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trading technologies for financial-market professionals

**The Buy Side's
Struggle with STP**

**BANKS AND BANK
ROBBERS TURN TO AI**

**Sell-Side Ambitions in
Alt Data Fall Short**



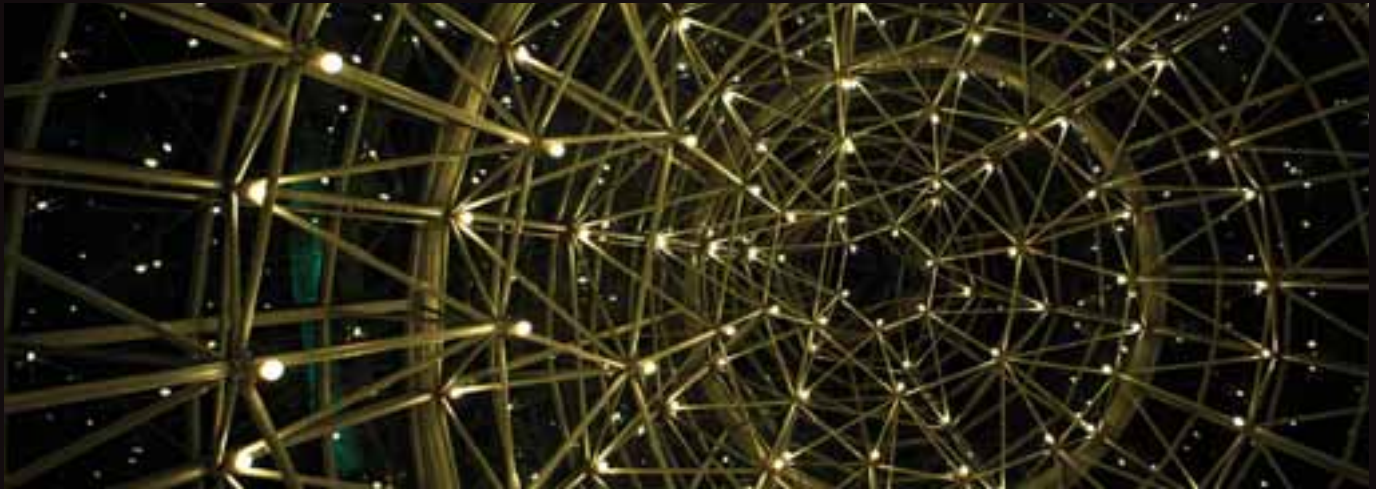
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To receive Waters magazine every month you must subscribe to a WatersTechnology Subscription or a Waters Premium Subscription. For more information and subscription details, visit waterstechnology.com/subscribe

Waters (ISSN 1068-5863) is published monthly (12 times a year) by Infopro Digital Risk Limited. Printed in the UK by Stephens & George Print Group, Dowlais, Merthyr Tydfil, Wales.

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Bonfire of the Sandwiches

Most market bellwethers follow commonly accepted measures of

market confidence: manufacturing indices, inflation, employment rates, the price of gold. Not so for Andrew Bailey, CEO of the UK's Financial Conduct Authority (FCA), who used his speech at Mansion House on October 25 to introduce a new measure of regulatory impact—the effect of the revised Markets in Financial Instruments (Mifid II) on the catering at City events. “Mifid II is leading to a critical decline in the quality of sandwiches served at City events,” he said. “It’s hazardous for the FCA to give guidance, but here goes. If you are offered a sandwich and are assured that it has no value for Mifid II purposes, I would probably not eat it.”

Truly, market philosophy has entered a halcyon phase. Aside from the glib introduction, however, Bailey’s speech had some truly remarkable aspects. The first, and most important in the short term, was that the FCA has the resources to handle Brexit, and that it is an ardent advocate of establishing memoranda of understanding between itself and national regulators in the remainder of the EU after the UK departs. This has been a topic expounded on at length, of late, by influential persons in the market, not least of all Steven Maijor—the chair of the European Securities and Markets Authority was even namechecked in Bailey’s speech for his efforts in this regard. Signing these memoranda is not a particularly difficult task in and of itself—the FCA has inked nine such agreements this year alone, with internal UK authorities as well as Australian, US and Hong Kong regulators. What makes it difficult in this case is European Union rules that do not allow existing member states to establish such agreements with each other, let alone grant equivalence determinations, while they are still members—meaning that they will have to be signed and processed the very second the UK officially leaves the Union, which some protest may already be too late.

The second reason this is more problematic than usual is that, following the UK’s departure, it will no longer be strictly beholden to the letter of Union law. This point is perhaps overblown by those with interests in isolating the UK—the FCA is, after all, not only largely responsible for extensive parts of Mifid II and other blockbuster European regulations, but it’s also gold-plated them and gone farther in many cases than the EU requires, not to mention published extensive documents laying out how UK regulation will work post-Brexit.

In either case, the other truly significant part of Bailey’s speech was his on-the-record statement that the UK will hew closely to European regulation in the future, and that equivalence determinations are the objective. While some mercantilist views might look for a bonfire of regulations, he said, that did nothing to support free markets. Both of these are needed to protect data practices that currently fuel markets under the Mifid II regime. The industry can withstand a bonfire of the sandwiches at Mansion House, perhaps—but the rules are a different story. **W**

James Rundle
Editor

Inside Market Data

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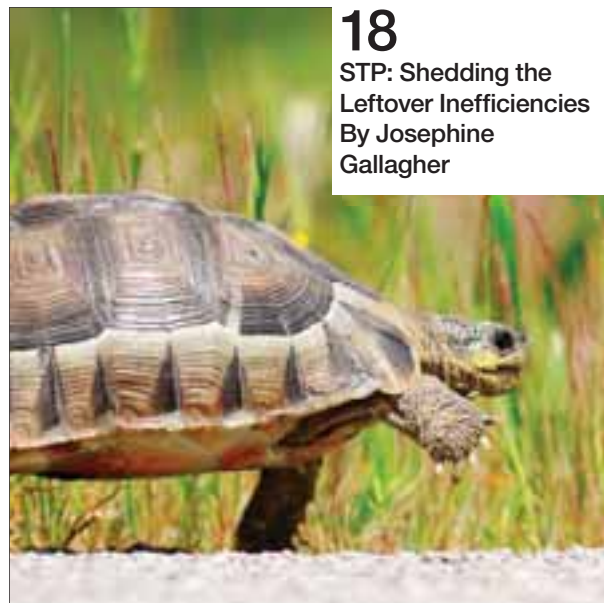
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Emerging Markets Exchanges
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Trading Technologies Preps OMS Launch for 2019

TT OMS will consolidate existing order and execution management workflows into a single screen, delivered on a software-as-a-service basis. [By James Rundle](#)

Chicago-based vendor Trading Technologies has announced the 2019 launch of an order management system (OMS) designed for sell-side traders.

While labeled as an OMS, the system includes execution functionality and handles trading by futures commission merchants (FCMs) and brokers in fixed income and futures. Although TT OMS is a new product, it will contain many of the same workflows and functionality already available through the vendor's existing product suite, TT Platform, albeit through a single screen.

The platform is currently scheduled for an early 2019 release, says Rick Lane, CEO of Trading Technologies.

"Much of the delay between now and 2019 will be spent integrating with our clients. And maybe this is part of the broader story, here. Much of the OMS workflow that we're now branding and packaging as TT OMS has existed in one shape or form for many years, and this is an education piece as well as integrating into other platforms and integration points of our sell-side partners to make sure that they're able to see a consolidated, holistic view across all of their order flow on their TT screen."

Trading Technologies is working with a number of clients to ensure these workflows are "present and accounted for," Lane adds. While TT OMS does incorporate existing workflows, it also includes integration with a number of new tools and products that the vendor has released



Rick Lane
Trading Technologies

of late, including its cryptocurrency trading technology, along with TT Score, the surveillance platform it built out following its acquisition of artificial intelligence specialist Neurensic in October 2017.

"Because we pride ourselves on our execution capabilities, we typically are everything that sits between the trader and the exchange, and therefore, generally speaking, most of the order flow that goes through our pipes originated in our pipes," Lane continues. "So, a lot of the work we've had to do over the past few months, and really over the past few years, is around the ability to take order flow from all sources—from any source, pretty much any asset class—and be able to provide a consistent experience across all of

those regardless of whether those orders originated in TT."

Delivered on a software-as-a-service (SaaS) basis, TT OMS also represents a more significant shift for the company, which has been steadily rebuilding and re-engineering its technology from the ground up for a number of years now. In March, Lane outlined his vision for the future of the company, which at the time he described as a move away from its traditional heartland of screen-based execution management, and into a more varied role as a technology and infrastructure provider for the markets.

The release of TT OMS, he says, is one of the first major moves toward realizing those goals. While initially designed for FCMs and brokers operating within crypto, fixed income and futures, the platform will be the base layer for the company's expansion in the future, Lane explains, which may include other asset classes and client segments, including the buy side.

"I may have used the phrase [back in March] that we don't consider ourselves a screen company anymore, and this really is a big part of that strategy and that initiative," he says. "We've now built the technology platform we intended to build, which will serve as the foundation for us for the next 25 years, and with it, we can really branch out of that core futures execution wheelhouse we've known so well for the last 25 years. TT OMS really is the first big product launch that shows the fruits of that labor, I think." **W**

Japan Exchange Group Mulls Pooling Content into Data Lakes

Senior tech execs at Japan Exchange Group say the bourse is considering its options when it comes to data management. *By Wei-Shen Wong*

As exchanges expand the amount of data they collect and distribute—which increasingly involves new data types that don't conform to “traditional” market data structures—they are revisiting the potential of data lakes to deliver the breadth and depth of capabilities to store and surface both structured and unstructured data at any scale in the most efficient manner.

One such exchange, the Japan Exchange Group (JPX), is looking at the potential of data lakes to support its strategy of finding new ways to add value to existing proprietary data.

Data lakes are centralized repositories that store data in a relatively ungoverned and unformatted way, allowing firms to deploy tools to run different types of analytics and machine-learning applications without having to move the data. Implemented and used correctly, they could help organizations yield significant improvements in their ability to store and manage certain datasets, particularly when it comes to experimenting and building out potential new products.

It's this aspect that particularly appeals to JPX CIO Ryusuke Yokoyama, who says that—while not yet set in stone—the exchange is currently thinking about using a data lake to help achieve this.

“At this moment we only have a data warehouse. We don't have a data lake or data pool where we can inject all the data. We are thinking about it but we haven't realized it,” Yokoyama says.

A data warehouse stores structured data differently from a data lake, which organizes data while accounting for



Ryusuke Yokoyama
Japan Exchange Group

business processes and determines how data sources are analyzed. When a purpose for the data has been identified, only then will it be loaded into the warehouse.

According to advisory firm Deloitte, data lakes should be divided into three zones: data loading, defining user access and security, and creating a more user-friendly environment. The first zone consists of the raw and untransformed data direct from the source. Zone two is the data sandbox, where the data can be lightly processed, cleansed and combined for exploration and analysis. The third zone consists of the refined data that is ready to be used by the data warehouse or manipulated for analysis.

JPX is currently replacing its internal systems, including the system that accumulates data, Yokoyama says. “We are constructing a system considering the convenience of data usage and the smoothness of cooperation with other systems,” he says.

Like other organizations, JPX is trying to gain more value from the data it already has in order to better

cater to its customers and market participants. Adding to this, artificial intelligence (AI) and machine-learning technologies are also becoming more sophisticated. “So we believe that data utilization will expand more in the future. JPX holds various data, so I think that what kind of value we should add to raw data is the issue for us,” he says.

But while the exchange sees the opportunity presented by data and is considering ways it can expand its data business, exactly how it will do so is still uncertain at this point.

“Everybody is scrambling to the data business. I think it has huge potential in JPX's future growth and expansion. What we're doing right now is providing the plain and simple raw data, like stock prices and volumes. What we have to think about going forward is how we can add value to that data and sell it to customers, and how we can work out their needs and appetite for data,” Yokoyama says.

That may even mean that JPX will need to direct some efforts toward development of AI technology “to filter and pick out necessary data,” he adds.

Though deciding how JPX can add value to its data and repackage its data as new products is a business decision, rather than one that will be determined by the data and IT teams, the IT team still has its work cut out. “On the IT side, we have to think about how we can handle the massive data. How can we build the data handling platform that can respond to the business needs?” Yokoyama says. **W**

IHS Markit **Cancels** Derivatives Unit Sale

The information provider says it will now keep MarkitServ, despite putting it up for sale earlier this year. **By James Rundle**

IHS Markit has decided to take MarkitServ, its post-trade processing business, off the market, weeks after the unit announced a major overhaul of its technology base, after failing to secure acceptable terms with potential acquirers.

The information provider had said in May that it would be looking for a buyer for MarkitServ at the same time as it announced its acquisition of Ipreo, a data analytics specialist.

Sometimes described as the nerve center of the post-trade market in derivatives, MarkitServ handles 130,000 derivatives processing actions per day and is connected to over 2,500 buy-side firms and 100 dealers.

The move had marked a significant shift for IHS Markit, with CEO Lance Uggla saying that he did not see synergies between its derivatives post-trade processing activities and its other areas of focus as being “substantive.” The decision to sell MarkitServ, he continued, had been partly prompted by a number of “incoming calls” about the business in the preceding months.

However, on a third-quarter earnings call with investors, held on September 25, Uggla said the firm had failed to find an acquirer to purchase the asset on acceptable terms.

“We’ve decided the best financial and strategic outcome for IHS Markit, at this time, is to keep our MarkitServ business,” he said. “We completed a disciplined and comprehensive sales process with both strategic and private equity parties, and could not reach agreement at a sufficient value for the asset with an ongoing acceptable commercial relationship.”



Lance Uggla
IHS Markit

While the derivatives post-trade market remains a competitive area, it has been subject to a certain degree of consolidation of late. NEX Group, which operates Traiana, TriOptima and other competitive services, for instance, announced its sale to the Chicago Mercantile Exchange Group in March, a deal that is expected to close by the end of the year.

Although IHS Markit will stay in the post-trade processing game, for now, Uggla said that he did not expect to be “highly acquisitive” in the space. He also implied that the firm may be open to fresh offers for the business in the future, given that Markit’s view is that there is room for further consolidation in post-trade.

“We don’t see ourselves being highly acquisitive within derivatives processing. But we do think we made

a lot of statements to the marketplace that there are opportunities for the strategic consolidation of certain assets,” he said. “And if some of the strategic market participants wish to discuss or participate in those types of activities, we’re going to be open to doing that. But we’re also quite open to managing the asset.”

Spokespeople for IHS Markit referred requests for further comment to Uggla’s remarks and declined to comment further.

The decision to keep MarkitServ also comes at a time when the business is preparing to completely overhaul its technology base with a new, cloud-based platform, TradeServ. *Waters* reported exclusively on the impending launch of the platform several weeks ago, which will eventually replace DSMatch and host MarkitServ’s other platforms, including Markit Trade Manager and MarkitWire. On September 10, they officially went live with the first roll-out of TradeServ, focusing on foreign exchange (FX) for non-deliverable forwards (NDFs).

That platform, which grew out of a multi-year project within MarkitServ, codenamed “Voltron,” will move into FX options in early 2019 and credit later down the road. The addition of credit is dependent on the launch of the Depository Trust and Clearing Corp.’s new Trade Information Warehouse, built on distributed-ledger technology. *Waters* understands that this is tentatively planned for early next year, possibly stretching into the second quarter. **W**

UK Regulator Seeks EU Equivalence and Cooperation

FCA CEO Andrew Bailey says the UK regulator is preparing for a range of Brexit options, and that cross-border data sharing between regulators is 'essential.' *By Amelia Axelsen*

According to Financial Conduct Authority (FCA) CEO Andrew Bailey, the UK is committed to implementing the EU rulebook to maintain equivalence with the bloc, and is working with the European Securities and Markets Authority (Esma) to smooth the aftermath of any Brexit outcome in March 2019.

"One broad outcome is to seek to stay closely aligned to the EU. There are good reasons for doing this—our markets are closely integrated and we have developed much of the EU financial services *acquis* together," said Bailey in his address at the City Banquet in London on Oct. 25. "So, we need to find a way to create the effective voice and practical involvement for the UK authorities when it comes to the shape and form of that future alignment. We can build on our close and effective working relations with authorities in the EU, but, obviously, we would need a framework in which to do that."

Saying he was "amused" by a question posed by Parliament into whether the FCA has enough resources to deal with all Brexit outcomes, Bailey touted 900 pages of consultation documents compiled by the UK regulator to signify preparedness for anything from a smooth transition to no deal. He called for engagement and cooperation from EU counterparts to establish memoranda of understanding (MoUs) aimed at an easier transition.

"MoUs will support cross-border supervision of firms and data sharing will support our ability to jointly oversee markets," he said. "The FCA is a significant sharer of cross-border



Andrew Bailey
Financial Conduct Authority

data. We pass on around 70 percent of the transaction reports we receive to our counterparts across the EU, and we are committed to continue this if it is possible. We will also need close coordination on Mifid transparency thresholds if the EU version of Mifid is no longer based on UK data."

Bailey touted the importance of open markets and free trade to instill confidence in the UK's willingness to continue to trade with the EU.

"For me, the guiding principles for such an arrangement should be that we all do everything we can to preserve open financial markets, and particularly wholesale markets, supported by the strong international standards that have been refined or put in place since the crisis of 10 years ago," he said.

Issued as a warning to avoid "spillovers" that affect the stability of the markets, Bailey stated that equivalence should enable market access and not be an "unnecessary imposition of home country rules on business done elsewhere." This is not uniquely a

Brexit issue, he said, but with the UK proactively seeking equivalence, he expects broad support without caveats or limitations for UK-based financial participants.

"The key point for me here is that we—whether it be the UK authorities, EU, US or anyone else for that matter—should avoid a world where we regard it as normal to tell our market participants, corporate treasurers, etc, where they cannot, and therefore can, do business," Bailey said.

Although he championed equivalence and following Esma's rulebook, Bailey noted that the FCA will amend or change some features of regulatory rules for the UK market should Esma rules not work as intended when applied in practice.

"If I had to name an area where I would criticize the EU approach, it is the ability to amend and adjust, and recognize the need to do so more rapidly," he said. He pointed to the PRIIPs regulation as an example of a regulatory mistake, which was declared as "not working as well as it needs to."

Bailey also acknowledged that temporary permissions to enable European Economic Area firms and funds entering into the UK to continue operating in a no-deal situation, are being passed through Parliament. He also declared that the FCA is trying to protect consumer objectives. For example, he noted the regulator's stance that large international banks operating in the UK should only move activity away from the UK if it is in their clients' interest, but maintained that Parliament's rules take precedence over FCA guidelines. **W**

DTCC Launches Data Product for US Equities

The Depository Trust & Clearing Corp. (DTCC) has launched Equity Kinetics, a service that offers a comprehensive view of trading activity across all US equities.

Tim Lind, managing director of data services at DTCC, says the settlement and clearing company captures, aggregates, and anonymizes data for different asset classes. Equity Kinetics datasets include aggregated trade volumes by security and transaction type for the buy side and sell side, covering buy and sell activity, short sale and short sale-exempt data, plus historical data from December 2011 onward.

“DTCC processes securities transactions valued at approximately \$1.6 quadrillion every year,” says Lind. “Eighty percent of the notional value of over-the-counter derivatives are reported to a DTCC-managed infrastructure, and with the DTCC Institutional Trade Processing service about 60 to 70 percent of

buy-side and sell-side confirmations flows through that infrastructure. Essentially we’re sitting on a historical record of what has occurred in the world’s largest capital market. In the age of algorithmic trading, automated risk management and data aggregation, that historical record plays an important input into many risk capital, liquidity and market sentiment decisions.”

Equity Kinetics was created to solve the problem of fragmented US equity trading activity data resulting from multiple registered exchanges, alternative trading systems and broker platforms. It captures equities trade data once a trade has been executed and input into the clearinghouse.

The service captures the instrument type, volume, and how liquidity is distributed among market participants on the buy side and sell side. Third-party information is not collected.

Lind says data quality is always an issue for historical trade activity, as well as data input for quant trading, algorithmic trading, or risk systems, which requires a significant amount of time dedicated to curating, integrating, and matching fields for AI and machine learning purposes.

Equity Kinetics, Lind says, gives firms “a view of the trade, but the other important characteristic of this dataset is that it is post-cleared data, which means multiple parties agreed to the economics of the trade, so the data itself is as good as it can get in terms of accuracy and quality because two parties are independently matched and have cleared the trade.”

Equity Kinetics is consistent with DTCC’s “overall strategy,” and the company plans to launch new data products next year, he adds.

Jamieson Coote Bonds Adopts Bloomberg Buy-Side Solutions

Melbourne-based active bond fund manager Jamieson Coote Bonds (JCB) has adopted Bloomberg’s buy-side platform to simplify its technology infrastructure.

Charles Jamieson, executive director at JCB says the firm has been long-time users of Bloomberg’s technology. “As we were looking for an order management system, we needed something that not only could simplify and streamline our workflow but also would be well-recognized institutionally as a robust and rigid operating model,” he says.

JCB uses Bloomberg AIM to achieve an optimized front-to-back office workflow that covers portfolio modeling, trading, reporting, compliance, and investment operations. Meanwhile, Bloomberg PORT is used for portfolio reconciliation, cash management, and portfolio valuation. “It allows us to work in one flow environment where we can look at portfolio modeling and monitor key rate risk, liquidity risk, and other risks in utilizing in the Bloomberg PORT system, and we can also do that in AIM and make sure our workflow allows us to stay within our mandate and compliance limitations,” he adds.

Jamieson says the alert system is useful, especially since JCB covers a lot of markets. “It allows us to filter large amounts of information and be alerted to changes in information that will be important to that strategy and things we want to implement on should they move to predefined target levels,” he says.

Nice Actimize Debuts AI-Powered X-Sight



Nice Actimize has launched a new platform designed to act as a larger ecosystem around financial crime detection and risk management.

The platform, dubbed X-Sight, is cloud-based and offers analytical services using machine learning technology. It will also act as a

marketplace for clients to access some third-party provider offerings.

Jason Vinson, general manager of Nice Actimize’s platform group, says the platform is meant to bring better scalability for clients, particularly if they are undertaking a large project.

“This will not replace our old platforms but rather bring new capabilities and augment those other platforms,” Vinson says. “We wanted to find a way to create an ecosystem rapidly as well as offer a marketplace to connect services to clients.”

Data analytics on the platform will be augmented by machine learning, which Vinson says is easier to scale on the cloud. X-Sight uses machine learning to determine patterns leading to fraud and other anomalous financial activities. Vinson notes that the new cloud-based platform does not mean the company is abandoning further enhancements on its on-premises solutions.

CLSA Diversifies AM Business with AlphaLabs Launch

Hong Kong-based capital markets and investment firm CLSA has launched AlphaLabs, a new venture eyeing technology-focused startups disrupting institutional finance businesses in Asia. Max Nam-Storm, founder and CTO at AlphaLabs, says the potential to bring change to institutional finance in Asia is significant.

Nam-Storm adds that clients in Asia are quickly evolving and their business models are changing and advancing. In emerging markets, particularly, clients are able to skip generations and innovate. This is unlike Western financial institutions that have been established for a long time—many of them are already in their fourth or fifth generations of infrastructure, which are more stable and perform adequately. However, many of them end up running several generations of legacy platforms and that makes them inflexible, he says.

“We have the impetus to change our services and the region has the flexibility to change. Also, this ties in with CLSA wanting to diversify its asset management business into venture capital,” he says.

AlphaLabs is focused on startup firms with expertise in artificial intelligence (AI), automation, big data, blockchain, cybersecurity, digital



Max Nam-Storm, AlphaLabs

assets, and regtech. It recently completed its second investment, providing funding to Epistema, an Israeli company that develops AI tools for knowledge collection and analytics.

AlphaLabs’ first investment was made earlier in April, in secure messaging provider

Symphony Communication Services. Nam-Storm says AlphaLabs looks for areas where there are potential problems to solve. “The next step is to look for companies with highly credible teams and good business models with a focus on Asia,” he says.

Some of these problems are looking at the way technology can help with streamlining processes in different parts of finance. The other one has to do with the volumes and quality of data needed for increasingly analytical approaches to doing business, he adds.

“It may seem like an obvious point, but to me, the problem of data being an after-thought to function is one of the biggest inhibitors of technological progress in the financial services industry. As an example, just think about how much effort is spent on data being constantly packaged, sent around and reconciled. For me as a technologist and potential investor, I’m very focused on the efforts at getting better at managing data,” says Nam-Storm.

AxiomSL Partners with SKS for German Markets

AxiomSL has partnered with SKS Unternehmensberatung to extend its market presence and positioning in Germany, Austria, and Luxembourg.

It aims to use SKS’s consultancy expertise and knowledge of regulatory reporting in the regions. Buncak Saykam, business development manager at AxiomSL, explains that the partnership emerged as both firms are “complementary” to each other, given they share a common client base and mutual business offerings.

He adds that the strategic move developed due to the demand for a joint implementation and consultancy approach to regulation across the German-speaking market.

“AxiomSL provides the robust platform needed in the German-speaking market for either the Deutsche Bundesbank, the Swiss regulator, the Austrian regulator or the Luxembourg regulator,” he says. “So we offer the technology and SKS brings the expertise when it comes to implementation and interpretation of local regulatory requirements.”

Commcise Introduces Contract Management for Research

Research service provider Commcise has added contract-management functionality to its CommciseBUY platform. The service has been developed from the ground up and will let users model fixed-price contractual relationships more accurately.

The addition of the functionality is a direct result of provisions in the revised Markets in Financial Instruments Directive (Mifid II), which stipulates that research must be paid for separately from execution commissions.

“As a result of clients changing the way they buy research services, rather than

paying for research through trade, which is how many clients have historically done that, they are decoupling the payment of research from how they value those services,” says Amrish Ganatra, managing director at Commcise. “And so more and more firms are buying research under fixed-price contracts, where the contract gives you a certain amount of access to their



research product. And the challenge there is being able to model all of the different flavors of research service that can be offered to our buy-side customers.”

CommciseBUY is an integrated cloud-based platform that lets investment managers track the funding, consumption, and payment of research services. Ganatra estimates there are currently around 900 buy-side and sell-side clients using the platform.

Established Exchanges Eye Crypto Swaps, Futures

Established exchanges are getting serious about crypto. While prop shops have been deep in the bitcoin weeds for some time, now licensed and regulated trading venues are building—and in some cases, expanding—on the ground broken last year by Chicago's exchanges.

Regulated players are entering the digital asset space, with both Eris Exchange and trueEx announcing crypto asset platforms and products this week.

Eris Exchange, known for its work in swap futures, announced on Wednesday that its digital asset arm, ErisX, plans to launch a derivatives exchange and clearing organization for crypto assets. At the same time, trueEx affiliate trueDigital will be launching a bitcoin swap contract to be listed in its own planned derivatives marketplace, subject to regulatory approvals.

Thomas Chippas, ErisX CEO, says the platform is meant to stand out because it offers a regulated venue for spot contracts, and, once the regulatory approval has been handed down, clear transactions. "Our goal is to fill a gap in the market with an intermediary friendly venue that is fair, safe, and trans-

parent," Chippas says. "With futures and spot contracts on one platform, we are integrating digital asset products and technology into reliable, compliant and robust capital markets workflows."

He adds it was important to offer the trading of spot contracts with the same level of surveillance as cash-settled contracts.

It is backed by investors including DRW Venture Capital, TD Ameritrade, Virtu Financial, NEX Opportunities, Cboe Global, Pantera Capital, and Third Stone Partners.

Chippas says spot trading will begin in the second quarter of 2019, pending state licenses that the company is required to get.

"Work on the technology is proceeding apace but we do have to get the requisite licenses," says Chippas. "We plan to launch our spot trading in the second quarter and we're hopeful by that point our DCO application has been approved allowing us to proceed with our futures offering."

Meanwhile, trueDigital will launch a Bitcoin swap contract through its US Commodity Futures Trading Commission-regulated swap execution facility. While the introduction of a swap is noteworthy, this

contract also stands out for another reason—it will be physically settled. Currently, established bitcoin derivatives contracts, such as the Chicago Mercantile Exchange's, are financially settled in US dollars.

Nick Goodrich, director of business development at trueDigital, says the contract is physically delivered as this method sidesteps issues around cash-settled instruments relating market and price manipulation.

"We started this process a little over nine months ago, gathering industry and market feedback and really arrived on a physically delivered swap because there's been so much discussion around indices," Goodrich says. "We took a look and saw that a physically delivered contract in a lot of other markets has been very well received and is oftentimes referred to as a truer pricing mechanism for the contract."

Goodrich notes part of the development of the bitcoin contract was determining how to address processes such as custody, clearing, and settlement so the firm looked toward other markets like foreign exchange, which has similar considerations to crypto.

Schroders and Lloyd's Wealth Arms Confirm Joint-Venture Talks

Schroders and Lloyd's Banking Group have confirmed they are in talks to form a wealth-management alliance.

First reported by Sky News, the firms have outlined intentions to forge greater ties by moving the bank's £13 billion (\$17 billion) wealth-management arm into the joint venture. According to reports, Lloyd's would use the merger to harness Schroders' technology and investment-management capabilities, and in turn, enable the asset manager to benefit from Lloyd's distribution network.

Wealth management has been a growth area for Schroders in recent years, with an eight percent rise in net income to £143.8 million (\$187.7 million), according to its 2018 half-year results.

Schroders spokespeople say that it is "in discussions with Lloyds Banking Group PLC with a view to working closely together in parts of the wealth sector. Discussions are ongoing and there can be no certainty that these discussions will lead to any formal arrangement being entered into."

Northern Trust Announces Outsourced Trading Capability

Northern Trust has announced the launch of an outsourced trading capability for asset owners and asset managers.

Northern Trust already had an existing offering in this area, although the product has not been formally launched until now. In 2016 it acquired Aviate, an equity brokerage firm, and landed its first customer in January 2017. In July 2017 it acquired an outsourced execution business from State Street when it closed its European trading operation in London. Northern Trust gained 11 new clients through the acquisition, bringing the total to 12. It has grown organically since and today has 23 clients.

"The reason we are formally launching it now is that the market landscape has changed significantly, mainly for asset managers," says Glenn Poulter, vice president for global markets. "There is a lot of pressure, and we have seen a lot of fee compression, with fees coming down from some of the larger global asset managers—Vanguard, Fidelity et cetera. We have seen a shift in the mood from active to passive investing."

Winners' Circle: SS&C Advent

Practice Makes Perfect

SS&C Advent won the best accounting system provider category in this year's Waters Rankings thanks to two products—Geneva and Advent Portfolio Exchange—that it inherited as part of its July 2015 acquisition of Advent Software. [Victor Anderson](#) chats to Robert Roley, senior vice president and managing director at SS&C Technologies, about the firm's growth in recent years by way of acquisition, and the particular pain points expressed by its buy-side clientele.

Q It's been three years since SS&C acquired Advent Software. How has the integration panned out and what has the response been from existing Advent clients?

Robert Roley, senior vice president and managing director, SS&C Technologies: The true test of any acquisition is the impact on clients. It's gratifying that those results speak for themselves with multi-year highs in client satisfaction and retention, which we track with rigor. Joining SS&C Technologies has been a major shot in the arm for Advent Software. It's given us the scale and scope to move the business forward and ensure that we can better support our clients' goals, in whichever markets and segments they operate. Post-integration, we've improved our core products by adding new user-friendly functionality and flexible deployment options. We have also launched five new products and acquired two businesses, as we build out our offering to meet clients' evolving demands. I'm proud of what we've accomplished as part of SS&C over the last three years, and we are determined to maintain this focus going forward.

Q SS&C might be described as an acquisition-driven business that has perfected its strategy over the years. What are the perennial challenges it needs to address when integrating new businesses and technologies?

Roley: Acquisitions are a valuable component of SS&C's strategies, but I wouldn't call the business "acquisition driven." Before 2018, there had only been one acquisition over \$1 billion in the company's 30-plus year history. That said, acquisitions are an effective way to grow our business, acquire great technology, and expand our team with more talent and expertise. I think SS&C has a strong track record of success in our tie-ups because we take a different approach from other companies I see. We find champions within our current team and the newly acquired business who are excited about the opportunities that combining forces creates. We then try to support that.

Other companies often play defense and/or spend their energy standardizing every process. We like to get people excited, get some skin in the game, and we try not to weigh them down with unnecessary integration tasks simply for the sake of integrating or becoming homogenous.

Q One of the issues raised by Advent's clients in the wake of its acquisition was around future product support. How has SS&C ensured Advent's heritage and DNA lives on now that it is part of SS&C?

Roley: In 2015, SS&C and Advent spent considerable time figuring out how we could bring more value to clients. This included taking the best

of both companies and combining our capabilities to form new, more powerful offerings. One of the values SS&C and Advent shared was a healthy respect for expertise. That common value created a bond that has helped maintain Advent's culture of innovation. In addition, we've increased our investment in our core platforms. Clients see that R&D pay off in the quality of solutions they use each day and their future development roadmap.



Robert Roley

Q SS&C has made a number of other high-profile acquisitions in DST Systems, Eze Software and Intralinks. How have those businesses bedded down in the SS&C stable and what has the response been from the market?

Roley: It's early days, but we're making good progress. DST is a fairly large organization, so we are being prudent in the changes we make. Mike Sleightholme, who is now in charge of DST, is doing a great job with a very complex business.

Eze only officially became part of SS&C in early October. However, Eze is no stranger to SS&C, and particularly Advent. We have more than 100 mutual clients, and during our near 20-year partnership we have ensured that our systems complement each other well. We now see plenty of opportunities to enhance that relationship by developing new solution bundles, as well as offering new services to Eze's clients.

The Intralinks acquisition is still closing. We know them well though, we respect what they've built, and we look forward to working together.

Q It is no secret that the investment management industry is a tough place to operate in right now. What is SS&C hearing from its clients in terms of demand for additional services and technologies, and how is it responding to those demands and alleviating some of their pain points?

Roley: Our clients want to improve how they service their end-clients, make good investment decisions, and run their businesses efficiently. How they accomplish that varies depending on the segment, but common themes include: enhanced digital engagement with end-investors through communications tools and portals; data management and governance tools to ensure investment decisions are based on timely and accurate data; and better solutions for front-office users to manage research, model and build portfolios—the Eze acquisition will further enhance our existing capabilities in this area; and finally, improved scalability and variable cost structures. **W**

THE NEW OIL RUSH

An Examination of the Alternative Data Market



Banks are looking to cash in on the alternative data boom, but they might find themselves in an uphill battle to claim their territory. *Waters* spoke with over two-dozen companies about the alternative data market to gain a better understanding of how the vendor community has approached the space and how the sell side is looking to fit in. By Anthony Malakian

From Texas to Pennsylvania, and Calgary on down to the Gulf of Mexico, oil rushes have played a key role in the shaping of North America, bringing with them both vast wealth and colossal despair. The latest oil boom is unfolding in North Dakota. From 1920 to 2009, the state's population had rested steadily at around 640,000 residents. But as the financial crisis started to unfold and the price of oil shot up to \$100 per barrel, a relative flood of people entered the state looking to tap into its vast petroleum resources coming from the Parshall Oil Field, which was discovered in 2006. The result was the population increasing by 18 percent to just over 755,000 from 2008 to 2017, after decades of essentially net-zero growth.

In today's financial markets, data is often referred to as the oil that runs the machine. If that's indeed the case, then the vast alternative data market represents the Parshall Oil Field at a time when regulation and the challenge

of finding new forms of alpha generation are leading to the \$100-a-barrel oil boom.

According to alternativedata.org, there are 375 alt data providers focused on providing information to institutional investors; in 2013 there were fewer than 250. According to IBM, 90 percent of all alternative data in circulation today was created in the last two years. And capital-markets consultancy Opimas estimates that in 2018, the alternative data market—including data sources, IT infrastructure, system development and human capital—will exceed \$5 billion, and will climb to almost \$8 billion by 2020.

This bull market can be attributed to three primary causes: the explosion of available data; the ability to store that data, cheaply; and the growing sophistication of analytics tools that can deliver insights faster at capabilities beyond human cognition. But there's more to it than data and tech advancements—the revised Markets in Financial Instruments Directive's

(Mifid II's) research unbundling component has proven disruptive to the old days of brokers selling information to the buy side; buy-side firms are relying on the vendor, fund administrator and broker communities to help with their data collection and management needs post-2008; and the rise of passive investing have cut into hedge fund profits, so they need to find new sources of alpha generation.

As a result, the sell side is trying to figure out how to get in on this boom. Citi is creating a consulting team that will work with clients on bespoke alternative data projects; Goldman Sachs is building a team to sell its own internally created/captured data back to clients; Morgan Stanley is creating a consulting team and application programming interfaces (APIs) that will allow users to feed into curated datasets. It is no easy task.

Waters spoke with over two-dozen individuals at a range of institutions—including banks, hedge funds, traditional asset managers,



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“I really thought the buy side would adopt these methodologies, these techniques that we had been utilizing for a decade-and-a-half, much sooner. What really ended up being an influx of interest, demand and revenue growth for us didn’t really kick in until late 2016, early 2017. Since then, we’ve seen it really pick up.”

Michael Marrale, M Science

vendors, exchanges and consultants—to better understand the alternative data market, and found that banks are worried about being left nibbling at the scraps of a burgeoning market. But, in reality, they’re already well behind the vendor community. Data giants like FactSet and Bloomberg have already built out their services. At the same time, the fintech community is proving to be its usual disruptive, nimble self.

Reinventing the Wheel

From Bank One’s ill-fated ownership of Telerate to the bank community creating trade reporting utilities such as Boat, the sell side has had a shaky history of owning data providers, as they seem to lack the long-term commitment necessary to see these endeavors through.

Several sources laid out a timeframe for bank involvement in the alternative data space, which generally follows a pattern in which banks try to figure out a way to sell their own internal data, buy a third-party provider rather than continue to build the team internally, and then spin out that unit after disillusionment sets in. That, or they try and become an alternative data hub, before realizing that there are already a multitude of specialists in the space who do it better, then buy them, and so on.

“Why become a data vendor and compete with the likes of FactSet, Bloomberg, Refinitiv? It doesn’t make sense,” says Bruce Fador, head of Fador Global Consulting Group. “The buy side is not going to embrace that model. The sell side isn’t exactly unbiased—they can’t become Switzerland and market it as effectively as a vendor can. You’re in the market of selling ideas [through research] and these aren’t ideas.”

A data head at a tier-one US bank echoes Fador’s sentiments. “My personal view on the alternative data space is that the jury is still out,” says the source. “First of all, a lot of the data just won’t have enough investment value and no one will pay for something that doesn’t improve their signal. Then you’re going to have data that does improve the signal, but the question is, how much will they be willing to pay for it? And are the firms that provide that data going to take broad or narrow distribution approaches with it? Because obviously the more you distribute it, the less value it has.”

The data manager is also skeptical as to how much many of these alt data signals are improvements over more traditional signals—is the cost worth the noise?

“Asset managers are interested in this data, but there are hundreds

of these providers out there, bringing in all of their data, signing a non-disclosure agreement, getting the data in, parsing it, making it usable so you can run your backtest on it, running the backtest. It all takes work and time, and most of our clients don’t have the bandwidth to do it,” the source says. “That’s the argument for creating these marketplaces—what a Citi or a FactSet or whoever would be doing, is, in part, provide a vetting service for clients. As to whether that’s enough to get clients using more of this data—I have to believe there must be some firms out there that are going to want the best data possible to form the best signal, but you have to be trading pretty actively for a lot of it to make sense monetarily.”

The most sensible path forward, rather than competition, may be cooperation. Indeed, early signs of that are beginning to emerge.

Come Together

7Park Data licenses from first-party data sources, taking in their raw data, and transforming those feeds into derived datasets and market indicators. Founded in 2012, the vendor has built an infrastructure that can digest massive, unstructured datasets and turn those into something usable. While that will remain its bread and butter, now it is also essentially licensing that infrastructure out to the sell side.

Brian Lichtenberger, CEO and cofounder of 7Park, compares the service to how Amazon built Amazon Web Services to power its e-commerce business, but then realized that the cloud could have utility to others.

“That’s where our services come into play,” he says. “Essentially, we have the ability to repurpose our infrastructure to help data owners get value from their own data. For example, a bank has some type of data on some consumer activity, but it’s not in a form that plugs into their systems or that can be easily analyzed. So they can

plug that into our infrastructure in the cloud, we do our work to normalize it and make it useful and drive analytics, then we deliver that data back to them and they use that data to make their own decisions internally, or they can take that and commercialize it, or whatever they want to do.”

He says one large bank and another large financial information company are using the new service. These projects can be as simple as normalizing a bank’s data so that users can click through to receive reports, or more complex use cases, such as creating a panel and normalizing the dataset in a way that both delivers analytics and validates those analytics against other datasets.

“We’ve got real technology that we’ve created over the last six years with a team of experts, engineers and data scientists,” Lichtenberger says. “That’s a highly scalable infrastructure and speaks to a similar end use case that a bank might have with its own data.”

It’s not just the traditional fintech community eyeing this potential new frontier. A year-and-a-half ago, Nasdaq launched its Analytics Hub, the genesis of which came about from its own journey with data science and machine intelligence projects through its Innovation Lab, which was created in 2015.

Through the Analytics Hub, Nasdaq looks to sign exclusive partnerships—such as those with data providers iSentium and Prattle—and bring in other non-exclusive datasets where it structures and cleans the data to provide back to buy-side firms, so they can run their own analytics.

“We’ll never replace the need for our buy-side customers to invest in these capabilities on their own, but our goal is to make it easier for them so they can spend more time on figuring out how to make clean, reliable data work for their processes and investment style, and less time on the data janitor clean-up work,” says Bill Dague, head of alternative data at Nasdaq.

Dague says Nasdaq would be “great” at helping banks and brokers to monetize their own internal data.

“When you look at the sell-side phenomenon there, in my view when I was out there early on in the Hub days talking to these sell-side banks, I was almost always talking to someone in prime brokerage,” he says. “The idea there is they want to know what’s going on in the market: ‘How can I advise my clients? How can I make sure that I’m up to date on what’s going on?’ What’s interesting is they’re starting to execute and establish a position, but also they’re branching out a little bit and starting to explore the data they have to offer and monetize that. I think that’s going to be a fraught endeavor in a lot of ways. It will be an interesting development to watch because there’s quite a bit that the banks have to balance. That’s something we could absolutely do; we would be great at it. That falls into our core expertise. I think there’s a lot of opportunity there.”

Over Promise, Under Deliver

Today, there is a certain level of expectation on the buy side when it comes to alternative data. A few years ago, the big race was to find new datasets and stake a claim, not unlike finding and tapping a new well on an oil field, and while that’s still an imperative, by and large, that piece is taken for granted. Now, what is expected is that

vendors—and brokers, should they look to enter the space—will provide the analytical tools and visualization to easily extract the value of the raw data, says Octavio Marenzi, CEO of Opimas.

And if banks want to monetize their own data, it will be more than outside forces pushing back—the call will be coming from inside the house.

“The sell side, in general, has a bit of an antagonistic relationship with the providers of alternative data,” he says. “What the sell side would love to do is use alternative data sources in their equities research and then tell their clients that they analyzed 50 billion credit card transactions and they think this is going on in these sectors, and then the buy side doesn’t need to buy that underlying data service; the sell side will do the heavy lifting for them. [As a result] a lot of the people who sell the data are now saying they’re not going to sell the data to the sell side at all anymore. So certain vendors have said no more data to the sell side because it cannibalizes their own business.”

The head of research at a pension fund with over \$30 billion under management is skeptical of these sell-side efforts. In the source’s 20 years on the buy side, they say that they have seen the brokers “offer the world” but routinely under deliver. What often happens is that they understand the market need, but lag when it comes to human resources and the institutional resilience necessary to build robust, interconnected systems and the failure that will eventually underpin any successful technological advancement.

“Before it was about, ‘We’ll help you make better decisions with your stocks.’ Now it seems like, ‘We can help you with your data management stuff,’” says the head of research. “The problem with the data management stuff is that there’s an ongoing maintenance element to it that’s really hard to do at arm’s length. So you can have a research service, which is arm’s



Nasdaq Analytics Hub

length—you get an email once or twice a month and here it is and this is what we think about a bunch of stocks to help you do your job. But with the data and technology side, you often need to be much more involved behind the scenes and be much more responsive. It feels like it's a high value-add, but also a high engagement activity and it's hard to create scale off of that."

The source sees the alt-data space for the sell side as being more of a talking point for the brokers when dealing with funds, which—outside of the sophisticated quants—are largely still trying to figure out how they can capitalize on this explosion of new and diverse information.

"The day you turn on CNBC and you start to see a segment describing alternate risk premia and the different kinds of factors, that's the day you know the market is ready," they say. "Until then, you're going to see earnings announcements and [host Jim] Cramer talking about the world—that fairly straightforward, anybody-can-pick-it-up-and-look-at-it language. Until then, much of the alternative data market will remain niche and specialized and not prime to mass distribute."

Outside of historical problems with bank ownership of data providers, it's important to recognize that the sell side is also starting to encroach on turf that has been well-tilled already by the vendors of this data, which can be effectively broken down into four categories. There are the first-source providers that actually collect the data to be sold—those that collect the raw satellite imagery or mobile-device pings to cellphone towers. There are the intermediaries that take raw data and transform it into easily understood metrics. There are the data aggregators and marketplaces that are aiming to become somewhat of an app store or one-stop shop. There's the already robust consultancy community. All of them have years-long headstarts on new sell-side entrants, and will not be easily dislodged.



Bill Dague
Nasdaq

Origin Stories

Founded in 2002, Majestic Research aimed to capitalize on the internet, recognizing early on that people were leaving a digital footprint with every click of their mouse. The vendor would capture that information and sell this early form of alternative data to clients who were hoping to use it to make more informed investment decisions.

In 2010, Majestic was bought by agency broker ITG for \$56 million, becoming ITG Investment Research. Then, in 2016, Leucadia National Corp., the parent of Jefferies Group, acquired the vendor and gave it a new name: M Science.

M Science's early entry into the alt data space was one of fits and starts, but those efforts are now reaping dividends. "I really thought the buy side would adopt these methodologies, these techniques that we had been utilizing for a decade-and-a-half, much sooner," says Michael Marrale, the company's CEO. "What really ended up being an influx of interest, demand and revenue growth for us didn't really kick in until late 2016, early 2017. Since then, we've seen it really pick up."

In 2019, the company is planning to launch a healthcare practice, as well as expand its industrials coverage. "It's very early days for us, but if you think about the things that matter to fundamental analysis, similarly we're exploring ways to using alternative data to gain insight into the entire healthcare ecosystem," he says. This includes—but is not limited to—pharmaceuticals, biotech, hospitals, payers and providers, where M Science will provide insights into these companies, sectors and people to help investors in the decision-making process.

But even for a company that has an infrastructure in place to bring in new datasets, what's involved in the process?

First, just like with oil, there's exploration. So the process begins with canvassing what's available—though sometimes, clients will simply come and help M Science to target their

efforts around what they specifically want. Once they come across something that they feel could be of value, they must next ensure that the dataset has the proper permissions and use rights in place, and that there isn't any personally identifiable information (PII) available in the data.

M Science has a staff of 115 people—including a 45-person research team—with plans to hire another 40 people in the near future to help with its growth. Those analysts then go through and make a decision on efficacy with regard to alpha generation.

That process, from search, to compliance, to testing for a single dataset, can take four to six months, Marrale says, and requires members of the tech, data science and research teams to be working in unison. Then, if they actually decide that this is something that should be incorporated into the M Science offering, they will look to sign a multi-year licensing agreement with the provider. "We don't really do anything for less than three or four years because there's so much work up front that goes into product development," he says.

Only once they have signed the deal do they get to work on turning it into a usable product, by incorporating the dataset into a particular analyst workflow, and, in some cases, creating derived data products for clients.

"What we're seeing is that those clients that have been working with alternative data over time, as they become more sophisticated they want to go deeper into the data. With every report we release, we provide backup report analytics and we give our clients the ability to deconstruct our own analysts' conclusions and take a look at the data for themselves," Marrale says. "So as clients become more proficient in the use of alternative data, we're building more data products and data platform solutions that give clients the ability to go and look at the data themselves."

It's important to note at this point that even though a bank is looking to monetize its own internal data, the

same arduous process described above will likely have to take place. It can be even more complex for banks that have to deal with twitchy legal departments or individual business units not wanting to give the data up—perhaps for reputational risk reasons, perhaps because they're not inclined to help a competing business unit.

Benefits of Size

M Science is one of many specialist data providers in the market. Its size—as well as smaller companies in the space such as Eagle Alpha, 7Park Data and Quandl—gives it the ability to adjust business plans on the fly. But it must also compete against the prominent data providers in the financial markets, too.

About two years ago, FactSet saw the growth of the alternative data usage on the buy side and tried to figure out how to get into the game. While FactSet was used to integrating data with its own symbology, it had to decide: Could it embrace these new and varied datasets, but also consistently tie them into its symbology? Otherwise, what is the value-add in an already populated market? It created the Content & Technology Solutions (CTS) group and appointed Rich Newman to head it, with the goal of combining FactSet's content along with integrated datasets. "We see our strength as being the data engineers to configure the data and then let our clients run the data science," Newman says.

Open:FactSet—the vendor's answer to the buy side's alt-data needs—is built on top of Microsoft's Azure cloud infrastructure. In the cloud it has put all of FactSet's content—its standard feeds, fundamentals, estimates, ownership, supply chain, events, transcripts—alongside partner content, such as datasets from RepRisk and Estimize. "It's not easy," Newman says. "I think a lot of people underestimate how hard it is to do the integration."

The latest offering to be added to the Open:FactSet marketplace is called

Data Exploration, which allows users to interact with data from the marketplace in a hosted environment that includes industry-standard databases, programming languages—Python and R—and data visualization tools. Its aim is to allow users to cut down on the time and cost of trialing data internally by doing it in the cloud. The service is being released in a "for-trial environment" currently, Newman says, adding that it will enhance the offering over time so that users can build their production environments directly inside of Open:FactSet.

"You watch a show like *Billions* and see hedge funds using satellite information, but it's gone way beyond that now," he says. "Firms now not only want to look at alternative data like satellite and sentiment, but actually data from larger organizations, around weather information and other types of data. We see our obligation as building the platform to enhance that information so that clients can get to the data science more quickly, as opposed to spending all their time doing the integration themselves."

Similar to the process described by M Science's Marrale, FactSet has a team of engineers, product developers, strategists and data scientists that are looking through a list of 400 to 500 potential partners to incorporate into the marketplace. "We won't put up just any data; there's a lot of work to incorporate the data, so we want to make sure that there's client demand," Newman says. The vendor also has large teams comprising over 1,000 people, located in India and the Philippines, which conduct concordance and matching on the datasets in the marketplace.

Unsurprisingly, the other market data players are already well-established in the space, as well. Take, for example, Bloomberg—you can't charge over \$20,000 for a Terminal license and be seen as being left behind in the alt-data oil rush.

Through Bloomberg's Enterprise Data License offering, using its <GO>



Rich Newman
FactSet

functionality, users can gain access to news and social sentiment analysis, geolocation data, supply chain data, and environmental, social and governance (ESG) datasets.

"We have been providing a variety of alternative datasets through the Terminal for nearly a decade," says Ben MacDonald, Bloomberg's global head of enterprise product. "More recently, we have made some of these datasets available through our Enterprise Data License—for example supply chain, ESG data—and plan to continue expanding our offering, both on the Terminal and through data license."

And, of course, the major fund administrators and custodians in the space, such as Northern Trust, are figuring out how they fit into this new landscape. Peter Sanchez, head of alternative fund services at the custodian bank, says its job is to have readily available data for buy-side clients to tap into to enrich their own data warehouse, together with the bank's data and the fund's data.

"Five years ago, the idea for them was to wrap controls around the processes and the reports and the services that the administrator was offering to the manager," Sanchez says. "Now, it's to the point where, yes, all those controls are in place, but they want to take data management for their oversight and control and transparency to their investors, so there's an expectation that you have a means to send data back to the client and they have access to your transaction data, the investor data, the portfolio data, the performance data, in a readily available way."

Finding a Spot

Others see themselves falling into the eventual mergers-and-acquisitions (M&A) shakeup, which is inevitable as the number of alt-data providers reaches a saturation point.

In 2010, Emmett Kilduff started at Morgan Stanley and got an inside look at the bank's AlphaWise unit, which was created to provide research to the

buy side. What he saw inspired him to set up Eagle Alpha six years ago.

Today, the vendor has a database of 850 datasets relevant to the buy side, spread across 24 categories, such as consumer transactions, satellite, social media and sentiment. It is currently in the process of expanding its oversight to the Asia-Pacific region and, specifically, China.

Eagle Alpha provides data sourcing, dashboards on top of datasets, bespoke alternative data projects, and an industry forum. It's a self-contained ecosystem, in many ways, and Kilduff says that a deal could be in the future.

"The winner will probably be a type of company that has done that type of job for decades, such as a Bloomberg or FactSet," he predicts. "They've done that for decades, just on traditional data, so why wouldn't they do it on alternative data? Is an investment bank really going to try to step up and compete with one of those firms? I'd be surprised, but I wouldn't rule it out. In the end, at Eagle Alpha, we're humble enough to recognize that we are an early pioneer in the space but we're more likely to be part of the M&A that will come down the line."

And still others are changing the way that they deliver data so as to



Emmett Kilduff
Eagle Alpha

better position themselves against rivals. Orbital Insight, which has established itself as one of the major providers of satellite analytics, is set to broaden its offering in 2019. At this year's Buy-Side Technology North American Summit, held in New York on October 7, Ben Rudin, commercial business lead for Orbital Insight, said the company will eventually use a platform-as-a-service (PaaS) model to deliver information to users.

"This is the future of Orbital Insight," he said. "Previously, with consumer and energy and a one-off product, that's currently the model today and in the past, but the future is a PaaS—[or] as we call it, do-it-yourself geospatial analytics. The end game is to have you, the user, work with our platform to circle anywhere you want in the world or it's already in our area-of-interest database and you can run your time series yourself to track cars, planes, shipping containers, etc.—you can do that yourself."

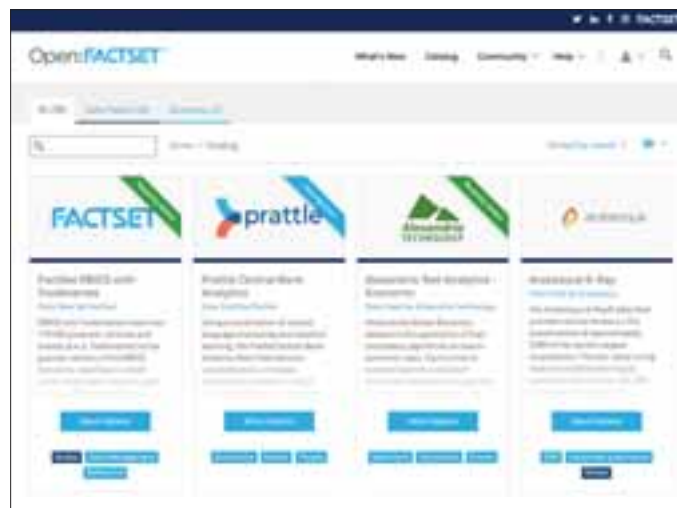
While Rudin declined to provide further specifics about the project, Opimas' Marenzi, who authored a report examining the alternative data space recently, says that such services are in production already, such as SpaceKnow. He also says this

move toward a PaaS offering will help Orbital Insight to move into closer competition with firms such as Quandl, 1010Data, and 7Park Data, "but it will require the company to provide a broader range of datasets and not rely solely on satellite imagery."

A Whole New World

As the sell side, in general, goes about this transformation, though, it's worth considering a few key points. Do they have the institutional fortitude to monetize their own internal data? Can they do it better than a tech company that has been doing this kind of thing for years? Can they be better consultants to the buy side even when they, themselves, are trying to figure out how to find lasting signals from this information? And, perhaps most importantly, this: Many of the vendors mentioned above have had to readjust their focus over the years as they've learned the pitfalls of the market. Some may succeed, some may fold, and some may be bought. Do siloed banks have that kind of vision, patience and dexterity to fail and adjust and iterate?

Much like an oil rush, if you get to the game even a shade too late, the well might just have run dry. **W**



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STP: Shedding the LEFTOVER INEFFICIENCIES



The age-old problem of achieving straight through processing remains a challenge for some buy-side firms today. But time is running out. Regulation, data quality issues and fee compression have conspired to up the ante to eliminate these leftover inefficiencies and unresolved technology problems.

By Josephine Gallagher

Five years ago, when Erik Kaland, COO of Storebrand Asset Management, joined the firm, he inherited a problem. Norway's largest investment manager was laboring under decades' worth of built-up issues—structural inefficiencies; manual processes; custom-built technologies and fragmented systems architectures all combined to create a costly, ineffective technology base at the business.

Worse, some of the employees who had put this in place, or developed the platforms in the first place, had left the firm, leaving very few who knew how to fix the car when it broke down.

“The picture I was confronted with was that we had a lot of customization and many systems, more than 100 we counted at one point, and we no longer had the skillset in our employees to maintain and develop these further,” says Kaland. “It was very costly, and it reduced our agility and ability to onboard new types of solutions.”

The industry has spent decades trying to upgrade its technology stacks, improve efficiency and automate from the front office to the back office. However, due to the nature of buy-side technology development in past years, the build-up of multiple complex systems has meant that



“They are really sitting on the edge, held back by their inability of time and budget and not really wanting to spend that on what runs, then suddenly they realize they have grown so big and are now under pressure to upgrade. Better to think ahead than have to execute under pressure.”
Chitra Baskar, Viteo Fund Services

some asset managers are struggling to get their systems to communicate. It might seem odd in 2018, but the bulk are still trying to resolve the problem of straight through processing (STP).

Standards

“It’s a kind of an 80/20 rule where the industry has gone a long way in the last 20 years to improve things but it is now at the difficult part, where to get to the next improvement, you have got to do some radical surgery,” says Jerry Norton, head of strategy, financial services at CGI, a technology consultancy.

Historically, asset managers have tended to approach their technology strategy much like it was a candy store, by picking and choosing platforms from various third parties, according to need or desire, and by building out proprietary systems. Problems then emerged when trying to bridge these technologies from multiple sources to create effective STP chains. Today, many heavyweight asset managers have reached a high grade of STP across their firms, often ranging at 90 percent or above, according to sources. However, those without the resources of the largest global money managers are still catching up on decades-old technology debt

at a time when new challenges have emerged.

“They are really sitting on the edge, held back by their inability of time and budget and not really wanting to spend that on what runs, then suddenly they realize they have grown so big and are now under pressure to upgrade,” says Chitra Baskar, COO at fund administrator Viteo Fund Services. “Better to think ahead than have to execute under pressure.”

For many, that pressure has already arrived. A combination of new practices around settlement discipline, owing to Target2-Securities in Europe, and the recent Securities and Exchange Commission (SEC) ruling on T+2 settlement in the US, for instance, have forced operational processes to be accomplished faster than ever before. Outside of equities, the same pressure is being felt in fixed income and derivatives, owing to reporting mandates in rules such as the Dodd-Frank Act’s Title VII, the European Market Infrastructure Regulation, and the revised Markets in Financial Instruments Directive (Mifid II).

For the first time, many buy-side firms are being forced to capture data intraday throughout each transaction lifecycle across all asset classes—a complex task by any measure, even

for sophisticated quant shops, let alone smaller asset managers that may still rely on software that was regarded as outdated years ago.

CGI’s Norton explains that regulation has been a key driver in achieving STP but that in the lead-up to Mifid II some firms adopted compliance technologies in a hurry before tackling fundamental issues such as future-proofing their infrastructure and ensuring interoperability between old and new systems.

“A lot of Mifid II was done as workarounds and there are still a lot of reporting issues that are workarounds,” he says. “You can keep on applying a patch to a patch but at some point you have got to start again and it is getting to that tipping point, I think.”

To add to the problem, some parts of the industry are still largely untouched by automation. One example of this includes the repo market, where transactions are still carried out using manual processes or basic technologies such as telephones, email, Microsoft Excel spreadsheets and even faxes. EU lawmakers have recognized these operational issues in this segment of the market, and are set to endorse the Securities Financing Transaction Regulation (SFTTR), which is expected to go live in first quarter of 2020.

One perspective is that achieving full STP can prove challenging without some level of industry standardization. A single asset manager may leverage technologies from various providers across multiple global jurisdictions. Today there is no common underlying thread that links these fragmented systems to operate seamlessly without the addition of multiple application programming interfaces (APIs).

This doesn’t just affect buy-side firms, but also the custodians and



Erik Kaland
 Storebrand Asset
 Management



Jerry Norton
 CGI



asset servicers who handle their processing. Lou Maiuri, head of Global Exchange and Global Markets at State Street says that some of the issues of surrounding the age-old problem of STP have emerged due to the lack of standardized processes or numbering systems for currency trading, repos or derivatives. He explains that as a major custodian, State Street may receive different versions of the same transactional data sent from individual counterparty platforms or vendors, making it increasingly difficult to enable seamless STP.

“As a custodian and in our role we are dealing with every trading system on the planet,” says Maiuri. “So as people and attorneys come together to invent a new investment vehicle and trade it, we have got to get it into the system, strike a net-asset value, get it settled and deal with the safekeeping. And we don’t always know what these

things are so there is a lot of what I would call friction in the machine.”

Therefore, the nature of trading on the buy side, which can stretch into the esoteric more often than not with customized instruments and exotic structured products, often hinders attempts to standardize.

“In the land of alternatives, there is no real ability to perform STP,” says Melanie Pickett, head of front-office solutions at Northern Trust. “In the European markets it is a little bit different with industry utilities and the ability to automate hedge funds subscriptions but there is no industry clearinghouse for these types of transactions.”

Under the Knife

There is no easy fix. Some firms, such as MEAG, which manages the assets of Munich Re and Ergo, have spent years getting to a point they are satisfied with.



Lou Maiuri
State Street

“Our vision is for 100 percent STP across the liquid environment,” says Claudio-Peter Prutz, head of digital business services and organizational development at MEAG. “We truly believe in the value of our portfolio managers, as human beings, so our starting point would be the optimization of the portfolio. From there, it’s a matter of pressing a button and that is it.”

In the late 1990s, MEAG made a strategic move to upgrade and automate its front-office functionality. Today the Munich-based asset manager is striving for 100 percent STP across its front-to-back operations using a single automated platform from a third party, SimCorp. It’s an ambitious target and one that Prutz admits the firm might never reach. To date MEAG has attained 97 percent automation rate across its pre-trade compliance operations, including the management

of 6,500 compliance rules and is aiming to close the remaining three percent across the front and back offices to differentiate itself from its competitors.

“I don’t think that we will ever reach 100 percent, but anything close to 100 percent is highly satisfying,” he adds. “Seamless automation like in this example, can give you a significant competitive advantage.”

For others, it’s been a case of taking a sledgehammer to an aging infrastructure. This is what Storebrand Asset Management’s Kaland had to do upon joining the firm. Kaland explains that as with many other buy-side firms, fee compression, diminishing returns and shift from active to passive investments influenced its decision to scale back its IT infrastructure. Since the restructuring, Storebrand has decommissioned multiple IT systems across order management, portfolio management and external risk systems, resulting in annual savings of at least €1 million (\$1.7 million).

“In this climate of higher costs and diminishing margins, you can either keep innovating, creating leading-edge solutions and services to sustain margins,” adds Kaland. “Or you can go the other way—grow aggressively, consolidate to reduce costs, and be competitive that way.”

Despite the fact that many firms hoping for a silver bullet are effectively in a long wait for a train that isn’t coming, others are hoping that the solution may lie in emerging technology. One, in particular, could prove fruitful in paving the way for improving STP.

Promising Technologies

Distributed-ledger technology (DLT), often referred to in shorthand as blockchain, is touted by many as one of the emerging technologies set to reshape certain aspects the financial markets and resolve some of the industry’s biggest challenges, at least in



Melanie Pickett
Northern Trust

the post-trade space. As one concept, effective STP could be achieved by executing trades or processing data on a distributed ledger.

State Street’s Maiuri explains that blockchain technology could be used to create an industrywide securities master database, or an immutable book of record for trading all asset classes, where every investment instrument would have a globally recognized reference identifier. The idea is that each counterparty would have a transparent view and understanding of each investment instrument created, its transactional data, and how to distribute it.

“One concept here is that you can take these instruments and tokenize them using a blockchain and get rid of some of these problems,” he says. “This technology could tokenize assets in a way that starts to distribute them in a way that is a lot cleaner.”

State Street is currently exploring this possibility of using private blockchain technology to tackle some of the problems relevant to STP and standardization, for the trading of securities or alternatives. MEAG’s Prutz further echoes this perspective in that blockchain technology holds a great deal of potential in resolving some of the operational issues on the buy side, but that the sell-side community is under greater pressure to innovate in this

space. He says there are other emerging technologies that the asset manager is exploring and developing to increase its level of automation across the firm.

“As an asset manager, we have to focus on efficiency,” he adds. “There are some promising developments such as robotics and machine learning, which could deliver more automation and less manual interaction. That is something we are working on as well.”

For those with the budget to do so, some major buy-side firms are actively exploring the use of artificial intelligence (AI) technology for many front- and middle-office tasks. AI can be used to minimize the need for manual processes, as intelligent machines have the capability to process modern-day volumes of data in a short period of time, reduce the possibility of human error, improve data quality and make STP more efficient.

“Really, STP should look at reducing the number of times you bring in the same data and really enhance your data management capabilities,” says Viteos’ Baskar. “And therefore STP becomes a lot easier, simpler and something we can take on.”

She adds that STP can be enhanced by building out warehouses to normalize, clean and process the data. This can be used to enable the technology to more efficiently process the data throughout all event lifecycles and ensure it remains connected as possible at all points. Implementing an effective STP system throughout a firm can require a great deal of resources. But in today’s competitive landscape, with the increasing pressure of costs, it seems the STP problem is worth resolving now rather than holding off any longer.

“Everything needs additional people, time and money before you make this change,” says Baskar. “It is an inevitable thing. You have to consider how long you can push it and some days how to make this change, because you are otherwise working off inefficient products.” **W**



Claudio-Peter Prutz
MEAG

SALIENT POINTS

- Regulatory shifts, costs and data quality issues put pressure on the buy side to shed the leftover inefficiencies and unresolved technology issues associated with the age-old problem of STP.
- Mifid II and T+2 requirements have reinforced the need to phase out the remaining manual processes, uproot legacy technologies and create effective STP systems.
- STP proves even more challenging in an industry lacking standardization across technology and data.
- Emerging technologies such as DLT and AI offer potential solutions to the STP challenge.

If you're looking for an example of tenacity and the extent to which perseverance can pay dividends in the capital markets, you need look no further than Laura Barrowman, group CTO and group chief information security officer of Credit Suisse. Hers is a story of patience, about reveling in the stimulating aspects of a role while enduring the mundane, and grasping opportunities if and when they present themselves. [By Victor Anderson](#)

Some C-level executives

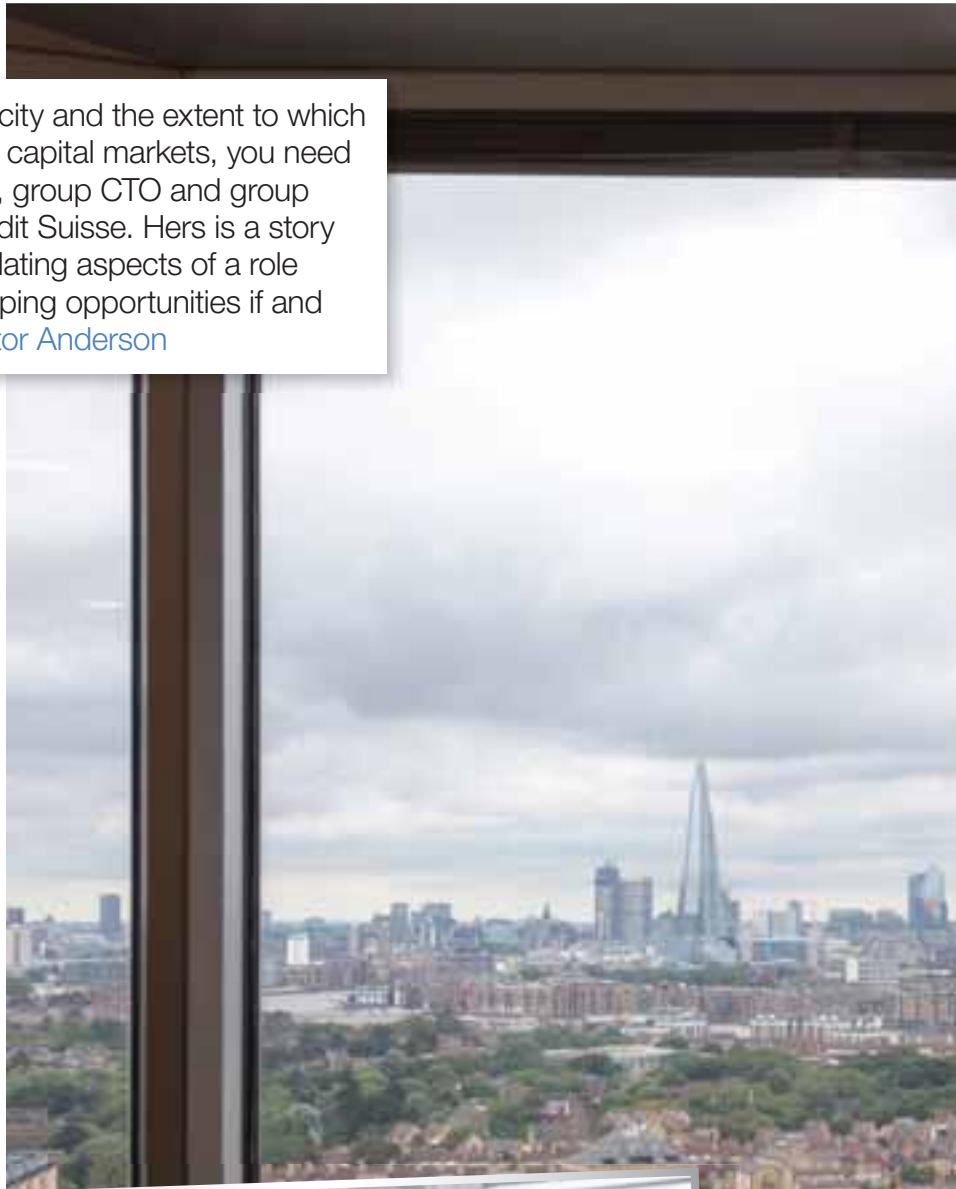
believed they were destined for the boardroom, while others had an affinity for technology and the capital markets from a young age and knew instinctively from early in their careers that they were on the right path. But Laura Barrowman is not one of them.

Not only was she unsure of what she wanted to do when her life reached a crossroads while living in London in the mid-1990s, but what drove her initially to accept her first role at Credit Suisse was the fact that her former boss was heading up the Swiss bank's helpdesk at the time. Little did she know that, two decades later, she'd be responsible for Credit Suisse's global infrastructure.

Barrowman earned a Bachelor of Commerce (BComm) degree at the University of the Witwatersrand in Johannesburg, majoring in business information systems and accountancy. "My intention was to study law and accountancy, but I really didn't like either," she says.

When she graduated in 1991, she says she had little idea about what she wanted to do. And so, like many South Africans with European roots—courtesy of the Dutch, Huguenot and British colonization of the Cape from 1652 until the formation of the Union of South Africa in 1910—she boarded a plane and flew over 5,000 miles north to London to spend a year traveling around Europe. After initially considering a return to the southern tip of Africa in December 1994, she had a change of heart and decided to "stick it out for a while longer" in the UK to "see what came up." That she had already met the man she was going to marry helped sway her decision.

"He's Scottish and would be very upset if you referred to him as English," she jokes. "For the first three or four years I was in the UK, I told myself that I would stick it out for another six months and then I'd





In Praise of Perseverance

Laura Barrowman
Credit Suisse

go home. I was working for Mercury Communications at the time—I started contracting and then joined the company full time, but after a few months my boss left and joined Credit Suisse. At the time—in the middle of 1994—I thought that I really needed to start doing something sensible. I had a job offer from Price Waterhouse, which would have allowed me to complete my articles, but by that stage my ex-boss was running the helpdesk at Credit Suisse and she asked whether I wanted to go and work with her. I started at Credit Suisse on the helpdesk, which I ended up running. I then moved on to desktop support, then second-level support and then trade floor support.”

Learning on the Job

It goes without saying that Barrowman’s career can best be described as one contingent on her learning on the job and persevering, having joined the investment banking industry armed with little more than a BComm and a smattering of experience, courtesy of a soon-to-be defunct telecoms company, which exited the industry in 1999. “Yes, it was [a case of learning on the job],” she says. “The traditional path for business information systems [graduates] would have been development. A lot of my peers and friends who I finished university with ended up focusing on development work. I wasn’t averse to it, but I was enjoying what I was doing and I was gaining more responsibility.”

Barrowman’s rise through Credit Suisse’s ranks, and the additional responsibilities she assumed, ensured that she fast became a crucial part of the bank’s machinery, and as is invariably the case when it comes to business, those amenable to taking on additional responsibilities tend to be given more, much in the same, cyclical way that success breeds success. She took on larger parts of the organization and additional project roles, initially heading up the bank’s web initiative, before moving on to lead its market data functions and



then service support. After overseeing managed support and project roles for a number of years, she moved across to manage engineering (infrastructure products and services) and then on to development and development support, where she was tasked with integrating the different support teams from all the application groups into one organization. It was then that her big break came when her ex-boss—who was head of infrastructure at the time and was instrumental in her joining Credit Suisse in the first place—left the bank. She assumed the now combined reins of infrastructure and application support functions as CTO, heading up an amalgamated group of approximately 7,000 staff.

That was just over three-and-a-half years ago, which now affords her the opportunity to look back and assess her journey so far. “I love the technology piece, I love driving new programs and new pieces of work, and I love the innovation and the people leadership part,” she says. “But I don’t always love everything that goes with the role; I don’t love the budgetary responsibility, even though I’m quite good at it. It’s probably

down to my accountancy background, because I’m all over the numbers—but those things are part and parcel of the job even though it’s an aspect of the role that I could do without.”

Tech Changes

The most notable change Barrowman has witnessed during her more than two decades at Credit Suisse is the extent to which technology has evolved during that time. And for her, cloud has been far and away the most transformative piece of that, even though she admits that banks tend to be slower adopters of new technologies than organizations in other sectors by virtue of their conservatism.

“Cloud is such a game-changer for us,” she says. “From an infrastructure perspective, in a big organization like this—we currently run thousands of applications—any time you want to upgrade or patch, it’s a mammoth piece of work and it’s a huge expense. Cloud is a significant enabler that allows us to be much more current and capable.”

Barrowman explains that cloud also allows Credit Suisse to address some of its end-of-life and legacy challenges, in addition to facilitating the way the entire organization works. This is particularly relevant in her domain, where the physical location and even the time zones of technology staff tend to be inconsequential to the functions they support, as long as flexibility, responsiveness and quality are maintained.

“When I first started [at Credit Suisse], I think we operated a much more DevOps-type environment where everyone worked much closer together,” she recalls. “But as IT grew, it became more segregated. When I started on the helpdesk everyone did everything. Now, because IT is so large, it’s become segregated. Cloud allows us some of the capability to get back to working in a more cohesive way.”

No interview with any capital markets CIO or CTO is complete without discussing innovation with respect to

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“What we have noticed—and this is something that I drill into my team—is that if we have a new product, given the fast pace of technology now, you have to be able to get it into the environment quickly, and similarly, you have to be able to get it out quickly.”

new practices and technologies they might be dabbling in, and how the organization goes about surfacing innovation and introducing it to support the business, especially those functions that have been around for years and might be manually intensive and therefore ripe for automation. Barrowman confirms that innovation is persistently on her and the bank’s radar, and that as an organization Credit Suisse has tried various models when it comes to identifying new technologies and fostering a culture of innovation, openness to change, and nimbleness.

“I once read an article that said that in order to get the most innovative ideas, you need to decentralize innovation,” she says. “Basically it said that the more money you dedicate to innovation projects, the less value you get from that investment. In an internal discussion around innovation projects, someone asked what the business case was for this investment and I remember someone else commenting that if we’re asking for a business case, we’re not talking about innovation. In banks, our thinking tends to focus on business case validity and moving from that to actually innovating is hard.”

Barrowman says the bank is now “pretty good” at trying new technology, and understanding when to walk away—perhaps the hardest trick of all, after investing heavily in something you later have to pull the plug on.

“That’s been difficult for us to get our heads around and I wouldn’t say



our approach is perfect right now, but we are now focused on building motivated, fit-for-purpose teams across the organization, and providing the tools that support collaboration on a global basis,” she says.

The ‘S’ Word

Our conversation somewhat inevitably shifts to the subject of startups and the extent to which Credit Suisse engages the myriad small tech firms orbiting the industry in the hope of catching the covetous eye of a better established fintech firm, or from buy-side or sell-side firms themselves, emulating the stunning (but rare) success enjoyed by the likes of Cadis and BISAM by way of their acquisitions by IHS Markit and FactSet, respectively.

“We work with startups, both directly and indirectly, through many different channels,” Barrowman explains. “We have funds that invest in startups and we work with them quite closely. We also work closely with the tech bankers, [the investment banking division that supports the technology functions, based in San Francisco]. Sometimes they have really good

insights into what’s going on in the marketplace and sometime we have good insights. But as with any big bank, when working with a startup, you have to understand the viability of that business, because ultimately what you want is the best product set that is also sustainable.”

She says the bank supports formal accelerator and lab programs for startups around the globe, in addition to providing various services to startups that might need help in getting visibility and traction with large clients, while the mentorship aspect of these programs frequently has positive knock-on effects on the bank’s own employees. Through these programs, she says, Credit Suisse’s employees gain a better understanding of the process of refining value propositions associated with nascent technologies or services, in addition to fully appreciating the challenges that startups face when it comes to navigating organizational structures, stage gates and the manifold processes inherent within large, complex institutions.

“What we have noticed—and this is something that I drill into my



team—is that if we have a new product, given the fast pace of technology now, you have to be able to get it into the environment quickly, and similarly, you have to be able to get it out quickly,” Barrowman explains. “A lot of what we did historically was build tooling into server and desktop builds, but removing it when applications are built on top of it is very difficult. And so we ended up making long-term commitments to systems, tools and applications.”

Pain Points

While on the subject of the technologies that Credit Suisse has embraced as a means of enabling the business, it seems pertinent to inquire about specific pain points Barrowman experiences during her day-to-day role as the person charged with looking after Credit Suisse’s global infrastructure. “It’s the legacy we’re carrying,” she says without hesitation. “And it’s not the mainframe—that’s quite modern. What I’m referring to is all the legacy builds that we have applications on that are fundamental to the bank and which rely on really old technology, either because it’s vendor technology or because we just coded them that

way. So you have to accept that there is some legacy that you have to live with. How you minimize it, contain it, and secure it is the next big thing.”

Earlier, Barrowman cited cloud—specifically the firm’s private cloud, which she describes as one of her proudest achievements at the bank, even though she isn’t averse to using public and hybrid clouds—as the single, most transformational technology Credit Suisse has embraced, although she is similarly bullish about artificial intelligence (AI) and the promise it holds for the firm.

“Not long ago—perhaps three or four years ago—we were trying to automate manually-intensive processes,” she says. “What we did historically was replace a bunch of people doing process work with a bunch of people automating and writing scripts, because everything had to be scripted. But with the [intelligent] automation tooling now, you can do it once and it can learn across all the builds. That blows my mind—that is phenomenally game-changing.”

In a throwback to Barrowman’s roots, Credit Suisse has rolled out a helpdesk agent called Amelia, from IPsoft, who she describes as “lovely.”

She explains that often people ask Amelia whether she’s a robot, given how life-like she is. “I like keeping track of how many people ask her that question,” Barrowman says, adding that irrespective of AI’s undoubted promise, there is a potential downside to committing so much critical knowledge to a machine. “The thing for me is that you build all your knowledge into Amelia so that she can solve problems, but then you have to ensure that you can get your knowledge out of her, otherwise you’re effectively signing a no-divorce contract with IPsoft,” she says. “The problem with all technology is that we become so reliant on it.”

Creating Problems

Outside of work, it comes as no surprise that Barrowman is passionate about the science, technology, engineering and mathematics (STEM) subjects and playing her part in attracting women to technology roles in the capital markets, although she is “bothered” by the small number of girls studying them. “I’ve been very fortunate: I had great maths teachers when I was at school and I have worked for a number of fantastic people,” she says. “Having said that, it looks as though my own daughter is not going to focus on them, so as a mother I have failed to convince my own daughter.”

She is adamant that in the next 10 or 15 years, if graduates don’t have a STEM background, it will be tougher for them to secure certain jobs, an issue that has been raised by a number of senior technologists in the pages of this magazine in recent years.

“We are building an environment where it’s become more important to have those skills,” she says. “If we have such a small number of girls doing those subjects, we are by definition building an unequal workforce. If all those jobs are going to go to people who have STEM knowledge, and we’re saying eight or 10 percent of females are choosing those subjects, we have created a problem.” **W**



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Emerging Markets Exchanges

Embrace New Tech



While economic measures might place markets in Kenya, Tanzania, Palestine and elsewhere firmly in the “emerging” bracket, their use of technology is anything but. [Hamad Ali](#) investigates.

The very smallest exchanges may still be entirely reliant on outsourcing from larger groups, but others are building their own technology, embracing mobile trading and increasingly examining the potential for artificial intelligence and distributed-ledger technology (DLT) to disrupt—and perhaps, enhance—their own tech base.

In many cases, this may also allow them to leapfrog painful and unnecessary steps in technology development that more mature exchanges have had to experience.

Indeed, the technical sophistication on hand can rival even the most advanced operators.

In and Out

In emerging markets, two firms still dominate technology provision at a base level—Nasdaq and the London Stock Exchange Group (LSEG). Their technology, including matching engines and surveillance platforms, is ubiquitous throughout the Middle East, Africa and Asia.

“We have full end-to-end technological solution[s] provided by Nasdaq,” says Ahmad Aweidah, CEO at the Palestine Exchange (PEX). “We are actually Nasdaq’s oldest client in the Middle East and North Africa region.”

PEX provides an interesting case in point. Established in 1995, it is



“Today, over 300,000 Kenyans have the ability to buy government bonds on their phones. And the reason we do that is we have a very deep and very successful mobile money market in Kenya. Seventy percent of adult Kenyans today transact using their phones. The mobile money has really helped us roll out new products.” **Geoffrey Odundo, Nairobi Securities Exchange**

one of the newer exchanges in the region, the first fully automated stock exchange in the Arab world, and also the only Arab exchange that is privately owned, rather than being state-operated. Using Nasdaq’s technology has allowed it to punch above its weight in terms of sophistication, like its African neighbor, the Nigerian Stock Exchange, which makes extensive use of Smarts and Nasdaq’s corporate tools.

“Just from a day-to-day running of the exchange, we are highly automated,” says Oscar Onyema, chief executive of the bourse. “From delivery of financial statements and market moving news, which is all automated, to how we do accounting and human resources systems. And even the way we regulate our broker-dealer ecosystem.”

Yet even when some markets take external technology, there may be an element of internal customization necessary. This was the case for the Bombay Stock Exchange (BSE), the oldest in Asia—established in 1875—and likely one of the more advanced emerging-market stock exchanges in the world.

It uses technology from Frankfurt-based exchange giant Deutsche Börse, but the German-developed technology wasn’t exactly suitable for

Indian idiosyncrasies. That required some work on their part.

“We took that software, but the Indian requirements are slightly different so we had to make modifications to [suit] Indian needs,” says Ashishkumar Chauhan, CEO at the BSE. “So that then becomes compliant with the Indian regulations.”

As a result, the BSE, which has over 5,000 listings, now claims that it has the ability to take 500,000 orders per second, with a response time of six microseconds—hardly the stuff of dusty, primitive frontier markets.

“In regulatory technology, clearing, settlement, and risk management, we are far ahead of the rest of the world on real-time technologies,” Chauhan says. *Waters* was unable to definitively confirm this claim in time for publication.

On a regional level, local operators are beginning to challenge the dominance of LSEG and Nasdaq in tech provision. The Korea Exchange, for instance, is building technology for the Hanoi Stock Exchange, following approval from Vietnam’s Ministry of Finance. And in Africa, the Johannesburg Stock Exchange—by far the largest and most sophisticated market on the

continent—is continuing to quietly burnish its credentials as a technology provider in its own right, and one which is beginning to even uproot the LSEG and Nasdaq in certain markets.

To start this process, the JSE took an interesting approach—rather than directly sell at the sometimes-large fees charged by LSEG and others, it allowed neighboring exchanges to use its own installations of that technology.

“Many years ago, even before I was at the exchange, the JSE did make the offer to various of the regional exchanges to piggy-back on their system,” says Tiaan Bazuin, CEO of the Namibian Stock Exchange. “This was round about the time when they were in-sourcing from London. Only Namibia took up the offer, but it has worked very well for us because [of] the very low-cost solution, and for small exchanges you really need to control your cost base more than anything else, which we have done very successfully.”

Indeed, it’s not just the JSE, but South Africa more generally which is beginning to flex its muscles as a regional technology powerhouse. The Nairobi Securities Exchange (NSE), for instance, uses LSEG technology for its cash markets, but South African technology for its fixed-income and derivatives segments. Likewise, the Dar es Salaam Stock Exchange switched from the LSEG’s MillenniumIT platform in 2014 to one provided by South Africa-based Securities and Trading Technology for its trading, clearing and depository settlement needs.

“For us [as] a small market, [the] cost element is very important to what we do,” says Moremi Marwa, CEO of the Tanzanian bourse, in explaining the decision to switch.



Oscar Onyema
Nigerian Stock
Exchange



Emerging Market (Tech)

While matching engines, round-trip latency and settlement systems are a market's bread and butter, newer technologies and an embrace of existing trends are one area where emerging markets are equaling—and in some cases, surpassing—developed ones.

Mobile technology, in particular, continues to be far further ahead in African markets than it is in the US or Europe, as evidenced by the NSE's launch of a mobile-only Kenyan government bond offering in 2017.

"It is a first in the world, and we did that last year," says NSE CEO Geoffrey Odundo. "So today, over 300,000 Kenyans have the ability to buy government bonds on their phones. And the reason we do that is we have a very deep and very successful mobile money market in Kenya. Seventy percent of adult Kenyans today transact using their

phones. The mobile money has really helped us roll out new products. That is what we have done so far on the capital markets side."

In Asia, also a hotbed of mobile-phone e-commerce, emerging markets such as Bangladesh are also finding use-cases for handheld devices.

"What we are trying to do is introducing new products with full automation," says Majedur Rahman, managing director at the Dhaka Stock Exchange. "We are fully automated. We don't have the traditional [open-outcry] trading floors. It is all on the web. You can also do your trade through our mobile app, which we have developed ourselves."

Some markets labeled as emerging, of course, have a leg up on others, particularly Greece, which in 2003 was reclassified from a developed to an emerging market following the severe debt crises that gripped the country.



Majedur Rahman
Dhaka Stock Exchange

In the summer of 2015, the exchange was closed for five weeks when there were fears Greece would be removed from the Eurozone.

"In terms of [the] crises, one of our major advantages was that we tried to make use of technology efficiently for markets," says Nikolaos Porfyrakis, chief business development officer at the Athens Exchange. This eventually led to the creation of a Greek corporate-bond market, and the centralization of technology provision and data sales, which are all done in-house.

The exchange is following developments on emerging technologies, such as blockchain. "We believe there is use in DLTs but it is to be proved through a viable business case that it will be useful and will actually make money for the exchange. Therefore, at the moment we are just considering the use cases only, for, I would say, ancillary services, not the main trading, clearing settlement

SALIENT POINTS

- While exchanges in emerging markets are increasingly working with big data, many are still unsure about practical uses for blockchain technology.
- For smaller exchanges, cost is a crucial factor when it comes to purchasing expensive technologies from the likes of Nasdaq and London Stock Exchange Group (LSEG).
- Within the “emerging markets” spectrum, the scope is very wide.

Some exchanges still deal with first-generation products like equities and bonds, while others are developing sophisticated technologies to catch-up with developed markets.

- With the advent of AI and a stronger familiarity with mobile technology, however, some may be able to leapfrog developmental phases that developed markets are still going through.

services,” says Porfyrus. “They have to prove themselves and that might take a bit of time, but we follow the newest technology advances, we follow conferences, we follow things that happen in the industry.”

Representatives from most other exchanges interviewed for this article say they are exploring DLT and other technologies in one way or another. Mahsa Tavakoli Kousha, head of international relations at the Iran Fara Bourse, says the Tehran-based exchange had a blockchain lab and teams for artificial intelligence (AI), robo-advisory and algorithmic trading. Claudio Jacob, director for international markets development at B3, says the Latin American exchange is “following developments” in the cryptocurrency space, although products are a way off yet. The Dhaka Stock Exchange is automating its financial information and disclosures through the reporting language XBRL.

Others are banking heavily on new technologies. Mohamed Farid Saleh, for instance, executive chairman of the Egyptian Exchange—once considered the fifth most active exchange in the world, and one that can trace its roots back to 1883—believes that “the future is quite inclined to be based on artificial intelligence, data mining techniques, machine learning and so on.

“So all exchanges eventually will have to adopt heavy techniques when it comes to machine learning and artificial intelligence to make the sophistication of trading much lighter for the observer from that point of view, and to make use of the humongous data points that exchanges have and databases they have given the trading, the settlement—all of these aspects,” he says.

Dealing with Data

All of this points to a growing level of sophistication—and comfort with—topics that are more traditionally suited to conferences held in the City of London or Midtown Manhattan rather than Lagos, Dhaka, or Dar es Salaam.

The Nigerian Stock Exchange, for instance, has technology partnerships with Tata, IBM and Microsoft to explore big-data analytics, while the BSE has developed social-media analysis technology that proactively powers its surveillance functions, as well as promotes public engagement with the exchange in a way that is less common in the developed markets.

“We have a method through which we take social media feeds from organizations like Facebook and Twitter, and also from various open websites [and other] organiza-



Mahsa Tavakoli Kousha
Iran Fara Bourse

tions,” says the BSE’s Chauhan. “We parse that data in real time and check out rumors about the companies. And then we ask the companies about whether those rumors are true or not, and so the public gets to sort of ask the questions of the companies about the rumors and get the correct information from companies.”

Not all emerging markets exchanges are emerging technology companies, of course. The Dar es Salaam Stock Exchange’s Marwa, for instance, says that as a small market, issues about big data or cryptocurrencies “are a little bit far ahead of where we are.” Likewise, the particulars of Vietnam mean that, for the Hanoi Stock Exchange, governmental approval tends to come before its own experimentation, as CEO Hoang Linh Nguyen says.

“The government is very cautious in approving or regulating a new technology,” he says. “So right now they have assigned the Central Bank of Vietnam to conduct certain careful research on the adoption of blockchain and the regulation of blockchain and related technology.”

Ultimately, while AI, blockchain, and slick trading systems are nice to have, most exchanges say that they remain focused on their core mission—building capital markets, often in challenging circumstances.

“We face the challenges that all exchanges are facing, which is how to stay relevant in a fast-changing world,” says PEX’s Aweidha. “How to stay relevant, how to stay useful and how to perform the functions that we were initially created for, which is basically to help companies and businesses raise capital in order for them to grow and for economies to develop.”

Despite far more limited resources, however, the emerging markets—in a technological sense—increasingly aren’t that far behind the exchanges of the developed world. **W**



Nikolaos Porfyrus
Athens Exchange

Banks and Bank Robbers

EMBARK ON AI ARMS RACE



As cyber attacks become more frequent and costly, banks are increasingly turning to artificial intelligence to protect their networks—but so are the criminals. [By Emilia David](#)

The first recorded bank heist in US history occurred in 1831, when James Honeyman and William Murray entered the City Bank of New York, courtesy of forged keys—and made away with \$245,000 in cash. Fast forward to 2016, and crooks made away with \$1 billion from the Bangladesh Bank by using much the same tactic—although the forged keys were transmitted through the Swift network, via fiberoptic cables, sending fake instructions to the central bank's account at the Federal Reserve Bank of New York.

In the modern world, the days of the stick-up man are fading, but the criminals themselves have mostly swapped their bandanas for

hoodies, their sawed-off shotguns for keyboards. Where banks once had to guard against physical incursions, would-be bank robbers are increasingly turning to artificial intelligence (AI) to assist them with heists.

This broad umbrella of technology—which includes machine learning, deep learning, and automation—is now being deployed for sophisticated cyberattacks. Instead of the old standard distributed denial of service (DDoS) assaults that targets a small portion of a network, attackers can use their own versions of AI programs to craft targeted attacks by mining personally identifiable data from organizations. This data is then used for advanced phishing attacks.



“AI is one of the most transformational technologies we see today in that it opens up possible new products but also new ways to improve operations including protecting our internal and client data.” **Alexander Peh, Royal Bank of Canada**

To combat this, the financial services industry is fighting fire with fire. AI is being developed for use in cybersecurity as it eases many of the burdens they face when confronted with billions of network events to sift through every month, says the Royal Bank of Canada’s (RBC’s) head of innovation, Alexander Peh.

“AI is one of the most transformational technologies we see today in that it opens up possible new products but also new ways to improve operations including protecting our internal and client data,” says Peh. “We live in a world that is increasingly connected so there are more avenues to attack. We do believe that we can continue to innovate and advocate for better security and a deeper talent pool for security.”

Cybersecurity professionals must monitor network activity to look for any potential disruptions and determine where vulnerabilities lie. This requires a great deal of resources, and particularly for larger firms, the amount of data coming into a network is simply too much for people to handle on their own. While some threats are easily identifiable and contained, most of the attacks now being deployed by bad actors are far too sophisticated, fast, and dangerous. An attack can burrow into a network and gather enough information from

inside the organization without anyone noticing.

Much of the AI used in cybersecurity revolves around machine learning and deep learning. Companies program algorithms to search for any activities that are regarded as out of the ordinary within a network.

These technologies look into the threats detected by the system and identify them quickly. Using machine learning, companies can deploy an algorithm on their systems to watch out for any anomalous behavior in a more-or-less supervised manner. As it learns from the data, the AI finds anomalous behavior, identifies if these are attacks or not, and then categorizes it for future reference. Particularly worrisome attacks are flagged to a human analyst, who determines how to respond and locks down any vulnerable parts of the network.

Deep learning, on the other hand, may eventually predict where threats within the network can come in. It can manage to not only identify and categorize threats but help prevent them as well. Much like what machine learning does with identifying and categorizing threats, deep learning also makes its own assumptions about the threat, but what sets it aside is the cognition in the process—it independently learns new patterns and self-adjusts when it detects a threat.

These technologies actually allow banks to deploy automated systems to monitor their networks rather than keep a team to look at screens at all hours.

None of this comes cheap, of course, and it presents an enormous problem for financial institutions, which are struggling to reduce costs in the post-crisis era while understanding and defending against this emerging threat.

Deployment and Investment

Most of the AI development around cybersecurity came from technology firms, with some financial institutions preferring to invest into research projects and provide access to their data for pilot testing. While financial firms may be working on their own machine-learning-based cybersecurity technology, some technology firms have begun to offer their own products, such as IBM with its Watson platform, which it can deploy to combat cybersecurity issues. Other smaller vendors also offer AI-based programs for cybersecurity.

Banks are also investing in the security industry and its efforts to develop AI. Banks like RBC and JPMorgan have invested separately in the technology with a particular view toward developing cybersecurity use cases. JPMorgan says it has been exploring the use of AI in many operational areas, including cybersecurity, but declined to comment further, citing operational concerns.

The Options Clearing Corp. (OCC) started on its journey in early 2018 as it grappled with an increasing number of threats but a limited pool of people. Mark Morrison, chief security officer of OCC, says it became a matter of necessity to explore new technologies to combat cyber threats.

“We’re just starting on this journey but we identified this as an area we wanted to invest in and implement more of these techniques into our cyber-defense capabilities,” Morrison says. “There are basically three main avenues that we value around AI—to use AI to gather and analyze varying inputs of cyber intelligence that we get from commercial and government sources; be able to come up with algorithms to input whatever is critical to our processes and data; and be more predictive in where we think adversaries will attack us based on current tactics.”

Morrison notes the OCC is using third-party service providers for its cybersecurity AI, as its core competence is in derivatives processing, and not developing AI.

“It’s been on everybody’s radar screen for a while. I think we were kind of waiting for the technology and AI to mature and then have a number of the commercial companies and startups adapting more of the machine learning techniques into their security offering,” he adds.

RBC has also begun deploying AI in its cybersecurity defenses, according to Peh, mainly around analyzing the threat data coming into its systems and finding ways to enhance its own models.

“We doubled our cybersecurity spend and that includes investments into adversarial AI and other investments that we have made into the technology,” Peh says. “We use it to analyze 200 billion log events per month and tag it across our entire system.”

RBC inked a research and development deal with Israel’s Ben-Gurion University and its technology arm BGN Technologies for \$2 million earlier this year. The partnership

will allow BGN to explore how to use AI and machine learning to mitigate cyber threats.

RBC’s Peh says part of the research is to look into adversarial AI to find loopholes in algorithms to better secure machine-learning models. It also has a partnership with Canada’s Waterloo University around privacy and AI.

Morrison says the OCC saw the benefits of AI when security professionals were able to advance their knowledge much faster, since they didn’t spend most of their time looking for the threats. He adds the technology reduced their “dwell time,” or the time spent on finding the right point of attack to respond so the threats are identified and dealt with much faster.

The OCC is not the only clearing organization extolling the use of AI for cybersecurity. The Depository Trust and Clearing Corp.’s (DTCC’s) chief security officer, Stephen Scharf, said in an article published on the DTCC website in October that the combination of machine learning and big data provides a holistic picture of a threat environment to a financial institution. Scharf, however, noted the technology can still be made better.

“While there is great



Mark Morrison
Options Clearing Corp.

potential for AI to improve cyber defenses, there is more work to do to learn how we, as an industry, can use this technology going forward in the context of cybersecurity, both on the offensive and defensive side,” he said.

But it isn’t just the increased speed and efficiency in finding threats that attract financial services firms to AI. It’s the ability to move people into higher level tasks that builds a better knowledge base that has helped companies like the OCC.

Slim Pickings

A shallow talent pool of cybersecurity experts has forced financial services firms to look for ways to intelligently use the assets that they do have. Deploying AI lets companies take the more menial job of monitoring the network away from a person in order for them to concentrate on higher level tasks.

IBM Security’s CTO, Koos Lodewijkx, says AI systems take out more than half, at 58 percent, of the manual monitoring and classification activities most cybersecurity professionals need to do, which frees up humans to prioritize other tasks requiring more engagement.

“Without AI you have to staff your security operations center 24/7 because the attacks don’t stop and alerts can pile up,” Lodewijkx says. “The big challenge is how to make your analysts more productive because we’re not yet at the point where





“The big challenge is how to make your analysts more productive because we’re not yet at the point where the system can respond to threats on its own. We still need to put people in tasks more suited for them, things that are completely new or require creativity.” **Koos Lodewijkx, IBM Security**

the system can respond to threats on its own. We still need to put people in tasks more suited for them, things that are completely new or require creativity.”

All this development does not mean the battle has been won against bad actors seeking to destabilize a bank’s network. This technology also happens to be available to them too. Steve Mann, chief marketing officer for vendor Arachnys, calls it an analytical arms race.

“The problem with waiting to get these capabilities is that bad actors use the same technology, so who does it better will win,” Mann says. “We understand firms are cautious about their data but it’s for their own good.”

Mann also notes AI should be fully integrated into an organization’s

network in order for it to properly work. Not doing so could mean more security gaps where hackers can come in and either launch massive DDoS attacks, or leave malicious viruses to cripple a bank—not to mention the existential nightmare of programming in undetected back doors for entry when a bank is not on high alert following the detection of a serious threat. But it doesn’t have to be a completely devastating attack that siphons millions—if an AI system is not fully integrated, hackers can go in and mine data that can be leaked to the public.

Lodewijkx also emphasizes the importance of having access to information, not just around the security infrastructure within the bank. “Cybersecurity is not a discipline unto itself; it connects to how the bank works,” he says. “Some people don’t connect the dots when something happens. Sometimes if there is an uptick in the number of security threats, there is also an uptick in fraud. Both use similar data analytics.”

Additional information about threats from other banks—like those shared by members of the Financial Services Information Sharing and Analysis Center—could also enhance machine learning techniques, says Lodewijkx, as it provides a larger learning base for identification. He

adds IBM is working on a solution that can take insights from shared attack database and bring it to the cloud for additional analytics.

Mann sees potential for increased collaboration between firms around cybersecurity and how it can help develop machine-learning models. He points out that common algorithm development prevents erroneous data from being shared within the industry.

Both Mann and Lodewijkx point out that AI has a specific use in cybersecurity so that other technologies may have to be deployed in conjunction to create a very strong defense. OCC’s Morrison says his company is also looking at other technologies, particularly around data, to complement its cybersecurity AI. Other technologies can also be leveraged for cybersecurity AI, as DTCC’s Scharf points out using the cloud to deploy machine learning provides a greater capacity for ingesting data and churning out insights on intrusions.

AI continues to evolve and the next step for cybersecurity will be even more sophisticated systems that can even figure out specific vulnerabilities within a network and offer suggestions how it can be better secured—or exploited.

Most people think AI is now an inevitable tool to combat cyber threats. As the cyber arms race only grows in strength, financial organizations have to rely on more sophisticated tools in order to combat complex threats. These are not going to go away and as long as there’s a target, bad actors will also find a way to attack them.

“Banks have no better way forward but to use this technology; the environment is too complex, the attacks are becoming too sophisticated and there continues to be a lack of talent to cover the amount of work that needs to be done,” says IBM’s Lodewijkx. **W**

SALIENT POINTS

- AI is being deployed for cybersecurity purposes, as the technology can take in massive amounts of data and spit out alerts much faster than humans. It is also being deployed by the people seeking to infiltrate bank systems.
- AI, particularly machine learning, can cut the time spent on manual monitoring and identification of incursions by more than half, freeing up human resources for more complex tasks.
- Cyberattacks are growing both in frequency and sophistication, which makes the faster identification of attacks more important.

We, the Laggards



While Anthony understands why banks are desperate to get in on the alternative data oil rush, he thinks that ultimately, they're going to be disappointed.

At some point in August, I was working on a story looking at how the major investment banks were building out their alternative data teams and offerings. Unfortunately—for me, anyway, definitely not you—my colleague Faye Kilburn on *Risk.net* scooped me on the story and, quite frankly, wrote it better than I ever could.

Bested, I had to think of a different angle, or just give up on the story. After talking with way more people than I was originally intending to talk to, I found that there's a hefty degree of skepticism that exists in the market as to these sell-side efforts. The result is the story that appears on page 12. (To read the full, almost 6,000-word feature, go online to waterstechnology.com/3938811.)

The gist of the story is this: Unsurprisingly, the sell side is late to the gold rush when it comes to the alternative data space. They want to monetize their own internal data; though, as Faye originally reported, that is proving far more difficult to get off the ground due to legal issues and internal fights.

And, as my feature tries to show, they are also far behind on the hardware game—from the biggest data providers to the bleeding-edge startups, there's already a tremendous amount of investment that has been made to build platforms that can take in huge volumes of unstructured data, normalize it, and turn it into something that is easily ingestible.

OK, so if that doesn't work—due to either technical or compliance issues, or both—maybe they can become wholesalers of alternative data, signing exclusive deals or creating something akin to an alt data app store. Again, this is no small effort and if history has shown us anything, institutional fortitude and patience to fail and learn are not strong qualities for banks.

“

Unsurprisingly, the sell side is late to the gold rush when it comes to the alternative data space.

Oh, and did I mention that there is a shortage of available data scientists and engineers? Qualified candidates can choose to work for a cutting-edge Silicon Valley tech company or join a bank and deal with internal red tape and constant fights with the legal department ... tough choice. I hope the banks are ready to open their check books.

A Tough Game

These efforts make sense. First, there's a lot of money to be made if this is done well. But ask any of the numerous vendors that have already disappeared or have been—or will be—gobbled up in a round of M&A, and they will tell you that this is not even remotely easy.

Second, and just as important, there is great interest coming from buy-side clients. While the most sophisticated quant shops are already well ensconced in the alt data space,

the institutional asset managers and the majority of the hedge fund market are sniffing around because they are looking for new ways to find alpha, especially as passive investing cuts into inflows for the latter.

I'm aware that I can come off as snarky at times. I'm not saying sell-side participants are doomed to be disappointed with the results of these projects because they're incompetent. Rather, I think there's a bit of hubris involved on their part. You can almost hear the conversation unfolding in the boardroom:

CEO: We need to find new ways to generate alpha. I pay you all a lot of money. Give me some ideas!

CFO: What about this alternative data space?

COO: Yeah, I hear it's hot. We can do that better than the tech companies for sure.

CTO: [Stares off into the abyss, hating life.]

Now clearly I've never sat in on a boardroom meeting. I mean, a CTO sitting at the table? C'mon, is this fantasyland?! But here's what I do know: The talks about setting up internal alt data teams, platforms and bespoke projects have been ongoing for more than a year at many of the largest sell-side firms, but there's still no clear direction. Right now it's all conversation, but little action and only whispers of what might lie ahead.

Ultimately, more likely than not, most of the sell side will have to find another angle, or just give up. **W**

Can the sell side overcome alt data challenges?
For more information and readers' feedback please join the discussion at waterstechnology.com

The Quantum Computing Question

While interest in quantum computing has been slow to arrive in the capital markets, Wei-Shen, who attended this year's Sibos conference in Sydney, says a tipping point might be soon to come.

The future is quantum?

For more information and readers' feedback please join the discussion at waterstechnology.com

Despite all the talk about universal quantum computers being years away, there was keen interest at this year's Sibos conference in Sydney, which featured no fewer than eight sessions on the topic, including a curated quantum computing networking session.

I always try to sit at the front of the room, so it came as a shock to me when, at panel after panel, all the seats were already taken, leaving me standing with several dozen other attendees in the back.

The sessions broke down quantum computing, covering quantum bits, more commonly called qubits; why quantum computing matters; what we know about it; and what we should be thinking about as we head into the future.

David Reilly, principal research and director at Microsoft Quantum in Sydney, told the audience that building the hardware, the machine, is a tremendous challenge. "It's not sufficient to write the equation to build the prototype. We need a much more significant approach," he said, explaining why Microsoft is working on building topologically protected qubits.

He continued: "Thomas Edison did not invent the electric light, but he recognized that the lightbulb needed to last long enough and he used fundamental physics and basic chemistry to do that. We are re-engineering the qubits so they can go the distance. They don't have qubits long enough to last in the new world," he said.

Anna Phan, research scientist at IBM, said that while it is still early days, using a quantum approach could be used to greatly enhance computing of large mathematical problems. "Risk analysis, personal finance planning, risk or derivatives pricing—depending on the instrument of choice—needs millions of samples to get the required answer. You'd need to run risk analysis

“What if we had perfect quantum computing devices, and as many qubits as possible? What could be accomplished?”

over night or all day long using clusters of classical computers," she said. Using a quantum approach could get the quadratic speed up to the point needed to solve large computational problems. "It's early days, but hopefully one day there will be tools to satisfy the variety, volume and complexity," that financial institutions, and others, require, she continued.

Addressing the point that quantum computers at the moment are not capable of being in a quantum state for long—the longest recorded is 90 microseconds—Alejandro Perdomo-Ortiz, senior research scientist at Rigetti Computing, noted that the device has to be kept at -273 degrees Celsius. "It is a remarkable piece of engineering. It's important to establish the connection to classical processors. We need to control that device, so what

about a hybrid approach? This is what we call the quantum classical hybrid interface," he said.

Rigetti is giving out a \$1 million prize to the first team that is able to prove quantum advantage on its hybrid platform. Quantum advantage—a term often used by the likes of Google and IBM—is a state where a quantum system is able to solve a problem that classical computers aren't able to.

But what if we had perfect quantum computing devices, and as many qubits as possible? What could be accomplished? Stacey Jeffery, senior researcher at CWI, said the real potential of quantum computers is still unknown. "One real potential is machine learning and optimization problems. There are quantum techniques but we're not sure how applicable they will be in what we do," she said.

While there is still much up in the air about quantum computing, interest in understanding its inner workings and possibilities of what it can achieve is gradually growing, and at a much faster pace than I had thought it would.

While there are early movers in the space—such as JPMorgan, Barclays and Australia's CBA—just six months ago, quantum was a foreign topic for many financial firms. But if the interest at Sibos is any indication, a tipping point might come sooner than later. **W**



Human Capital

Broadridge Appoints Carey to Head Global Technology

Broadridge Financial Solutions has appointed a new president of its global technology and operations segment as it continues to explore how to integrate new technologies into its products.

Tom Carey, previously president of Broadridge International, will oversee core technology businesses globally and serve on the executive committee. He will report to newly appointed CEO Tim Gokey.

He will take over from Charlie Marchesani, who will transition to a strategic advisor role for the segment's growth strategies. Carey will continue to run Broadridge International as the company continues to look for his replacement.

Carey has been in the industry for 25 years and has been with Broadridge for more than a decade, where was instrumental in the creation of the company's utilities



Tom Carey

in Europe and Asia. In 2016, he led Broadridge's global fixed-income segment in addition to his other responsibilities. Prior to Broadridge, he held positions at ADP and Wilco.

Ex-ISE BizDev, Ops Exec Joins Crypto Exchange Gemini

Jeanine Hightower-Sellitto, former COO of Nasdaq-owned International Securities Exchange, joined New York-based digital asset exchange and custodian Gemini Trust as managing director of operations in September, responsible for institutional onboarding and for Gemini's client services team.

Hightower-Sellitto spent 13 years at ISE, most of that time in senior business development and product management roles, including responsibility for the exchange's market data business. Before joining ISE in 2004, she was manager of US client services at UK-based company fundamental data provider Perfect Information.

In her new role, she reports to Cameron Winklevoss, president of Gemini.

Credit Benchmark Adds Ex-Goldman Vice Chair to Board

London-based consensus credit ratings and analytics provider Credit Benchmark has added former Goldman Sachs vice chairman Michael Sherwood to its board of directors, following a \$7 million funding round in which Sherwood participated as part of a group of private investors, alongside private equity firms.

Sherwood, who joined Goldman Sachs in 1986, was also co-CEO of Goldman Sachs International before



Michael Sherwood

his retirement in 2016, and also served as co-head of global credit, and head of European equities and fixed income during his time at the bank.

ISN Taps Industry Vets Iati, Bruno

San Francisco-based consultancy International Solutions Network has hired Bob Iati and Mike Bruno as managing directors, to expand its roster of senior industry executives.

Iati spent the past six months as an independent consultant, prior to which he was senior director for capital markets at Dun & Bradstreet, and spent more than 10 years at research firm Tabb Group as partner and global head of consulting. Before that, he was research director at Tower Group, and held vice president roles at Deutsche Bank Securities and Lehman Brothers.

Bruno was most recently senior vice president and head of product management for North America at Rimes Technologies, prior to which he worked as a consultant business analyst for Morgan Stanley Wealth Management and as a senior consultant in a prior stint at ISN.



Jeanine Hightower-Sellitto

Former JPMorgan Risk Pro Joins Trade Informatics



Thomas Jardine

Before that, he spent five years at FTSE, including as director of fixed income, head of strategy for fixed income and alternatives, and fixed-income business unit head, and spent almost nine years at Reuters America, including as vice president of institutional fixed income, and vice president of fixed income product specialists. He joined the vendor from Bridge Information Systems, where he was vice president of client services, following its acquisition of fixed income pricing vendor EJV Partners, where he was an account manager.

Both are based in New York and report to senior managing director Michele Kelsey.

Allfunds Sharply Boosts Asia Presence with Key Hires

European mutual fund platform provider Allfunds has increased its presence in Asia with three new hires and a new office in Singapore, to cater to growing demand from Asian wealth management distributors seeking to streamline operational efficiency.

The company has appointed Oliver Stewart-Malir as COO for Asia, Vinita Badlani as head of funds groups for Asia, and Edwin Tan as head of client services for Asia.

Alexis Fosler, regional manager for Asia at Allfunds, says this demand is driven by increasing complexity within the institutional investment industry in Asia. She says Asia will “massively” contribute to the future definition of the global asset management industry due to its economic and demographic significance.

Allfunds has more than €370 billion (\$424 billion) in assets under administration and offers more than

The analyst behind JPMorgan’s equality business intelligence initiative, who also ran the bank’s central risk desk for six years, has moved to Trade Informatics (TI).

Thomas Jardine is now a managing director at TI and will head data analytics for the New York-based quantitative analytics and systematic trading solutions provider.

Jardine is also an adjunct associate professor of applied analytics at Columbia University. Prior to joining JPMorgan, he oversaw the cash, electronic and program trading teams at

Equity Management Committee in Tokyo and has held a number of other trader positions at organizations including Bear Stearns, Deutsche Bank, Dresdner Kleinwort Wasserstein, Lehman Brothers, and Merrill Lynch.



Mike Bruno

64,400 funds from over 1,200 fund managers. Its open-architecture model allows it to service any client in the Asian market, as it is designed to accommodate multiple jurisdictions, constant regulatory changes, market variations and straight through processing.

Stewart-Malir and Tan will report directly to Fosler, while Badlani will report to Borja Largo, global head of funds groups at Allfunds. The company has also moved to new premises in Singapore to accommodate the team’s expansion.

Stewart-Malir formerly worked with Goldman Sachs in Singapore, Tokyo, New York, and London, and has more than 14 years of experience in operations management with financial services companies.

Before joining Allfunds, Badlani held a leadership role at Navigator, an integrated investment platform by Aviva, overseeing the due diligence process for funds and designing competitive fund offerings.

Meanwhile, Tan joins Allfunds from Citco Fund Services. Prior to that he worked at State Street Bank and Trust and UBS. He has 16 years

of financial services experience and as head of client services for Asia, he will work with the sales and marketing team to build and maintain relationships with Allfunds’ Asia-based clients.

MDX Ordains Bishop for Business Development

Data technology provider MDX Technology recently hired Darren Bishop as a business development specialist in London, responsible for the vendor’s Project Iowa ecosystem that connects content creators and consumers, and for driving business development and creating new product offerings.

Bishop was previously CEO of LiquidityChain, a joint venture between Formulate Digital and interdealer broker TP Icap, where—prior to the merger of Tullett Prebon and Icap—he spent four years at Tullett as director of Tullett Prebon Learning and head of customer relations for EMEA, and before that spent six years at Icap as founding partner of its ReMatch emerging markets credit default swap (CDS) execution platform. He also served



Darren Bishop

as partner at The Beast Apps for its corporate CDS execution business, and spent 18 years in a prior stint at Tullett Prebon as head of EMEA and Asia information sales, and at its predecessors Tullett and Tokyo and Tullett Liberty as a business manager in its interest rates division, and providing strategic support and development to its brokerage business.

At MDX, he reports to CEO Paul Watmough, who says Bishop's appointment will enable the vendor to exploit new opportunities.

Fenergo Taps Clarke to Lead Alliances Team

Fenergo, a Dublin-based provider of client onboarding, lifecycle management, counterparty data management, anti-money laundering and know-your-customer tools, recently hired Julian Clarke as global head of partners and alliances, responsible for leading a new team focused on developing the vendor's partner ecosystem.

Clarke was most recently interim chief client officer at Infuse Consulting in London, and held a similar role at merged technology consultancies Certeco and P2 Consulting, prior to which he spent three years at Capgemini, including as global director of digital assurance and testing. Before that, he was group service lines business development director at Groupe Steria, and was sales and marketing director at software quality testing company Experimentus. In his new role, Clarke reports to Greg Watson, global head of sales at Fenergo.

BNY Mellon Poaches BAML Vet for CTO Role

BNY Mellon has hired a trading technology veteran from Bank of America Merrill Lynch (BAML) to serve as its new CTO.

Sabet Elias, formerly the sales and trading CTO at BAML, will be based in New York and report into Bridget Engle, the custody giant's chief information officer.

At BAML, according to his LinkedIn profile, Elias was responsible for "strategy, architecture, and a cross-asset platform that enables consistent risk and pricing calculations throughout the entire technology stack." Prior to this role, his was a line of business CTO in BAML's corporate structure responsible for business-aligned infrastructure, in which he also led mobile banking technology efforts.

Before BAML, he was a CTO and managing director at Citi, and was the same at Lehman Brothers from 2000 to 2008. He was educated at the University of London and the New Jersey Institute of Technology, where he received a master's degree in information systems.



Sabet Elias

His new role is likely to be different from those he has held previously. The firm has \$33.6 trillion in assets under custody and/or administration, and \$1.8 trillion in assets under management. In addition, it has a number of other businesses, including a vendor arm, Eagle Investment Systems, which works closely with buy-side firms.

Post-IPO, Identiit Hires Execs to Drive Growth in Asia

Sydney-based blockchain technology provider Identiit has hired Mark Garvie as chief commercial officer and Clare Rhodes as chief marketing officer, to lead a new growth initiative, following its recent initial public offering. Garvie is responsible for driving commercial growth in Asia-Pacific and worldwide, while Rhodes is tasked with assisting in its growth plans.

Garvie was most recently senior vice president and managing director for financial services in Asia-Pacific at French security and identity technology provider Idemia, where he spent 13 years, prior to which he was managing director and co-founder of LegalStudio, an online resource for legal expertise in the Chinese market, which was acquired by LexisNexis. Before that, he spent five-and-a-half years at Capgemini Ernst & Young, including as business director for financial services in Asia-Pacific, and spent almost five years at iGate, including as group manager of consulting services and marketing manager.

Rhodes has spent 16 years in PR and marketing roles, including managing director of Articulate Communications, senior marketing manager at Sapient Global Markets, and account director at PR agency Metia. **W**



Julian Clarke



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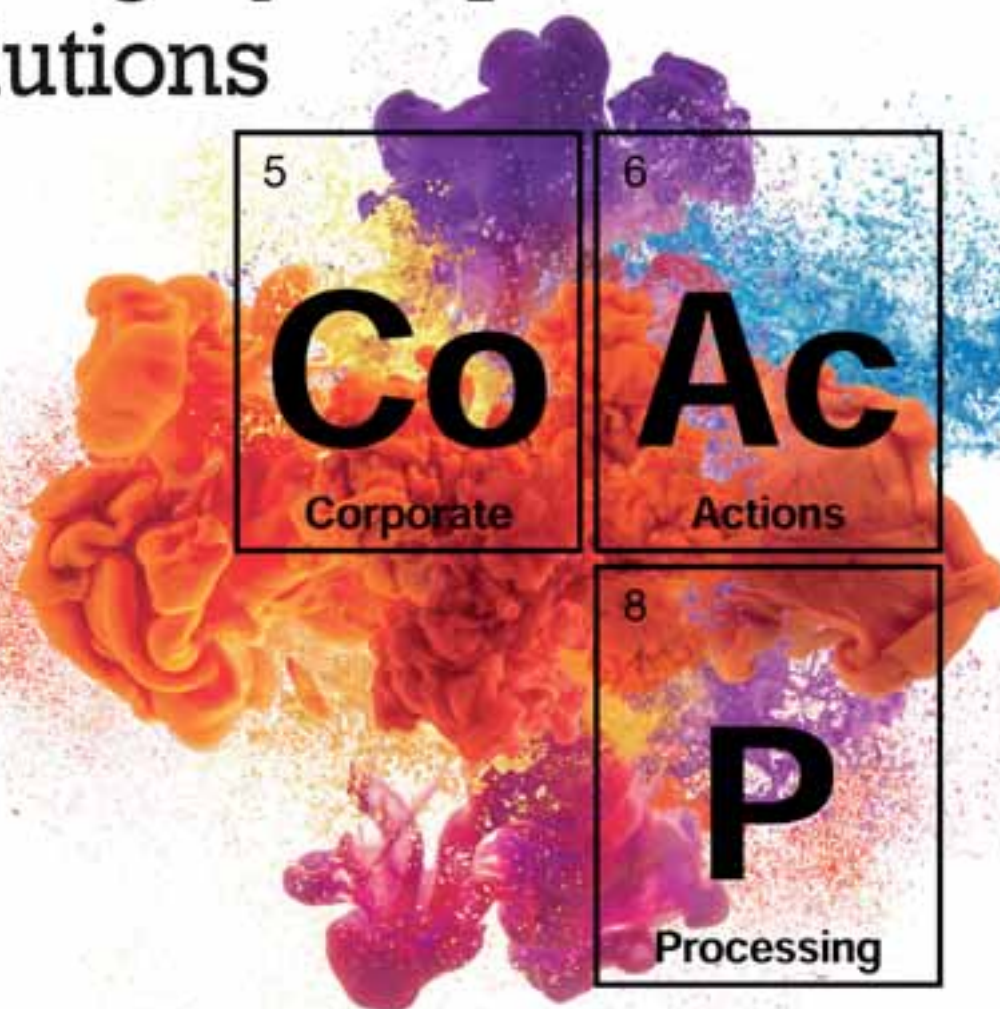
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