evans says. "I could look at Revolution alone and make an argument it's an incredibly powerful part of what we view the evolving

ecosystem to be. ... I think UBS Delta is a spectacular product that needs to get more oxygen, and we are there to provide it both through partnerships and investment. I think the ESG company in Milan is really cool and was an interesting response to our clients' desire to get more clarity around those challenges. Everything going on down at InfoVest [is] powerful, interesting [and] transformative.

"The fact of the matter is, we have a lot of work ahead of us in terms of understanding how to best integrate all of these contributing units into something that ultimately needs to benefit the client."

Another key point for both companies was geographic location. With each firm's respective presence and brand confidence, Pittsburgh-headquartered Confluence hopes to capture a larger European base, while returning the favor for London's StatPro in the US.

While the companies break ground on the work that lies ahead, the rest of the industry is tuning in to watch.

One industry observer says the performance measurement market is overdue for some consolidation, adding that investment managers want, more and more, to standardize around one system, and choose from a smaller pool of vendors. Confluence's keenness on StatPro, the observer notes, may stem from their boldness.

"StatPro were very gutsy when they built Revolution from the ground up as a pure SaaS solution. They effectively 'end-of-life'd' their existing legacy-deployed solution [StatPro 7] and went all in by investing in a next-generation, cloud-based system, betting that they would end up with increased revenue to offset the loss of revenue from their legacy product line. No other firm in the asset management software business has been so daring," they say. "Competitors have implemented 'faux' SaaS offerings by putting boxes in datacenters and letting firms remote access them. So I think the sale is cashing in on this initiative. Going private will make it easier for StatPro to continue with this strategy without having to answer to the markets."

Sources differ on what the price of the transaction means. Stocks sold at £230 (\$296) per share, a 55% premium on top of its Thursday closing price, reported Proactive Investors in September. That's a huge premium, which means Confluence sees great value in StatPro, some say, while others are scratching their heads.

"I think the valuation that was put on StatPro, £160 million, also looked kind of thin compared to what the brand value and perception was," says an executive at a European exchange. "Given that it has recently acquired the entire stake in UBS Delta with all their technology, I would have valued it at much more." The source compares StatPro's Delta buy for £13 million (\$14.5 million) to LSEG's



“We have a lot of work ahead of us in terms of understanding how to best integrate all of these contributing units into something that ultimately needs to benefit the client.”

Mark Evans, Confluence

purchase of Citi's Yield Book and fixed-income indices for £525 million (\$685 million). “UBS Delta was a direct rival to Yield Book—I don't know how they did that,” the source says.

Paul Sinthunont, an analyst at consultancy Aite Group who specializes in buy-side research, also thought the price was a bit low.

“It seems to be potentially low for the firm, considering businesses like Axioma fetched \$850 million with the acquisition by Deutsche Börse,” he says.

Sinthunont also echoes other sources in noting that the UBS Delta piece and that StatPro had made the painful transition to the cloud years ago are prime examples of StatPro's value.

“In terms of vendor strength, StatPro does have a large client base, ranging from smaller to larger buy-side institutions, and it has a strong functional breadth of capabilities across performance and risk,” he says. “StatPro's own acquisition of UBS Delta improved its fixed-income capabilities back in 2017, and so Confluence also acquired that component as well. StatPro also invested a lot in cloud architecture that should support the future-proofing of the business.”

Moving Forward

Evans says the combined workforce, including senior management, is poised to stay in place, and emphasis on human capital and intellectual

pro prowess is at the forefront of the firms' integration plan.

“When you look at our regulatory platform, and you look at StatPro's ability to measure and present risk, those two things are meat and potatoes. ... The closer your systems are tied together—such that the risk numbers that live in a regulatory presentation are provably correct and provably tied together—is really exciting to us,” he says. “But I think it's much larger than that. ... I look at [StatPro] more as an intellectual asset than specifically a product asset. I think that as an intellectual asset, they have taken a view that is absolutely consistent with our view that decisions are made and data is consumed, it's churned into some decision-making processes, things come out of that, and then instead of it disappearing, it should continue to move down the line.”

StatPro has found a niche in the regulatory risk space, but multiple

sources note that StatPro is still working on integrating the various tools that it had previously acquired. So going forward, the key for Confluence will be to continue on that integration path—which only now become more complicated—or figure out if it will be best to sell off or shutter other pieces, they say.

Over the last 12 months, StatPro has worked to build out its capabilities around processing large volumes of data/results to prepare daily extract/distribution of performance information to various internal and external stakeholders; improve processing times and automation, while reducing any manual intervention to a minimum; and address data quality by introducing impact date management. “Only the historical dataset affected by the backdating or any other data corrections is recalculated and results are re-generated, thus reducing the extra processing time required to deliver the final results,” according to a spokesperson at StatPro, who spoke with *Waters Technology* before the acquisition was announced.

On the fixed-income attribution side, the vendor has worked to build

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“StatPro’s own acquisition of UBS Delta improved its fixed income capabilities back in 2017, and so Confluence also acquired that component as well. StatPro also invested a lot in cloud architecture that should support the future-proofing of the business.” Paul Sinthunont, Aite Group

out its offering for the usage of multiple data sources for risk analytics and yield curve data, and to allow clients to “use their own analytics as the priority source and then fall back on the system source,” says the spokesperson. It is also addressing the challenge around transparency on calculated results by providing better troubleshooting tools, “such as the granular prove-out of fixed income return/contribution decomposition, flexible management of model residual assignment, or maintaining the track record of system setting overrides performed by the user.”

Finally, it has added a brand new fixed-income attribution model that allows interest-rate bets to be split from the spread allocation bets, while also

providing the user with the choice of two new spread allocation methods for the decomposition of spread effects, “i.e. spread duration allocation method or the Duration Times Spread (DTS) approach.”

At the time of the acquisition, StatPro’s IT roadmap included the expansion of its attribution capabilities to cover the “different flavors of decision-based attribution,” which the vendor had planned to roll out in 2020. It is also investing in modeling fundamental equity factor models, with the planned release of “several regional models in 2020. At the same time, we are developing the infrastructure to cover factor-based performance attribution, which we expect to deliver in late 2020 or early 2021.” [wt](#)





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Setting the standard: making finance risk-aware

Challenges, winners and losers in a revolutionary new framework

This is an edited excerpt from an article in Chartis' RiskTech100® report, published on 6 November 2019.

The next big thing

The next significant paradigm shaping the financial sector is with us. Reacting to the faulty accounting frameworks of the past, the IASB and FASB have made a concerted effort to overhaul and rebuild global accountancy standards in the sector. This new 'risk-aware accounting' (RAA) framework is supported by pillars that include standards - such as IFRS 9, CECL and IFRS 17 - aimed at reforming how firms recognize profits and losses and adjust for the market risk of assets and liabilities.

On the face of it, RAA should help to improve the overall stability of financial markets. But like any risk-mitigation measure, it has its challenges. Technology can help with these, and for solution providers the new standards offer big opportunities as financial firms scramble to comply. Compliance will inevitably create a cost burden for financial institutions, but with the right technology this investment should eventually pay off.

The challenges of RAA

To meet the new demands of RAA – not least incorporating market risk into financial reporting – firms will inevitably face monetary and operational challenges. Collectively, IFRS 9, IFRS 17 and CECL require firms to have massive amounts of data, and the right means to manage and model it, with rapid, repeated and often complicated calculations. Relevant data also needs to be organized within a centralized system with proper functionality to ensure its integrity, so its complex flow and manipulation can be controlled.

Firms will need cross-functional risk/finance teams, because the standards require them to apply risk-stochastic modeling during financial reporting. The demands of IFRS 9 impairment modeling, for example, are more akin to the stochastic modeling methodologies firms use when allocating economic capital, rather than the modeling used for conventional financial reporting.

Similarly, under IFRS 17, insurers will consistently need market data to determine the value of their liabilities. All cashflow projections must be subject to discounting. Along with the production of cashflow data, cohort contractual service margin measurements, financial and non-financial risk measures, and initial yield curves, discounting requirements also demand closer alignment between the finance and actuarial departments.

Technology to the rescue

To comply with RAA, we believe that institutions can employ the following functionality: a data warehouse, cashflow modeling, market risk modeling, data models, data tagging, workflow management, and data integrity functions, across different levels of aggregation (see figure overleaf).

Complying with standards like IFRS 9 and IFRS 17 will have a big technology impact for firms, but they can be smart about handling it, by possibly using functionality they already have to handle capital requirements. There are functional overlaps between Basel III and IFRS 9, for example; in insurance, IFRS 17 also overlaps to some extent with a capital framework: EU directive Solvency II.

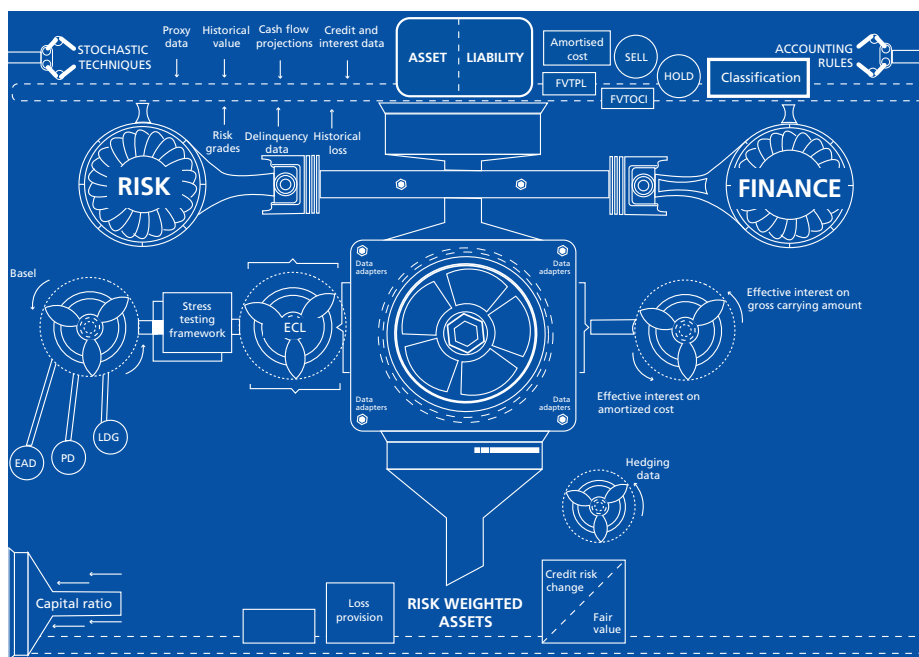
RAA: winners and losers

There is a great deal that is good about RAA, but some downsides too. For some market players, standardization can be debilitating because it doesn't accommodate certain product characteristics, and it can create common blind spots. And flexible modeling approaches can generate too much room for maneuver, and even scope for manipulation. So who are the winners and losers under RAA?

Winners: vendors

The move to integrate risk into finance means more demand for data inputs, data lineage and control, complex aggregations, extensive modeling

Getting it right: an example technology architecture blueprint for IFRS 9



Source: Chartis Research

and automated disclosure and reporting. For technology vendors that make much of their revenue from actuarial modeling, RAA is a huge opportunity to expand. The opportunities are not limited to bringing extensive actuarial modeling to firms' finance functions. IFRS 9, CECL and IFRS 17 all require strong, flexible accounting engines, cashflow generators and extensive data management and storage.

Losers: smaller firms, reinsurers, regions lacking infrastructure

IFRS 9/CECL. Smaller firms are likely to struggle more, because they lack relevant internal historical loss data for impairment modeling. Many firms will also have to reconsider their portfolio structure and enhance their performance monitoring.

IFRS 17. Life insurers and reinsurers are most likely to feel the full force of IFRS 17, because the longer the insurance contract, the more complex the modeling required.

Regions where accounting infrastructures are relatively underdeveloped will face particular struggles. In South Korea, for example, the insurance industry boomed under accounting rules

that allowed deposit features to be recognized as revenue. But that is set to change under IFRS 17.

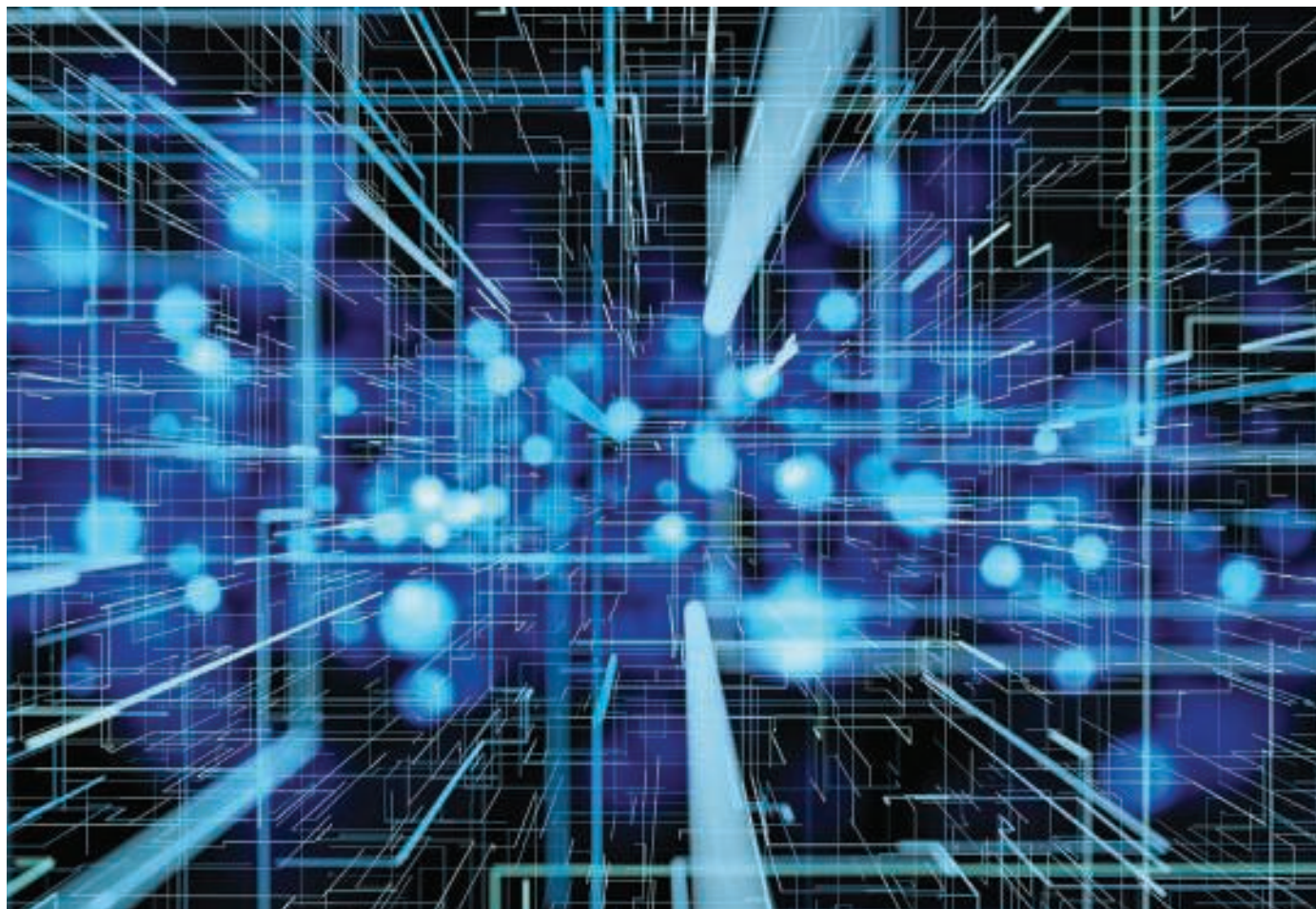
So what next for RAA and the finance industry?

Predicting the next big global credit crisis, or how such an event could trigger another overhaul of accounting standards, is never easy. The logic underpinning RAA is increased international standardization, which can ensure that the quality of financial reporting is consistent no matter what the institution, or where it's located.

But the standards are also principle-based, and have some flexibility. While the structure of measurements, timings and the information they must relay are rigid, methodological approaches can be adapted. There will still be an underlying need to reflect anticipated long-term market movements in the balance sheet, but with flexible modeling approaches firms can use resources that are already available to them to match their specific business needs. Flexibility is key to enable firms to adapt as new ideas, regulations – and indeed financial paradigms – emerge.

Cultural Appropriation: Private Equity Goes Quant

Machines are helping venerable shops find under-the-radar performers and the factors that drive them. By **Rob Mannix**



Researching a company as a possible private equity buy can sometimes involve a lot of shoe leather.

Junior staff might fan out to stores, noting how products are displayed on shelves, asking customers what they think of the wares and shop owners whether the goods move quickly or end up in a storage room.

Now, a handful of private equity shops are doing something they haven't done before: They're going straight for data.

For instance, Bain & Company, an adviser to private equity shops (not to be confused

with Bain Capital, the private equity house), might track downloads of whitepapers as part of due diligence on the potential of some business-to-business software. Or it might monitor searches for brands on Amazon to see if shoppers are insisting on specific labels.

"The old way of doing diligence was you did a survey, you did calls, you asked customers what they liked," says Richard Lichtenstein, who heads a new advanced analytics team at Bain

in New York. "Now, you can observe what people are doing in the wild, so to speak."

The change has been slow and, so far, modest. Even as the rest of the investment world began distilling data to see things not apparent to humans, private equity has continued largely to screen prospects as it always has. Given the smaller, bespoke nature of the deals done, the sector really hasn't had the volumes of data that machines need to tease out subtle signals.



“The old way of doing diligence was you did a survey, you did calls, you asked customers what they liked. Now, you can observe what people are doing in the wild, so to speak.”

Richard Lichtenstein, Bain & Company

But that's changing. While private equity still does not have the limitless digital fodder available to the public markets, it has found data—some of it in-house—that can be filtered to find the out-of-view companies that might be future star performers.

Unlike the broader quant insurgency, the private equity firms make only hundreds, rather than thousands, of investment decisions. But in engaging data, they are also beginning to see diversification in a new, more calibrated light as an element of risk-adjusted return. Also, several are looking for systematic drivers of growth or margin in the companies they buy—similar to the factors used in public-market funds.

“I would say the better firms understand this is something they're going to have to invest in, that will be critical to their success, and probably survival,” says Anthony Tutrone, global head of the \$75 billion NB Alternatives, Neuberger Berman's private equity business in New York.

Building the Teams and Their Mission

At Bain, the data team working on private equity due diligence assists on more than half of all deals the firm advises on, double the number at this time last year. The team started with two people focused on the US two years ago. Today, it has five times that, looking at the whole world.

Warburg Pincus, with a portfolio of more than \$60 billion, has a small quant team under Rüdiger Stucke, a former researcher at the University of Oxford's Saïd Business School, specializing in private equity. Swedish firm EQT Ventures, with €40 billion (\$44.6 billion) under management, has built

a combined database and productivity tool it's named Motherbrain to pick winners in the tussle of start-ups.

Kohlberg Kravis Roberts (KKR), the \$150 billion private equity house, has hired a team of 12 quants and programmers, reporting to Henry McVey, global head of asset allocation, including several from the larger, outside quant world in the past 18 months.

Firms want “to find systematic factors that can be identified as drivers of revenue growth or profit growth or improvement in margins,” says one private equity quant. The aim is to “diversify the risk factors and maximize the value-grabbing factors.”

KKR is understood to be using factors—found by using in-house data—to choose investments in all the firm's flagship funds, with the ambition to apply the approach eventually to every investment decision the firm makes.

At Warburg Pincus, Stucke's team uses quantitative techniques to balance risk across the firm's 200-company portfolio, and is also understood to be experimenting with factors.

The factors identified by the private equity shops so far are specific to different types of companies—those, say, in a certain sector, location or development stage. And that can give established private equity shops an edge: They've accumulated data on companies for years, sometimes decades.

Less Data, But Still Loads of It

At CircleUp, a private-markets quant firm, a machine learning model draws on proprietary, anonymized data on the evolution of successful start-ups gleaned

from the firm's experience as a venture investor since its founding in 2011.

Neuberger's data team, meanwhile, is looking at how to assemble and use data the firm has gathered over decades of private investment in “thousands” of companies, says Tutrone. He sees the project coming to fruition in 12 to 18 months.

Proprietary data “gives us indicators that are not publicly available, of what's actually happening in particular industries,” he adds: “It enables us to start identifying patterns, on what kind of factors within these companies lead to good returns, so we can try and replicate them in the new investments that we're making.”

Firms might use quant input to decide which of two roughly comparable investments to make to keep a portfolio diversified. They might also use it to decide when to exit an investment in a more mature company, a decision that could turn on the composition of the portfolio and the age of the fund. Largely, this second is an exercise in forecasting cashflows and alpha to find the most judicious mix of investments. In markets with no benchmarks, quantitative modeling fills the void.

Firms also are raking through external, so-called alternative data—from website traffic to satellite images—in the race to snag the best opportunities.

Bain is tapping these sources.

“Advanced analytics went through a step change a couple of years ago with the availability of more data,” says Lichtenstein. “Today, you can answer questions like: Is this company winning on Amazon? What's their market share? How's that trending? But also you can understand, are Amazon private-label sellers moving into a category? And if so, how successfully?”

Neil Constable, former head of global equity and quant research at GMO, joined San Francisco-based CircleUp in August as chief investment officer. He has said the current moment feels like the public markets circa 1981, at the dawn of quant investing. Back then, firms such as AHL, now part



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“I would say the better firms understand this is something they’re going to have to invest in, that will be critical to their success, and probably survival.”

Anthony Tutrone, NB Alternatives

of the Man Group, scraped together daily price information and crunched it through rudimentary computers to uncover patterns.

“The time is now for quantitative investing to begin, in earnest, the disruption of the private markets,” Constable wrote in a recent blog.

The success of those quant pioneers back then—and their successors today—is crucially tied to having a big universe of companies to analyze, as well as relatively exclusive, comparable data on them of some predictive value. Some of private

equity’s traditional playing fields, such as tech start-ups, don’t begin to meet those criteria, says Constable. But CircleUp has trawled data from 200 sources on 1.4 million companies in consumer industries—from lipstick to vitamins to pork-rind snacks.

In the consumer sphere, data is abundant, but hard to gather and organize, he says: It reveals useful things, such as what people are buying, and covers tens of thousands of products sold by thousands of companies. As well as using its own in-house data, CircleUp scrapes information from websites on everything from consumer reviews to new hires, or where the products are sold.

Sometimes, the private equity firms’ objective is just to identify lush targets more quickly than their rivals.

EQT’s Motherbrain, developed for the company’s venture-capital business, has now been made available more widely to the private equity team. The database portion of Motherbrain

holds records on 8 million private tech companies gathered from data providers and through in-house website scraping.

After four years of development, the latest version uses machine learning to identify companies that might interest EQT’s managers, floating them to the top of a ranking. Its algorithms ingest data ranging from download patterns at the Apple Store to any fundraising a company has done. The rankings allow portfolio managers to concentrate on their best prospects and improve the odds of sighting a “unicorn” ahead of competitors.

Henrik Landgren, who leads the Motherbrain project in the ventures part of EQT, joined the company from Spotify almost four years ago. His job now is to get EQT’s staffers to work efficiently in a world where data can reveal almost “everything,” but the volume of information can be overwhelming, he says. It’s the same problem he faced at Spotify.



“At Spotify, our mission was to build an internal analytics team, but how do you do that when you have so much data to look at?” he asks. “How do you work in a disciplined way to capture the value of that information? It’s a technical challenge, but it’s also a workflow challenge.”

Data Consciousness

Awareness of the possibilities that data puts within reach has become general, the firms say.

“Calls on the data team went from nothing two years ago to us trying to figure out for almost every investment we look at whether the data team is going to be able help us,” says Neuberger’s Tutrone.

Clients, too, are becoming equally data-savvy. Most expect credit card transaction data, for instance, to be part of standard due diligence, says Bain’s Lichtenstein.

Eric Wetlaufer, a former head of investment at the Canada Pension Plan Investment Board, recalls discussions

with a private equity firm for sales data from retailers in the portfolio: “We thought, we own half of this company, so why shouldn’t we get data on every transaction it does?”

“Everybody wants to be the intelligent enterprise, and use data and advanced analytics. Having talked to private equity firms about their data, it’s clear they are quite sophisticated and getting more sophisticated—they’d be crazy not to,” Wetlaufer says.

The more quant-like approach might also be a response to public-market funds eyeing private equity as a sector they could move into. Quant and factor investing has swept the public markets, and systematic investors are seeking new pastures. Private equity, where fees can still approach the famous “2 and 20”—a 2% fee for management and 20% for performance—is an obvious target.

And encroachment appears to be well on its way. Man Numeric launched a private equity replication fund in 2018 that seeks to mimic the



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Henrik Landgren, EQT

risk and return of the sector by trading liquid public-market instruments. Academics such as Harvard Business School’s Erik Stafford suggest private equity returns can be matched this way—to a degree. AQR Capital Management’s researchers have also found that private equity returns can largely be equalled using publicly traded instruments.

And the Payoff?

Is the new approach working? The private equity quants say it is.

At EQT, five of the firm’s 40 investments would have been unknown to its managers without Motherbrain, says Landgren, the five being some of its top performers. About 70% to 80% of the venture-capital investments EQT tracks are in companies previously flagged by the firm’s system, he adds.

Firms are pushing forward. KKR so far has worked through external consultants to get access to alternative datasets, but is understood to be planning to build a team and do that work in-house. Bain is planning to double its private equity-focused advanced analytics team this year. Neuberger expects to spend “tens of millions of dollars a year” on salaries, software and hardware as it adds to its quant capabilities, says Tutrone.

He sums up the mood of the early adopters: “The private equity firms that don’t invest in this, who can’t figure out how to do this—for the most part, I think they’re going to be in trouble.”

And the ones that do? “They’ll be big winners. Huge winners.” **WT**

Bringing an ‘Edge’ to the South Side

Max reports on how one company’s mission to exploit the trend of Edge Computing is not only improving latency and connectivity, but also has the potential to improve low-income neighborhoods and change lives.



Here at *WatersTechnology*, awards season is in full swing—first, the Buy-Side Technology Awards on November 1, followed in December by the coveted American Financial Technology Awards, which recognize the best of technology innovation in the capital markets.

The AFTAs also recognize individual technology executives and IT teams, and serve to remind us that behind all the artificial intelligence, bots, and underlying technology, are people who make everything work and who come up with the innovative ideas that are then executed in the latest technologies.

In 2012, Hurricane Sandy dealt a shock to New York City and the financial markets, reminding us that wind and water can disable the most robust technology infrastructures. Following Sandy, to recognize the impact of people—and their humanitarian contributions to more than just bottom line—we created the Above And Beyond Award in the Inside Market Data and Inside Reference Data Awards. The award showcases those in our industry who see their work as an enabler for good.

Take, for example, MetroEdge. This Chicago-based startup uses freight shipping containers as high-performance, “micro-scalable datacenter computing facilities,” which—because of their size—the company can deploy anywhere with access to electricity and the internet. The company calls this “micro-scalable” because of the containers’ small physical footprint, and because construction is completely modular: if you need more capacity, just bolt on

another container. When connected, these units create a “high-performance Edge Computing mesh network of micro datacenters in urban areas.” The spaces that MetroEdge chooses to set up these micro datacenters are typically low-income urban areas.

The company is a Minority Business Enterprise, led by co-founders and managing partners Craig Huffman

and Vance Kenney. Its founding team also includes COO Jeremy Diamond, one of the founding members behind Capital IQ, and previously a rising star at Morningstar.

“Everyone who needs low-latency and computing power is embracing Edge Computing... bringing the power to where the need is,” such as to enable “smart cities” and autonomous vehicles, Diamond says.

“One initiative that MetroEdge is supporting to accompany its micro datacenters is in training people to staff them.”

Indeed, the idea followed a model used by rideshare operator Lyft to pilot autonomous vehicles, where Lyft’s technology partner realized that any latency in the data that supports these vehicles could cause accidents, so they placed datacenters in shipping containers around test zones to avoid data traveling back and forth to faraway locations.

These investments can also be used to serve major corporations and financial firms—at least a sub-set of firms that want low latency but don’t need to

be directly co-located in an exchange’s datacenter.

All data that passes through these micro datacenters is backed up in traditional datacenters, while they also connect to major cloud providers.

“The big datacenter operators struggle to get into urban areas because of the size of the footprint required. It’s either extremely expensive or not possible for them. ...And the big cloud companies are struggling with latency,” Diamond says. “This gives us the muscle of providers like Amazon Web Services and [Microsoft] Azure, and allows the big players like AWS to use our proximity to tap into locations in downtown business districts.”

Targeting underprivileged communities isn’t just about finding cheap space to dump unsightly container-datacenters, or about helping firms meet their quota for supplier diversity. It’s about bringing much-needed investment to qualified opportunity zones. One initiative that MetroEdge is supporting to accompany its micro datacenters is training people to staff them by setting up training certificate programs at vocational colleges close to where it establishes locations. The first is being run by Kennedy-King College in South Chicago’s Englewood Square.

This, in turn, helps the industry overall, by creating infrastructure professionals to meet demand. It also helps local neighborhoods by training and empowering an under-utilized workforce with transferrable skills. If the Above and Beyond Award still existed, this initiative would have my vote. **WT**

The Jitesh Thakkar Case: A Scary Precedent



Jo says that enforcement cases against financial technology developers will have a chilling effect on the industry.

It's difficult not to sympathize with Jitesh Thakkar.

Thakkar is the Chicago-based software developer whose company, Edge Financial Technologies, designed the custom trading application London day trader Navinder Singh Sarao used to spoof the markets. After Sarao was convicted, the US Department of Justice (DoJ) and the Commodity Futures Trading Commission (CFTC) charged Thakkar, alleging that he had aided and abetted Sarao in building the bespoke solution, which allowed him to place orders on CME's Globex platform that he never intended to fill.

Thakkar's criminal trial resulted in a hung jury in April, after which the DoJ dismissed all remaining charges against him. Sarao himself admitted during the trial that Thakkar had no idea that he, Sarao, was going to use the software for nefarious purposes.

Still, though, Thakkar has spent his life savings fighting a costly legal battle and watching the business he built destroyed. He has an excellent lawyer: Renato Mariotti, who secured the first ever criminal conviction of a spoofing trader. But this type of representation does not come cheap.

Worst of all, Thakkar feels that his personal and professional reputation have been muddled, says Mariotti, who has filed a motion for summary judgment in an Illinois district court.

And the CFTC is still pursuing its civil enforcement action against Thakkar. The regulator's case, according to court documents, is that Thakkar had 18 years' experience as a developer of software

applications and knows how Globex works; Thakkar should have understood what Sarao was intending to do as the two worked closely via phone and email to build the features Sarao wanted.

Thakkar's supporters say this is profoundly unfair and is more about the CFTC trying not to lose face than actually punishing wrongdoing. And, as I say, it's difficult not to sympathize with him. Thakkar epitomizes the aspect of

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Programmers will be held responsible for their code, even after they no longer have anything to do with it.

the American Dream people still want to believe in: an immigrant who built a successful small business.

On the other hand, the CFTC and other regulators have to hold people accountable for wrongdoing; it's their job. Perhaps Thakkar should have been able to tell what Sarao was up to; he had apparently complained to Thakkar that orders were being hit and the program wasn't working properly.

Katten lawyer Gary DeWaal made the point recently that regulators are grappling with how to do their jobs and adapt as the pace of innovation in technology will always outstrip the ability of law enforcement to keep up. Regulators need to hold people accountable for wrongdoing, yes, but how do you do that when it's not clear who is responsible? Shouldn't the creators of software keep in mind the possible ends to which that software could be used?

It's the district court's job to decide the merits of the CFTC's case. And this case—the first in which a software developer who didn't actually do any spoofing has been charged with spoofing—sets an alarming precedent.

It is reasonable to expect that one outcome of these events is that software developers will begin to fear they may one day bankrupt themselves fighting a felony conviction for a crime they had no direct part in, whether in a case like this one, or in circumstances where the developer's employer has thrown them under the bus to avoid liability. And that kind of fear does not produce an atmosphere conducive to innovative software development.

After all, this is not the only enforcement case where a developer has been held liable for a crime perpetrated using their software. Zachary Coburn settled with the Securities and Exchange Commission (SEC) this year, after the regulator brought an action against him for operating as an unregistered national securities exchange. Coburn had created a token trading platform called EtherDelta and then sold it to someone else. At the time of the SEC action, he was in no way associated with the platform. Nevertheless, the SEC charged only him.

Coburn had to pay over \$300,000 in penalties and disgorgement of earnings.

The message coming from regulators is clear: Programmers will be held responsible for their code, even after they no longer have anything to do with it. But these ruinous enforcement actions are probably not the best way of getting that message across. [WI](#)

Unspoken Experimentation

As the race for quantum supremacy continues, Wei-Shen thinks about how financial institutions are experimenting with quantum computing and what results it could bring.



New technologies tend to create a buzz and a sense of excitement, and rightly so. One mention of artificial intelligence, and its subset machine learning, and you'll command the attention of many a conversation. But instead of AI, let's start by looking at the evolution of mobile phones and the incredible amount of change they have undergone in the last 30-odd years.

In 1985, one of the first mobile phones was the transportable Vodafone VT1, which weighed 4.7kg (10.3 pounds), and offered 30 minutes of call time on a 10-hour charge.

Today, the latest iPhone 11 weighs in at just 194 grams (half a pound). Comparing it to how bulky mobile phones were back in the day makes me wonder whether people's biceps were bigger then, with no intentional exercise necessary.

We can now do so much more on the go than was the case only a few years ago. Think about how you used to find your way around a new city. It wasn't that long ago when we relied on physical maps or directions from a stranger. Now you can whip out your smartphone, key in the location, and you'll get your directions, along with routes and the time each one might take.

Similarly, the world of computing is changing fast. Scientists have long been experimenting with quantum technology, which has now branched into the field of quantum computing.

As *WatersTechnology* has covered, it is a technology that is set to revolutionize not only the finance industry, but most every industry under the sun. Further-

more, quantum computers could help advance other technologies, such as AI/ML, which will benefit many firms, and create challenges for established technologies, such as encryption.

Reign Supreme

When we started covering this emerging technology in 2017, the race for quantum supremacy—the ability to solve problems that classical computers could not—was already on. Tech giants like IBM, Google, and Microsoft were vying to be the first past the finish line.

Well, Google recently claimed that it achieved quantum supremacy through its new 54-qubit processor called Sycamore, which uses fast, high-fidelity quantum logic gates to perform benchmark testing.

“**Barclays is close to finalizing its first experiment in using quantum computing for settlement optimization.**”

On its *Google AI* blog, the company said the machine solved a random generation number problem in 200 seconds. By comparison, it would take the world's fastest supercomputer 10,000 years to produce a similar output, it said.

But no claim to the title of quantum supremacy will go unchallenged—IBM argued that Google's claim should be taken “with a large dose of skepticism”.

Whether supremacy has been achieved or not, many financial institutions are continuing to experiment with quantum computing.

JP Morgan and Barclays, for example, are dipping their toes into the technology via the IBM Q Network, where they can access quantum expertise and resources to explore practical applications. Barclays is close to finalizing its first experiment in using quantum computing for settlement optimization, and plans to publish the results in a few months' time.

Elsewhere, Commonwealth Bank of Australia deployed a quantum computing simulator from QxBranch—which was acquired by Rigetti Computing in July—to allow it to rapidly deploy new prototype applications.

While several of the world's largest banks have been open about their progress with the technology, others have been more cautious. One banker told me candidly that his firm was looking at three potential use cases for quantum computing, but when pressed for specifics later on, shied away from the topic entirely.

So, why are banks that are usually keen to talk about the AI experimentation much more guarded with regard to quantum? Perhaps it's because AI is more marketable right now, while the use of quantum computing is still being theorized in the finance world.

I'm curious about what these experiments—either behind glass walls or hidden from public sight—bring to the table, and how they could push the envelope for quantum computing in finance. For now, much of the conversation is talk and thought, but it's only a matter of time until the theoretical becomes actual. **wt**

Human Capital



Apex Anoints First CDO

Apex Group, which offers a variety of financial, corporate, and fund solutions to the buy and sell sides, has appointed Renaud Oury as its first-ever CDO. In this role, and as a member of the executive committee, he will develop and manage the group's analytics strategy by leveraging data to enhance client services and increase efficiencies as Apex aims to become a data-driven organization.

Oury joined Apex in July as global head of sales analytics. Prior to that, he was head of Belgian and Dutch markets at Banque Internationale à Luxembourg. He has held executive sales and marketing roles at IQ-EQ and KNEIP, an international services provider to the fund industry.

Former Goldman Sachs COO Joins MarketAxess Board

Justin Gmelich has joined the board of directors at MarketAxess, which provides a trading platform, market data and post-trade services to the global fixed-income markets.

He joins after retiring in March from Goldman Sachs, where he was most recently COO for fixed income,



Justin Gmelich



Neal Goldstein

commodities and currency. He joined the bank in 1998 and became a partner in 2004, then global head of credit.

Lime Brokerage Hires New CTO

Antonio Abad has joined New York-based agency broker Lime Brokerage as CTO. He will oversee technical strategy and lead product research, engineering, and development, as well as drive Lime's evolution in electronic and automated trading by enhancing its technology and infrastructure.

Abad was most recently a trading systems architect at private trading firm Engineers Gate, and CTO of EG Market Technologies, a broker-dealer owned by Engineers Gate.

Former Liquidnet CIO Named Mutual of America CTO

Life insurance firm Mutual of America has hired Neal Goldstein as CTO.

Goldstein was most recently US CTO at Computacenter, where he led customer solutions for business partners. His 10 years prior to that were split between AIG as global head of virtual desktop infrastructure, desktop, cloud, collaboration and mobility technology, and Liquidnet as CIO and head of enterprise technology services.

Refinitiv Adds Global M&A Head

Cornelia Anderson has joined Refinitiv as global head of M&A, capital raising and head of investment banking. She will lead investment into Refinitiv's Investing & Advisory franchise, including the building out of teams and tech tools by expanding datasets and content into banker workflows.

Anderson joined Blackstone in 2007, and was most recently global head of research and market data. Prior to Blackstone, she spent three years at Thomson Reuters as a project

manager and the European lead for fund performance and private equity benchmarking solutions.

Based in London, Anderson will report to Pradeep Menon, managing director of Investing & Advisory.

LSEG CFO to Step Down

David Warren, CFO at the London Stock Exchange Group (LSEG) for more than seven years, is retiring from the company and will step down from the board by the end of 2020.

Warren will stay in his current role as CFO and a member of the board through the close of the Refinitiv acquisition to ensure a smooth transition to his successor, for whom LSEG will undertake a global search led by the board's nomination committee.

Earlier in his career, Warren joined Nasdaq OMX in 2002, where he was also CFO before moving into a senior advisory role.

Calastone Names Vice Chairman to Lead Americas Expansion

Calastone, a London-based global funds network, has hired Dan Kramer as vice chairman in New York. Kramer, an asset management veteran, is tasked with expanding the company's reach across the Americas.

He joins from BNY Mellon, where he was chief client experience officer in the asset servicing unit, managing client service, insight and strategy. During this time, he was also a member of the CIBC Mellon Board.

SS&C Eze Shuffles Exec Team

SS&C Eze has reshuffled its management team. Global head of sales Michael Hunter now leads the business as general manager and reports to Robert Roley, senior vice president of SS&C Technologies. Mike Reddy,



Renaud Oury



senior managing director of client services for the Americas, is now COO, and Anthony Rossi, director of institutional sales, is head of North American application sales.

SS&C has also announced that Jeff Shoreman, senior vice president and general manager, will leave the company on November 15.

The reshuffle is aimed at aligning SS&C Eze to capitalize on strategic growth and market opportunities.

HSBC's Lerak Joins Contineo

Contineo, a Hong Kong-based open messaging platform for order management and price discovery, has hired Franck Lerak as CTO.

Lerak joins from HSBC, where he was global head of equity derivatives IT and led the digital transformation of the technology stack. He was previously co-head of equity derivatives IT at JP Morgan, where he spent 24 years.

Azul Hires Wilcockson to Head Product Marketing

Azul Systems, a platform developer for Java-based applications, has hired Steve Wilcockson in London as senior director of product development. His role entails directing, building and deploying field-facing materials targeting financial services, online retail and other industries making use of Java and Java applications.

Wilcockson was formerly a product manager at Geospatial Insight. He reports to Azul's vice president of marketing, Howard Green.

T-Rex Hires Ex-Bloomberg Exec

T-Rex Group, a fintech firm that provides data and analytics services for alternative assets, has hired Geoffrey Patsch as director of strategic engagements. He will oversee all facets of program development and implementation for enterprise-level clients.

Patsch joins from Beacon Platform, where he was global head of strategy and customer support. Prior to that, he spent more than a decade at Bloomberg

ONE HIRE AND ONE RETIRE AT IHS MARKIT BOARD

IHS Markit has announced the arrival of Deborah Orida as an independent director to its board and the retirement of Richard Roedel. Orida will also serve on the board's human resources committee.

Orida is currently senior managing director and global head of active equities at Canada Pension

Plan Investment Board. She joined CPPIB in 2009 and has held senior leadership roles, including head of private equity in Asia, and head of relationship investments international, where she covered Europe and Asia. Prior to joining CPPIB, Orida spent nine years at Goldman Sachs in New York and Toronto.



Deborah Orida

Roedel, a former chair and CEO of BDO Seidman, who has served on the IHS Markit board for 15 years, is not seeking re-election to the board when his current term expires in April.



Alexey Bachurin

in a number of roles, including global head of institutional sales technology and head of sell-side execution and order management solutions.

Patsch reports to T-Rex chief business development officer Scott Miller. He is based in New York.

Bachurin to Lead Equity Trading at BCS Global Markets

BCS Global Markets, the investment banking arm of Russian broker BCS Financial Group, has hired Alexey Bachurin as head of equity trading in London. He is responsible for equities execution with a focus on global markets, and will oversee all of the firm's equities trading departments.

Bachurin has held senior management positions in equity trading at IFC Metropal, Metallinvestbank and Renaissance Capital. He reports to Luis Saenz and Oleg Achkasov, co-heads of global equities.



Geoffrey Patsch

Digital Vega Makes Three Hires to Bolster Strategy

Digital Vega, operator of the Medusa FX Options platform, has made several hires to support product development and geographic expansion.

Simon Nusey joins as head of Asia from Standard Chartered, where he was head of FX options trading in Asia. Asa Attwell joins from Nomura as head of product development, responsible for delivery of the new FX Options central limit order book and market data services. Lastly, Laura Winkler has been named EMEA relationship

manager. Winkler has managed client relationships for several firms in her career, most recently at Luxoft.

New Advisory Board at Connamara Systems

Peter Willmott, Travis Schwab, and Maureen Downs make up the new advisory board at Connamara Systems, an exchange solutions provider and custom software developer for capital markets. They will advise the firm on issues such as growth strategy, talent acquisition and retention, business structure, and governance.

Willmott was formerly president, COO and CFO at FedEx, which he joined in 1973. He was also chairman, president, and CEO of Carson Pirie Scott, president and CEO of Zenith Electronics, as well as chairman and CEO of Willmott Services.

Schwab is currently CEO of Eventus Systems, a regtech software firm. He has a background in financial services and product sales for firms such as Trading Technologies and Calyon Financial.

Downs is CEO of MC Downs & Co, a business advisory firm serving the trading and derivatives industries.

Ascertia Hires Hathaway as CTO

Mike Hathaway, a veteran in public key infrastructure (PKI), has joined Surrey-based Ascertia as CTO.

Hathaway joins from Entrust, where he spent more than a decade as authentication specialist and director of product management. [wt](#)



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