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Waters  
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2019

Quantum Computing: Banks &  
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## Tug of War

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# The More Things Change


A magazine is a look back in time, even when the stories look ahead. It allows us to take our time. Hopefully it allows us to preserve time, even if just for a brief moment in time. Through it, we can tell stories, whether of individuals, of events in the past, or of previews of things to come. Yes, magazines are beautiful things that I love with all my heart. Sadly, glossy print magazines are disappearing into the web. I would imagine that one day, *WatersTechnology* will no longer be in print, as well. Time, indeed, changes all things.

I mention the concept of time because we ran out of it. As this magazine was about to go to the printers, news broke that the London Stock Exchange Group (LSEG) had made a bid to buy Refinitiv for \$27 billion. In the pages of this issue of *WatersTechnology*, the only thing that you'll read about Refinitiv is how they won the best low-latency data feed provider in this year's Waters Rankings.

Now, if you visit [WatersTechnology.com](http://WatersTechnology.com), you'll find a story that's about 1,800 words long ("LSEG's Proposed Refinitiv Deal: It's About More Than Just Market Data") describing what this potential merger might mean for clients of the two companies and the industry at large. I'm sure there will be a lot more written about the merger, especially as the regulators start taking a long, hard look at it.

So if you want to read something in-depth, you'll have to go to the website. But for the time being, the biggest question I have is about people. Yes, there are new and interesting services that can be offered as a result of the merger, should it go through. Yes, there will be other acquisitions to come as competitors react to this change. And yes, there are major regulatory issues that will need to be examined.

Those are important topics, but my question is this: If you are a truly talented technologist working at Refinitiv, are you really going to want to go through this process once again? The Blackstone deal closed not even 10 months earlier. There's no guarantee that this deal will go through—if it does, there's the inevitable integration projections and reorgs and mind-numbing culture meetings; if it doesn't, much as Fidessa still got flipped after the Temenos deal fell through, it's only a matter of time until the next suitor comes calling. If I'm a user of a Refinitiv-built platform—from compliance to risk management to trade execution and analytics—I'd be greatly concerned about the future ... about innovation.

Platforms and tools are great, but they are made by humans. It takes a lot of time to develop something that can transform an institution; it takes a lot of time to find and cultivate talent. Acquisitions will happen and everyone knew that the consortium led by Blackstone was going to eventually sell Refinitiv. Change was imminent. But the worry now is how much change will hit the rank and file at Refinitiv. 

**Anthony Malakian**  
Editor-in-Chief

# waterstechnology



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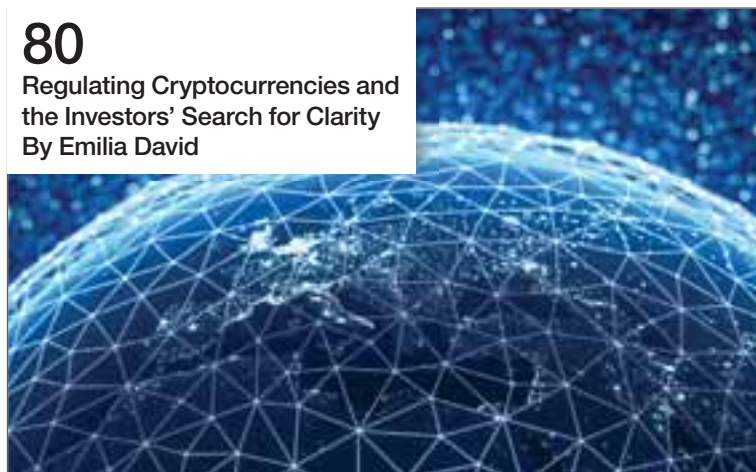
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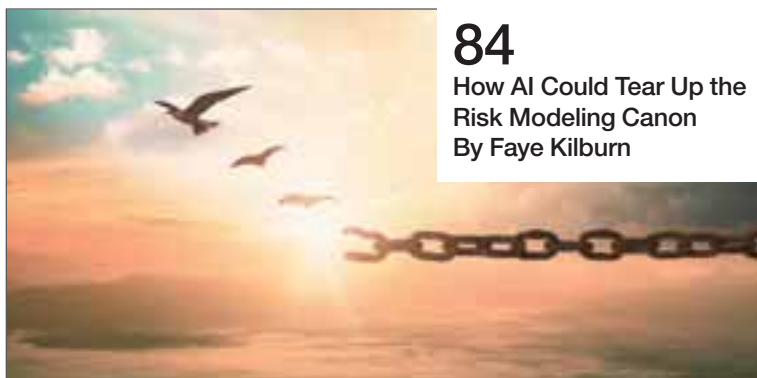
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# Bank of England's Ambitious Look at Regulatory Reporting

As the regulator looks at new ways to handle the rising tide of data, there are still a lot of paths to consider.  
By [Josephine Gallagher](#)



**T**he aftermath of the financial crisis has seen a massive increase in reporting requirements for trading firms. This has also created unique challenges for the regulators themselves, as they need to be able to take in, store and analyze this sea of information—or else what's the point?

As a result, the Bank of England (BoE) is exploring new technologies such as artificial intelligence and cloud storage to get to grips with these requirements, as well as improving its ability to handle machine-readable regulation, according to a recent report published by the regulator.

“Given the volume of information created, transmitted and received, embracing leading technology is no

longer a choice,” the BoE report said. “The explosion in the volume of regulatory data means supervisors receive more information than they can absorb and analyze using traditional methods.”

The value that regulators have gained from reported data has been a topic of contention for some time, particularly as regulated firms have had to allot a fair amount of monetary and human resources to build out new systems to comply with regulations such as Mifid II and EMIR. As a result, EU regulators are having to catch up with the rest of the industry in order to deploy technologies that will make sense of the incoming data. Discussing the report, John Kernan, head of product management at trade repository Regis-TR,

“‘Data’ doesn’t automatically equal ‘information’—it needs cutting and dicing in order to reveal trends and insights. Simply collecting more lines of data, or more data points, does not mean greater supervisory capability.”

**John Kernan, Regis-TR**



explains that regulators are only as good as the tools and technologies they use to analyze the data they receive from trade repositories, regulated firms and/or delegated service providers.

“‘Data’ doesn’t automatically equal ‘information’—it needs cutting and dicing in order to reveal trends and insights,” Kernan says. “Simply collecting more lines of data, or more data points, does not mean greater supervisory capability.”

The report says regulatory authorities spend, on average, two-thirds of their time manipulating data, rather than analyzing it—putting into question how equipped supervisors are today at assessing systemic risk or market behavior. To help tackle these concerns, the BoE has conducted proofs of concept using AI technology to derive detailed analytics from the data accumulated. It is also looking at machine learning techniques for detecting market anomalies and monitoring trading activity. Additionally, the regulator is exploring the potential of developing a data standard and a machine-readable rule book.

Some of its ambitious plans include using natural language processing, machine learning, and big data analytics to chart data points in real time for supervisors. This will be used to provide an instant view of how firms are performing against forecasts, with live updates of key ratios. These detailed analytics will enable regulators to apply real-time shocks and stresses to better predict breaches of regulatory rules.

The BoE did not respond to a request for comment in time for the publishing of this article.

### Embracing the Cloud

The BoE is also turning its attention to cloud technology for its scalability, as well as its cyber and operational resilience, the report says. This follows in the footsteps of the UK’s Financial Conduct Authority (FCA), which is looking to migrate all of its operations to the cloud. In February, when *WatersTechnology* spoke to Nausicaa Delfas, an execu-



“APIs, infrastructures and new technologies will continue to evolve and assist, but we have to ensure that every local [and] regional regulatory rule is adhered to.”

**Mark Husler, London Stock Exchange Group and UnaVista**

tive director at the FCA, she explained that the regulator was about halfway through the migration process.

“It is definitely a significant move and we are partly through that process,” Delfas said. “Our aim is to remove our reliance [to] physically contracted or directly contracted data centers in the next two to three years. It is a [work in] progress, and we are seeing many benefits from it already.”

Another potential benefit of using cloud technology relates to how regulators can collect data. One approach highlighted in the BoE report is enabling the regulator to access a firm’s cloud infrastructure directly at any point through a shared data lake. This, it hopes, will remove the slow and cumbersome system of receiving quarterly reports, and diminish the need for *ad hoc* data requests from the regulator to regulated firms.

### APIs and Central Repositories

The BoE outlined four options that it is considering—two of which could

transform the entire system in which regulatory reporting is conducted and collected. One option involved accessing firms’ data and systems through individual APIs using a common format. This approach could reportedly reduce the submission time from 30 minutes to 10 seconds and will require industry firms to be comfortable with permitting access to their systems.

But Kernan says there are many complexities with this approach.

“If we think about just one of the corporate towers looming over Canary Wharf, and the number of trading desks and business lines, front-, middle- and back-office systems that are holding and generating data, the number of counterparties holding disparate parts of datasets, it soon becomes clear that it is a much more complicated task to hook up regulators’ systems to firms’ systems,” he says.

Another progressive option proposed by the BoE would be to create a central data repository, where all statistical and regulatory reports are held.

This would involve working with the industry to build the data utility and would look to enable near real-time analysis of the market. Mark Husler, head of business development at the London Stock Exchange Group and CEO of UnaVista, believes regulators will have to consider the complex nature of regional regulatory requirements and global data protection laws if they decide to take a more transformative approach to regulatory reporting.

“APIs, infrastructures and new technologies will continue to evolve and assist, but we have to ensure that every local [and] regional regulatory rule is adhered to, and where, for example, there are datasets that are considered private,” Husler says. “So under rules or regulations like GDPR [the General Data Protection Regulation] where there are rules about data residency and how data should not leave a specific region... all of those legal and regulatory governance rules do have to be maintained.” **WT**

# State Street Explores Deeper Data Integration with Charles River

The bank is looking to create a single security master so the same data flows through the system.

By [Emilia David](#)

**A**fter acquiring Charles River last year, State Street is in the process of deepening the integration of Charles River's systems with the bank's wide-range of products by developing a single master file of securities data, thus creating a seamless front-to-back offering.

State Street has completed the base integration of Charles River's systems and is now in the process of finding new and more effective uses for it, says Dick Taggart, head of front-to-back platform services for State Street.

"Having it all in the same house allows you to make integrations tighter. This means you can make sure things like the Security Master that you both use is now fully in sync; so you're never going to have a difference on a Cusip number, for example," Taggart says. "We can make sure those things are perfectly in sync because we control both ends of the pipe. Ditto for information coming back about the status of a trade or dividend or piece of collateral—we can now hardwire that right into the Charles River platform in a more integrated way than before."

The benefit of this is that when a user recalls data between two platforms, the results coming back will be updated in real time, as opposed to there being a lag. This, they hope, will provide an environment to make better investment decisions. Taggart notes that having real-time information built off of the same security master—which is a golden source of data for trades, positions, and securities of clients—allows people to have a better handle on the true state of accounts.

State Street announced its acquisition of Charles River in July 2018,



“Having it all in the same house allows you to make integrations tighter. This means you can make sure things like the Security Master that you both use is now fully in sync; so you're never going to have a difference on a Cusip number, for example.”

**Dick Taggart, State Street**

with the deal closing three months later. Recently, the bank announced that Lazard Asset Management—a long-time client of both State Street and Charles River, but using separate services—entered into a letter of intent to sign State Street as its front-to-back investment servicing platform.

The point of acquiring Charles River was to link its front-office order, execution and portfolio management expertise with State Street's analytics, risk, and middle- and back-office functions. If successful, it can create a one-stop-shop environment for buy-side firms.

Taggart points out that many clients of both State Street and Charles River use a combination of platforms to run their businesses—i.e., Lazard uses Charles River for front-office activities and State Street for middle- and back-office functions. The idea is to connect all the pieces together and offer one comprehensive suite of services, so if a client uses Charles River for its front-office systems and State Street for custody and accounting, the same data will flow between the various platforms.

State Street is also looking at creating a data management service that pulls together all data generated within its systems, including CRD, and stores it. Taggart says this allows State Street to essentially act as a data custodian.

"Another project is the data management service. In many cases, investment managers today have a complicated environment with many software or service providers, data stores, data lakes or data warehouses, where they aggregate all this data, which they have to integrate, cleanse, and align themselves. We're now able to do all that for our clients—we can pull all that data together and make sure it's accurate and complete, end-to-end, and effectively be the clients' data custodian," he says.

Taggart points out that although State Street is looking towards a more seamless connection between all of the platforms it runs, it is still committed to providing an open architecture to clients, should they prefer other third-party solutions. He says State Street offers APIs to easily integrate a clients' preferred data source or risk model within its own system. [wt](#)



# Barclays Nears Conclusion of First Major Quantum Computing Experiment

Lee Braine walks through how Barclays is experimenting with quantum computing and where the field is heading. By [Hamad Ali](#)

**B**arclays aims to conclude its first foray into the use of quantum computing for settlement optimization this year.

Lee Braine of Barclays' chief technology office tells *WatersTechnology* that the bank has been focusing on exploring the application of quantum computing for settlement optimization. "We are aiming to complete our first significant experiment in the next few months," he says. "And then we'll look to publish our results off the back of that."

The challenge is finding the optimum variable to settle: that is, the number of transactions to settle or the value of the transactions to settle. "There are implicit connections between different trades; for example, chains of back-to-back trades, where it may not be explicit whether a particular trade is an intermediate or an end-point in the chain, but you can connect them via a netting algorithm to settle together as a unit in terms of optimization," he says.

Braine continues: "It is what is called an NP-complete problem in math, meaning it would take an extremely long period of time to come up with the optimal combination of trades that should be settled together. So that led us to a hypothesis that this challenge could be a good problem to be solved on a quantum computer that could potentially explore all the combinations in order to come up with the optimal combination."

The challenge for Barclays—like everyone else experimenting with the technology—is that quantum processors currently don't have a large number of qubits, the fundamental units of information in a quantum computer.

"You need to represent your prob-



**Lee Braine**  
Barclays

lem using in the order of, depending on the specific quantum processor, a maximum of 20 to 50 qubits," Braine says. "Whereas to represent a full transaction set of maybe 50,000 trades with all its associated data attributes, and all the processing stages they progress through, you'd need several million qubits. So we have to abstract the nature of the problem and then run experiments using both a simplified algorithm and a reduced dataset. This effectively is a 'toy solution' to the problem."

Braine says his team has to think through what the problem is, and then how to construct an abstracted version of it so that not only the number of qubits is reduced to what is viable on a current quantum processor, but also the number of processing steps needed to perform are viable within the quantum-coherence time before the quantum state collapses. "We are currently demonstrating via a proof-of-concept that the idea is viable. But we won't run it on actual trades, partly because there aren't enough qubits yet. So it is purely a simulation," he adds.

Braine says that over the last few

years there has been an acceleration in terms of the coherence time and an extension of the coherence time and the number of qubits. Coherence time refers to the period of time for which qubits can retain quantum information—a hurdle for developing the practical applicability of quantum computing.

When looking to find practical use cases, Braine says their methodology is to question the nature of the problem, and whether it maps to another problem of which there is a known quantum algorithm solution. If it does, they leverage that known algorithm.

"Inevitably, there will be applications in non-financial areas, such as quantum chemistry, where it is much easier to model behavior with a small number of qubits," Braine says. "I see applications there occurring sooner rather than later. I think the challenge in financial services will be in scaling up that number of qubits, but from our perspective, the important thing is to be what is called 'quantum ready.'"

He says the objective for Barclays at this point is for people to understand the opportunities and the threat by coding and running some of the quantum computing programs so the bank can make an informed view on the timeline for the deployment of these technologies. From a hardware and industry adoption perspective, as noted before, the challenge is abstracting complex problems using a smaller number of qubits.

Barclays has been involved in quantum computing since the summer of 2017. It is a part of the IBM Q network, a global community of companies, start-ups, academic institutions and research labs working in this field. [WT](#)

# Use of Alt Data in Investing Today Only 'Tip of the Iceberg'

At Risk Live, executives from Goldman Sachs AM, Societe Generale and Morgan Stanley talked about the benefits and concerns for using alt data. By [Rob Mannix](#)

**S**enior figures at Goldman Sachs Asset Management and Societe Generale say alternative data will “completely” transform the investment business, even as others question some of the claims around its use.

Goldman Sachs Asset Management’s head of quantitative investment for Europe, the Middle East and Africa, Javier Rodriguez-Alarcon, said the use of alternative data in investing today is only “the tip of the iceberg”.

Albert Loo, deputy head of sales for global markets at Societe Generale, expects fund managers to spend around \$1 billion on alternative data this year, with 80% of hedge funds and asset managers using the new data, which ranges from anonymized credit card transaction records to satellite imagery.

“Alternative data will completely change the landscape in the next couple of years,” Loo said. SG believes it can utilize alternative data in its quantitative investment strategies unit, using news sentiment signals, for example, although these efforts are “just at the beginning,” Loo said. Alternative data is already being used in SG’s research, he said, where it has been particularly useful in assessing the environmental, social and governance (ESG) characteristics of companies.

Rodriguez-Alarcon and Loo were speaking at the Risk Live conference in London on June 27.

Goldman Asset Management already uses data from patent filings to identify hard-to-see connections between companies in different sectors—connections that can lead stocks to move together. The firm has also applied natural language processing to interpret transcripts of company



Alternative data is set to change the investment landscape completely, according to senior bankers

earnings calls to shed light on analyst sentiment about a stock.

Mining new data has been a hot topic among investors, both quantitative and fundamental. The idea has its detractors, though. Some quants have questioned how much incremental alpha can be squeezed from some of the datasets on offer, and many firms have run into difficulties finding data of good enough quality or with long enough histories to use in formulating quant strategies.

Quant investing is all about breadth, Rodriguez-Alarcon said, and alternative data has a role to play, including to validate or disprove what firms think they know, rather than to generate wholly new insights.

“It’s about the ability to see things, and alternative data can give you a different angle on things. It can actually take you to a different conclusion,” he said.

People ask which dataset he “could not live without”, Rodriguez-Alarcon

told delegates, but it is the “accumulation of data points” from multiple datasets rather than any single source that often provides most insight, he said. Different types of data make up individual “pieces of the puzzle” in testing a quant hypothesis or building an investment thesis.

Other banks, such as Barclays, Morgan Stanley and UBS, have beefed up research teams with data specialists and see this data as a key resource in assessing investments in future. Banks are also exploring avenues to monetize their own data, such as derivatives pricing data and possibly aggregated information about trading flows. Worries about regulatory slip-ups dog some of these plans, however, with certain vendors refusing to sell datasets to clients lest they fall foul of market abuse rules, and many are concerned about possible privacy breaches even when data has been anonymized.

Also speaking at the conference, Phil Allison, head of fixed income automated trading at Morgan Stanley, warned against “scope creep” where firms—perhaps inadvertently—might start to use data in ways that clash with regulations or client expectations.

“As you start to pull further away from markets, further away from clients, deeper into quantitative functions, and also abstract further and further the process of what’s being done with the data, you have to be incredibly careful,” he said.

The industry should be ready for rules to change, too, he said. “If you had to choose areas where the regulations and standards five years from now will be a lot higher, this will be one of them.” [WT](#)

# Mizuho Finds New Ways to ‘Activate’ its Data Using Artificial Intelligence

The Japanese bank has already automated handwritten form processing and is experimenting with AI to make use of its unstructured data. By [Wei-Shen Wong](#)

**M**aking sense of existing data is something that every financial firm struggles with, and Mizuho Bank is no exception.

The Japanese bank, which serves both retail and institutional clients, is using artificial intelligence (AI) and machine learning techniques to reduce costs for its existing business and to provide new solutions to its external users.

Tatsuya Shirakawa, senior digital strategist for the bank, said Mizuho began exploring initiatives using emerging technologies such as AI and the “activation of existing data” three years ago.

“Within the bank, there are diverse types of tasks. We had to determine how and where we can use AI, in the front, middle and back office, and whether it was to be in retail, institutional, or market operations. So first we decided where to use AI, and as we did this, we had to think about what AI is,” he said.

Shirakawa, who was speaking at the Tokyo Financial Information & Technology Summit, which was held in Tokyo on July 4, said that to Mizuho, AI is a combination of data and machine learning.

Mizuho doesn’t yet have a systematic approach to AI, he said. The bank is first trying to enhance the literacy and understanding of its employees in AI and data. “They need to know the basics of those tools. We are trying to enhance the literacy of the members first,” he said.

## Unstructured Data

Mizuho is currently using the latest AI algorithms to make use of unstructured data within the bank, which is a new



“Another point that is important is that AI is a combination of data and machine learning, but data has great value. That’s a difference from the conventional IT investment because we have to now think about how to utilize the data of the user. By focusing on that, we work on AI and machine learning techniques and try to reduce costs for our existing business.”

**Tatsuya Shirakawa, Mizuho Bank**

capability for the bank. Among the tools it is dabbling in are image and video processing.

“Every day the bank is dealing with many forms. One of them is the money transfer form. This is manual work done by human beings. The format between forms is different too: it’s not standardized and it’s handwritten, so it can be hard for a machine to read.

But using the latest AI recognition capabilities, data in an unstandardized form can be recognized. We are able to extract the necessary information and handwritten data using OCR [optical character recognition],” he said.

This process has automated 80% of that particular task, while the remaining 20% consists of manual checking and matching of the AI and OCR results with the bank’s existing customer base.

“By doing this, we have been able to improve our efficiency,” Shirakawa said.

In 2017, Mizuho, together with WiL, which stands for World Innovation Lab, established Blue Lab to create new businesses based on technological advances. Blue Lab is based on the concepts of open innovation, creating platforms, global expansion, and an agile management style.

“AI is just a tool to enhance operations, but we first have to identify the problems. Another point that is important is that AI is a combination of data and machine learning, but data has great value. That’s a difference from the conventional IT investment because we have to now think about how to utilize the data of the user. By focusing on that, we work on AI and machine learning techniques and try to reduce costs for our existing business, and come up with new solutions to provide to external users,” Shirakawa said.

He said that Mizuho has not made the best use of a lot of data, particularly unstructured and investment data, but is now looking at how to collaborate with other financial institutions and banking groups to share know-how and information on improving efficiency. [WI](#)



# Universal-Investment Explores AI to Develop ESG Services

The administrator is looking at how artificial intelligence can be used to extract online sentiment and create customized alternative data services to attract clients. By [Josephine Gallagher](#)

Universal-Investment, an administrator based in Luxembourg and Frankfurt, is experimenting with the use of artificial intelligence (AI) to extract valuable insights and sentiment from online sources to build client profiles and develop dedicated alternative data services.

In the initial stages of its exploration, the firm is using machine learning—and natural language processing in particular—to scrape the web and for gathering data associated with the environment, social or governance (ESG) factors from sources such as social media platforms, blogs, news outlets and non-governmental websites.

“A lot of the information we are talking about in terms of ESG does not exist in data providers, it exists in the opinion of people, such as the opinion of a company, a stock share, etc.,” explains Daniel Andemeskel, head of innovation at Universal-Investment. “That is where web-scraping tools and sentiment analysis is important to better understand and get insights about companies from non-traditional information sources.”

The project would involve applying artificial intelligence to its entire value chain: distribution, investments, and operations. On the distribution side it will involve extracting insights and assessing new sales channels, while investments will involve developing new AI capabilities to process the alternative data. Meanwhile, operations will include automating processes, optimizing costs and improving efficiency.

Currently, Universal-Investment is looking at several collaborations with



Firms are having to take ESG seriously

fintech providers to help extract useful ESG insights and carry out a sentiment analysis of online activity and behavior using advanced AI capabilities. The technology would also be used to construct an enhanced understanding of the beliefs and interests of potential clients across largely untapped markets, such as millennials. This, in turn, helps the firm to build simple, customized and accessible investment services for potential investors or to offer these services to other asset managers.

## Wider Access

Some of the services may include predictive analytics, fund recommendations, gamification features and new distribution channels, such as enabling access to investment products through links on social media platforms or relevant websites. Gamification, in this case, may include the way products are displayed and the engagement with the client base. Some examples involve using compelling graphics, and imagery of ESG events such as climate change rather than just text. That will offer simpler access to investments through links and avoids the need for long-winded prospectuses.

Andemeskel explains that the investment firm aims to make investing more attractive to a wider community of retail and institutional investors. Particularly as climate change, gender equality, geopolitical affairs, and other ESG-related issues become more important to the success of a firm's stock price, Universal-Investment is looking to leverage this movement and simplify the investment process by presenting potential clients with investment products that matter to them.

“Investment products are primarily driven by performance targets and this is something that will change,” says Andemeskel. “Performance is no longer the only target. People want to have a stable income, but also want to invest in things they believe in.”

Andemeskel explains that advanced AI capabilities are the reason why tech giants such as Amazon, Google and Netflix have proven hugely successful in understanding their customer base. Another aspect of the technology is its ability to identify insights from huge sums of online and unstructured data to create sophisticated analytics.

“The biggest power of artificial intelligence is to have this compute power to assess the information and curate it,” he adds. “Instead of having thousands of people that could evaluate a company differently, you need to have stable evaluating procedures and algorithms—that is where machine learning, artificial intelligence, and deep learning will be important.”

## ESG Momentum

Although standards and data availability remain some of the biggest roadblocks to the adoption of ESG data and investments, in recent months the European Commission has stepped up its efforts to address these issues. The commission published the technical report on a taxonomy on sustainable investments on June 18, requiring firms to use the taxonomy, report the proportion of sustainable factors in investments and discuss the methodologies in which they are implemented. Though the current taxonomy is not legally binding, it sets out the basis for future legislation. [WT](#)

# Investec: For Alternative Data, Learn How to Fail Fast

Investment firms have the upper hand when dealing with expensive data vendors, says Investec's Nico Smuts. By [Joanna Wright](#)

**T**he ability to dig into non-traditional sources of data has opened up a world of possibilities for investment firms. This has led to a flood of start-ups entering the market, offering specialized datasets, whether in the form of geolocation data, satellite images, climate content, auto sales, credit card usage—and much more. The domino effect of this is that the largest, more traditional data providers have had to figure out how best to package these start-ups into their own offerings.

This makes for a confusing environment for buy-side firms, which want to hunt for alpha in these new sources of information. But these datasets are often aggressively marketed and most will not yield much value, whether because the offering is not robust enough or because of internal obstacles.

The answer, then, is to “fail fast,” said Nico Smuts, a data scientist at Investec Asset Management, who was speaking at this year's Waters Europe conference. This means the firm has to understand what a dataset contains, how it might be useful, reach that understanding quickly, and quickly cut bait if a use case can't be made.

“It takes so much time to understand a dataset and how it behaves, what its quirks are, whether there really is potential in it,” Smuts said. “But if you spend dozens of hours or more on a dataset only to conclude that it doesn't have value—well, you want to keep that journey as short as possible.”

This data can be expensive, however, and the sellers will be looking to lock in the firm to a contract or license quickly. Smuts conceded that some vendors can be aggressive salesmen, but he said buyers can be firm on running



Geolocation data is just one of a bewildering array of alternative datasets available to buy-side firms

trials on the datasets first. He said most providers will allow a potential licensee to see all the data, but made stale by three months, as a kind of free trial. And buyers have the upper hand, as few datasets now are exclusive to one seller.

“It's up to the organization providing the data, but I think it's a reasonable request to give you a chance to really kick the tires and understand the data, and try to see how much you can get out of it,” Smuts said.

At Investec, he said, they try to fail fast by looking at the data in a non-quantitative way, asking what the dataset is likely to contain and why it has not been priced yet.

“Can we extract it, what kinds of transformations do we do, how much do we need to clean the data, normalize it... having that kind of conversation before you engage with the data—for us, that pays dividends down the line.”

## Internal/External

Sam Livingstone, chief data scientist at Jupiter Asset Management, said his firm combines packaged datasets from ven-

dors with their own curated alternative data. “Internal data we would always curate ourselves; external data is sometimes build, sometimes buy,” he said.

Where the data is of low quality, it's always better for the firm to curate it themselves. But where the alpha has decayed almost 100% and the value in having the data is just that everyone else does, “it might make sense to pay 20% of the price to get something that everybody else is getting, but that you can use efficiently straight away,” he said.

Livingstone said that most of this effort involves loading and cleaning the data to make it usable. He said there are three ways to approach this.

The first step is through traditional back-testing. “You think of something that makes causal sense—that is good. You go long the top decile, you go short the bottom decile and see how that performs over a time period,” he said.

The second way is looking at a specific stock to understand its pricing history that might forecast future movements.

And the third way is mosaic theory: providing fund managers with pieces of information that together form a material conclusion.

“I think of it as driving a car only looking through the rearview mirror,” said Livingstone. “If you get good datasets, you can start unfogging part of that window so they [fund managers] can see that certain things are coming.”

Smuts added that his firm is looking at its own internal metadata to better understand its staff and clients—how investors and its own analysts behave, how clients make decisions, and how this behavior changes in market conditions—to find blind spots. [WT](#)

# OPEN OUTCRY

What the key figures in fintech are saying this month

“If you’re just going to take the relationship between S&P 500 and Vix, and then attempt to model that with a machine learning framework, not only will you not outperform a linear approach, but you will underperform it, because you’ll be missing explanatory variables that give rise to that non-linearity.”

Manoj Narang, Mana Partners

» see page 84 for full feature...



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“Four years ago, the word ‘fintech’ didn’t exist or it was just beginning to emerge, and it was then that Ralph Hamers asked me, ‘Are we fast enough?’ And if you looked around you would have seen that we were much slower than the rest of the world. We needed to accelerate.”

Benoit Legrand, ING

» see page 18 for full feature...

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“All these applications have in common that some decision or analysis has to be done based on uncertainty and a quantum computer has the potential to handle this in more efficient ways.”

Dr. Stefan Woerner, IBM Research

» see page 14 for full feature...



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“Folks are just beginning to recognize that even if you have great data, when you put it into these new technologies you have to interrogate the outcomes to understand how your decisions are affecting the socioeconomic or cultural situation.”

Diana Ascher, UCLA

» see page 88 for full feature...

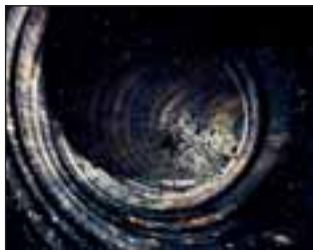
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“My message wouldn’t be to not worry.

I still think there is going to be some level of bottlenecking, especially in the custodial space because that is what takes the longest time in terms of getting ready to comply, in terms of getting your segregation accounts and communicating between two different custodians, because there are two initial margins [calculated]. I do think it is going to help the bottleneck, but it is definitely not something that is going to alleviate it completely.”

John Pucciarelli, AcadiaSoft

» see page 24 for full feature...



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“Institutions have been pretty nervous [about bitcoin exchanges], and I would say somewhat rightfully so. There’s an open question of how secure are these exchanges? How secure is my crypto? Am I even allowed to trade on these from a mandate perspective?”

Hunter Merghart, Bitstamp

» see page 76 for full feature...



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“Alternative data will completely change the landscape in the next couple of years.”

Albert Loo, Societe Generale

» see page 8 for full feature...





# NEWSDESK

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

## FIS to Deploy Machine Learning for Private Equity



Automating workflows

FIS is turning to emerging technologies, particularly robotic process automation (RPA) and machine learning, to boost its capabilities in the private equity space.

Tony Chung, general manager and global head of private equity at FIS, says the goal is to further automate and streamline workflows for private equity firms. "We can use machine learning to look for patterns in the data, which is paramount for private equity since it's not a very transparent space," Chung says.

He notes that much of the work for pulling together private equity data is still largely manual, which can be a problem when it comes to determining the performance of an investment and risk management. In light of this, FIS has released a portfolio data collection and analysis solution called Private Equity Rainmaker, which uses some RPA and machine learning to both ingest information and analyze that information to alert managers to patterns in the data. Clients can access Rainmaker through a web portal.

## Northern Trust Looks to Facial Recognition for KYC



New tech can make onboarding faster

Northern Trust is building out facial recognition functionality to help automate the processes around know-your-customer (KYC) and anti-money laundering (AML). Laurence Everitt, the firm's head of global fund services, says

the move is expected to make tasks such as onboarding new investors more efficient than existing, traditional methods—adding that the registering process could take minutes as opposed to months.

"If you are a new investor and you are investing in a fund, you have to provide lots of paperwork—this might be a passport, a driver's license or a utility bill, which is a very old way of completing KYC," Everitt says.

Northern Trust is also developing the capability to allow asset managers, investors and independent financial advisors to consume its data via any device, including mobile phones, tablets, laptops or desktops.

## Finra to Expand Use of Machine Learning for Market Surveillance



Finra to use more AI in fraud detection

The Financial Industry Regulatory Authority (Finra) is in the process of expanding its use of machine learning for market surveillance as it continues to refine its algorithms to trace manipulation.

Steve Randich, chief information officer at Finra, says the regulator plans to increase the use of AI for surveillance to handle easier-to-detect instances of fraud, thus freeing up human surveillance professionals to focus on more complex instances.

"We have used machine learning to make sure that the handling and disposition of the alerts has a higher level of certainty in that judgment. We are training the machine to do what the humans do in terms of their initial judgment and intuition and let the algorithm do that. That's exactly where we're at," he says. "Market manipulators are getting smarter, so when they notice that they're being caught they will change tactics. That's why we still need humans involved. Our plan this year is to continue doing more on the behaviors most commonly used by fraudsters. The roadmap is to implement machine learning so that the human is doing less of the redundant, low-value work of invalidating false positives."

## Botswana Stock Exchange to Replace LSEG's Settlement System with CMA

The Botswana Stock Exchange (BSE) is replacing its current settlement system. The exchange operator has used LSEG Technology's MillenniumIT platform since 2008, but Thapelo Tsheole, CEO of the BSE, says it is switching to a platform by CMA Small Systems as it looks to add more features to its trading environment while cutting costs.

## Trulioo Taps into Mobile Data for AML/KYC

Trulioo, the identity verification network that partnered with Refinitiv in June to enhance the company's anti-money laundering and know-your-customer (AML/KYC) products, is looking to incorporate mobile phone datasets to help identify individuals. Trulioo has loaded a variety of mobile network operators onto its network, enabling it to leverage its connection to the carrier and verify an individual's identity in real-time. General manager Zac Cohen sees mobile data as one of the more promising use cases, particularly in Southeast Asia, where demand for more detailed information is growing.

## Pico Looks to Expand Network Analytics for Outsourced Trading

Infrastructure network provider Pico is looking to expand its outsourced trading portfolio after its acquisition of analytics firm Corvil. The move is meant to allow for more real-time insights into managed networks. Pico, which provides managed trading network access, aims to grow its services around outsourced trading using insights from Corvil's products by providing more transparency around networks and systems. The plan is to provide deep data and analytics within real-time managed environments.

# Quantum Computing's Academic Question

Some of the most groundbreaking work in quantum computing is currently taking place in academia, and the more enterprising financial players are already partnering with universities and research institutes to gain first-mover advantage.

By Hamad Ali

In the 1990s, when Bob Coecke decided to work toward a PhD in quantum foundations, he viewed it as a chance to earn his doctorate while practicing music. As he puts it, he saw the funding he received to spend four years at Vrije Universiteit Brussel as an opportunity to “jam.” But it was the guitar that ultimately was put on the backburner—at least in terms of Coecke becoming a professional.

In the 1990s, quantum science was not exactly a mainstream subject area. In fact, today Coecke recalls the discipline as being “suffocated.” The main problem, as he saw it, was that it was challenging to share information—the internet as we know it now was still in its infancy. Immediately after he finished his PhD, Coecke struggled to find work. As a result, he had to reposition himself as a specialist in logic and category theory.

Things have since worked out for Coecke, who is currently a professor of quantum foundations, logics and structures at Oxford University. While he worries about the general state of employment for those entering the job market today and in the future, he sees a burgeoning field in the world of quantum science that is hungry to hire talented, young scientists.

“I am very concerned with the career [prospects] of young people,” he says. “But now, in this sort of area, at the interface of quantum computing and quantum foundations, the job prospects are fantastic. It is almost the opposite of what it used to be. You have more of a chance of getting a job in this area than anything else.”

Although quantum computing is still expected to be years away from going mainstream, interest in it has been growing. While many banks and financial institutions have adopted a wait-and-see approach, others are taking a more active interest.

One of the leading efforts in the space of collaborative research is unfolding through the IBM Q Network, a global community of tech companies, academic institutions, end-user firms and research labs working in quantum computing. Currently, more than 30 universities are collaborating with IBM Q Network. According to Stefan Woerner, global leader for quantum finance and optimization at IBM Research, these universities are working to accelerate

joint research in quantum computing, and develop curricula to help prepare students for careers that will be influenced by this next era of computing, across science and business.

“We are working on multiple projects in quantum finance with academic and industrial members of the IBM Q Network, such as Keio University in Japan, and JP Morgan Chase,” Woerner says. “The projects range from research on applications, such as options pricing, to basic algorithmic research on improving more generic building blocks for quantum algorithms. We are looking into further improving the existing algorithms in terms of performance and resource requirements, as well as identifying new applications and use-cases where quantum computing may achieve an advantage.”

Woerner says quantum computing may help speed up functions around portfolio optimization and risk analysis. “All these applications have in common that some decision or analysis has to be done based on uncertainty and a quantum computer has the potential to handle this in a more efficient ways,” he says.

Among the founding members of IBM Q Network is Barclays Bank, which joined in December 2017. “We partner closely with IBM via the IBM Q Network,” says Lee Braine, who works in the investment bank CTO office at Barclays. “It is this partnership where we have the business and domain and computer science experience that we can apply, and IBM has its quantum computing physicists with their deep knowledge. My observation has been that the interplay of these two sets of people working together is where the magic happens. We are able to create proofs-of-concept that either side alone wouldn’t have been able to [achieve] otherwise.”

### Secrets to Successful Collaboration

Ashley Montanaro holds the title of “Reader in Quantum Computation” at the School of Mathematics at the University of Bristol, and is a member of the Quantum Information Theory and Theory and Algorithms research groups. In his initial studies, he believes there are a few promising areas for quantum

“One reason that finance is potentially a promising area is that in finance there are some really tough optimization problems to solve, and people are using a lot of supercomputer time already to solve these, so, there might be some hope for some quantum speedup there.”

**Ashley Montanaro, University of Bristol**

development, such as modeling complicated financial instruments and portfolio optimization.

“One reason that finance is potentially a promising area is that in finance there are some really tough optimization problems to solve, and people are using a lot of supercomputer time already to solve these, so, there might be some hope for some quantum speedup there,” he says.

Additionally, advancements in other tangential industries will have profound effects on capital markets firms. Take, for instance, telecommunications. Montanaro recently worked on a project with BT and several other companies and universities—the project is funded by Innovate UK—which applied quantum algorithms to optimize telecoms networks, which would change the way that information is distributed for all industries.

BT supplied a library of potential computational tasks that it thought could be interesting to solve. “They would come along and describe these tasks, and we



**Ashley Montanaro**  
University of Bristol



**Stefan Woerner**  
IBM

would figure out somehow together which ones were likely to be amenable to a quantum speedup,” he says. “So, really, I think what can make these kinds of collaborations successful is where there is some kind of domain expertise from each of the partners that is really essential to understanding whether the problem could be solved with a quantum computer.”

Additionally, the academic community is entering into the vendor space in order to lend their expertise and, hopefully, speed up advancements. Montanaro created a start-up called PhaseCraft, which is looking at applying quantum computers to problems related to simulations of quantum systems.

Oxford’s Coecke holds a part-time position at Cambridge Quantum Computers. “What I have been asked to push within Cambridge Quantum Computers is quantum natural-language processing,” Coecke says. “There is actually only one paper that exists on that, and that is by me from a few years ago,



**IBM Q Network**





“Many people in the industry have heard of the term quantum computing, and they are aware that quantum computers are able to perform various functions in a way that classical computers cannot. Translating that awareness into C-level understanding, managerial appetite to engage in proofs-of-concept, and then building development capability is a challenge for every institution.” **Lee Braine, Barclays**

but now we are going to push this a bit harder, and IBM has given us privileged access to their main big quantum computer. And there are things you can sort of already do, and we use some machine learning in that already. So you can actually put it on a machine already. I know other people in Cambridge Quantum Computers also did some machine learning on the same machine.”

### Educational Challenges

Over the past 15 years, the focus for Coecke has been on replacing the complicated formulas of quantum mechanics with new ones that are entirely diagrammatical that he says are much easier to work with. He co-authored a book on the subject with Aleks Kissinger titled, *Picturing Quantum Processes: A First Course in Quantum Theory and Diagrammatic Reasoning*.



**Bob Coecke**  
Oxford University

He likens his pictorial formulas of quantum mechanics to a programming language.

“Quantum technologies are going to spread around, and automated programmers have to work with these things,” he says. “We need better formulas, and we need better languages, and this is the number one candidate [for exploration] right now.”

While complicated, Coecke believes that it’s important for universities and other players in the space to start reaching out to high school students to better prepare them for this emerging field. So he and his team go into high schools with these pictorial formulas and have the students work toward solving university-level exams in quantum mechanics and related areas.

He’s very pleased with the results thus far.

“We’ve already done some pilots and they can actually do this,” he says. “They can out-perform university students using the usual complicated mathematic formulas. So I think it is a necessary thing to have if it is going to become really widespread technology—you need these simpler formulas.”

In addition, Coecke is writing a book on quantum computing for high school students, which he says will be a technical rather than a popular science work.

According to Coecke, academics are usually happy to work with people in the industry, and there’s also a logical reason for that: funding. He says it is typically easier to get the money from the finance sector and other industries to work on cutting-edge projects than from standard grant organizations, where they have to go through competitions, which can sometimes be random in their decisions.

What is clear is that more collaboration in the area of quantum computing can only be a good thing, says Barclays Braine.

“Many people in the industry have heard of the term quantum computing, and they are aware that quantum computers are able to perform various functions in a way that classical comput-



ers cannot,” he says. “Translating that awareness into C-level understanding, managerial appetite to engage in proofs-of-concept, and then building development capability is a challenge for every institution. We have started on that journey and we think it has been fruitful. We have learned a lot, we have a good understanding of the opportunities and challenges, and we would encourage others to go on that journey as well.”

He sees opportunities for both collaboration and competition in quantum computing. He also says regulators and central banks could get involved, not just in terms of the understanding and appreciating the opportunities, but also the threat timeline around new risks that quantum could potentially introduce to the markets.

He points to Barclays and JP Morgan’s work with the IBM Q network. “I would expect that over time there will be more collaboration across the industry, whether that is driven by academic groups bringing in sponsoring financial institutions, financial market infrastructures bringing in members, or technology vendors that have banks participating in their research programs,” Braine says. “We would be supportive of industry initiatives that are looking to improve quantum

computing progress by encouraging collaboration across banks.”

Dimitri van Esch’s primary role at ABN Amro is to look at new technologies that could be applicable for the bank, with an outlook of five years and beyond. Last year, he visited IBM’s Think conference in Las Vegas and came across quantum computing. The bank has since started exploring the technology.

He, too, is supportive of collaboration with other banks.

“One of our objectives in doing this and being the front-runner in working together with quantum developers is to speed up this creation of this consortium, or creation of an ecosystem, where there will be more end-users working together with quantum developers and therefore also making things better and safer,” van Esch says. “You can’t do this on your own. We are not working on our own. ... We might need other banks or other end-user enterprises to help us to be able to fully create the right system. We invite others to join us in this venture.”

Stacey Jeffery, a senior researcher at Centrum Wiskunde & Informatica (CWI), a public academic institute in the Netherlands, says that perhaps the most important first step is to grow the pool of potential experts in the field,



**Stacey Jeffery**  
Centrum  
Wiskunde &  
Informatica

and that will start at the academic level. “I definitely think the first step is just to make it part of undergraduate education, because even many undergraduates in computer science don’t take a quantum computing course,” she says.

She thinks it is a reasonable guess that within the next 10 years banks will at least be interacting with someone who has a quantum computer—several are already on this path with IBM Q—if not having their own quantum computer, though that prediction is murkier. “It could happen sooner, it could also happen later. It is really difficult to say,” she says.

### Path to Quantum Supremacy

Jeffery says some of the industry people they have met have an attitude that quantum computers would be interesting for the future, but there is nothing they can do with it now. Others are enthusiastic about investigating what can be done in the near future, and getting ready for when quantum computers arrive.

“A lot of things right now are pretty speculative, and it is definitely not clear what the short-term implications will be, but [it] still [needs] to be investigated, for sure,” Jeffery says.

Developments in the world of quantum computing and quantum mechanics are happening fast and at an unpredictable pace. There’s no telling when true quantum supremacy—the point at which quantum computers rather than traditional computers are relied upon to solve complex problems—will happen. In the next few years, though, IBM believes that the use of quantum computing will reach beyond the research lab.

“Quantum computing will be used extensively by new categories of professionals and developers looking to this emerging method of computing to solve problems once considered unsolvable,” says IBM’s Woerner. “This is why IBM wants to help industries get ‘quantum ready’ to use today’s systems, and why IBM wants quantum computing to be ubiquitous in university classrooms. From computer science courses to chemistry and business classes, students should become familiar with this technology and consider career paths rooted in quantum computing.” [wt](#)



**Lee Braine**  
Barclays



**Dimitri van Esch**  
ABN Amro



With Benoît Legrand firmly in the driver's seat, the last four years have seen ING push to transform its IT landscape and approach to innovation. By Josephine Gallagher, with photos by Jonathan Goldberg

### Behind closed doors

and within the four walls of a bank, there is a constant tug of war. It's a battle of resources between what is crucial to business operations and regulatory requirements, and what can propel the institution into the future.

In most cases, it is a losing fight for innovation. But when Ralph Hamers, CEO of ING, approached Benoît Legrand in 2015, he asked for his help with transforming the bank's technology infrastructure and modernizing its approach to fintech.

"Four years ago, the word 'fintech' didn't exist or was just beginning to emerge, and it was then that Ralph Hamers asked me, 'Are we fast enough?'" Legrand recalls. "And if you looked around, you would have seen that we were much slower than the rest of the world. We needed to accelerate."

Part of the reason he was asked to take on the challenge, ironically, was his ability to manage fintech failures. Having worked with ING for close to 20 years at this point as acting president of ING France, he remembers having just come away from a "bad experience" with a fintech partnership as a result of multiple operational failures.

"It was based on that idea of failure," explains Legrand. He recalls that Hamers said, "You might be the right guy because you know what it takes to run a business; you know investment banking and direct banking; you can connect with people and if we effectively want to drive change, I think it is important to bring all of those elements together."

But driving innovation agendas carries many challenges, as Legrand has learned. Some of the major roadblocks are common among financial institutions, such as shifting the cultural mindset and unraveling decades-old legacy technologies that are bolted onto a myriad of systems. He explains that a lot of the apprehension derives from being afraid of failure—the fear of not delivering solutions to problems with each project that is pushed, or being unable to manage the pressure banks face to ensure 100% system availability.

"Those are the fears that people have at the beginning and this is still one of the biggest challenges: to reassure people that they can take those steps and make enough space in their agenda and budgets to







# **Tug of War:** ***The Innovation Game***

Benoît Legrand



discover new technologies for the future,” Legrand says.

Still, the bank has an aggressive innovation program that incorporates many buzzwords, but it also moves beyond that into creating truly transformational solutions.

### Moving Mountains

Four years ago, Legrand’s mission was to navigate and develop ING’s innovation strategy. With the new mandate in place, he started as head of fintech in October 2015 and dedicated the next three months to putting together a small team of three people to help evaluate the organization’s pain points. Over the coming months, they aimed to grow the innovation agenda by partnering with new fintech firms,

“**“It is also important to know when to stop [partnerships], as well. It is easier to start them, but more difficult to stop.”**

changing the mindset around exploring new technologies and gradually building out the team.

“It was done step by step,” he says. “It was very much like the Chinese philosophy where a man who wants to move a mountain should start by removing small stones.”

Today, as chief innovation officer and CEO of ING Ventures—a role he took on in 2018—Legrand manages

multi-million-dollar budgets and various teams responsible for innovation governance and incorporation, scouting fintechs, signing partnerships, overseeing wholesale banking innovation, and running labs across Amsterdam, Singapore, and London. Within that, he manages the bank’s methodology team called PACE, which combines three primary approaches: agile development, lean start-up design and a focus on the user experience.

Across the bank, he has helped scout about 1,800 fintechs, signed 160 different fintech partnerships, invested over €200 million (\$225 million) in 25 venture capital investments, and rolled out 50 start-up initiatives in labs across the globe. According to Legrand, a large part of the job is also ensuring

start-ups and new technologies are properly nurtured throughout the different stages of the innovation labs.

“Those companies that are still scaling need to be protected from the rest of the organization,” he says. “I need to shield them and make sure that until they are mature enough, they are not affected or slowed down by the rest of the organization.”

On the flip side, banks are also required to carry out the necessary due diligence before committing to these risky firms, as 90% of start-ups fail. As such, since 2015, Legrand has had to make some tough decisions. Over those four years, ING dropped about 70 partnerships with fintech companies. As Legrand explains, there were many reasons why the bank put an end to working with certain vendors, with the most common cases involving failure to deliver on expectations, inability to meet cybersecurity or compliance requirements, a change in the bank’s priorities, and, in some cases, ING was simply unable to keep up with the start-up’s pace of development.

“It is also important to know when to stop [partnerships], as well,” he adds. “It is easier to start them, but more difficult to stop.”

### Data Governance

Like any head of innovation, Legrand’s eyes remain on the road ahead, constantly looking at ways to develop new strengths. Yet one such resource that has yet to be fully leveraged is the mountain of data that has been running through banks’ systems since the digital awakening in the 1990s. For ING, this is no different.

“Although digitization is not new, we have still not used that data in an effective way,” Legrand says. “We have not organized it in an effective way and there is a lot of work that now needs to be done to make it usable or interoperable.”

Legrand explains that a long-term aim for the bank is to be able to effectively manage the bank’s

internal and external data sources to improve efficiency and better service its retail customers and professional client base. This involves improving interoperability throughout the organization’s systems and creating valuable data assets for historic and real-time data analysis. For now, at least, it’s a matter of exploring the different technologies that will help the bank to achieve this centralized data asset. Legrand points to the potential of new technology, such as artificial

intelligence (AI), blockchain and other forms of distributed-ledger technology (DLT) to help solve these problems. “Whatever technology helps us to get there,” he says.

Like many sell-side firms, including Deutsche Bank and Bank of America, ING is also gradually migrating much of its infrastructure to the cloud. It’s a big step for any heavily regulated financial institution. In this case, however, the bank has opted to use a private cloud model, similar to







Bank of America. As most fintechs are now cloud-native, moving ING's functions to a virtual environment has allowed for simpler integrations and an array of other operational and data benefits.

"It allows flexibility and variability of the cost, which are very important, and [supports] the availability and accessibility of data—things that are of immense value in a world where things move very fast," Legrand says.

But leveraging data as an asset comes with a warning label, particularly in cases where institutions seek to use banking data relating to credit card details, customer location, online activity or personally identifiable information (PII). This type of data can produce valuable insights into company performance, investment opportunities, and client behavior. Yet, as Legrand explains, firms like ING are having to tread very carefully in how

they process the data to avoid breaching global data protection laws, such as the General Data Protection Regulation (GDPR), which came into effect in May 2018.

"This is the risk we have with data," he says. "But it is not about having the data, as having data is OK, but it's what you do with it."

### The Enablers and Disruptors

In the financial markets, the term "disruptive technology" is often followed by examples such as AI, blockchain or cloud computing. Legrand says the bank is developing its own type of disruptive technology, known as software-building-software, or an automated coding environment.

ING is currently piloting the technology in a bid to build one of its wholesale front-office systems to replace an old, legacy platform, and will be tested over the next 12 months. The software is being developed in ING's Amsterdam labs and aims to transform the bank's IT development landscape in that users can simply request the functionality required for a product, which is then auto-generated within the coding environment.

"Our vision is to disrupt IT development. There is some work to be done and it is going to take years to get there, but we believe there is an immense need in the world to disrupt those areas," Legrand says.

If successful, the automated coding environment will set the template for developing other platforms and tools. It is expected that this software will be product-agnostic, meaning that it could be programmed to build any technology. It aims to be able to develop products in a fraction of the time that it takes for a developer, and remove any potential disagreements between IT teams during development.

ING has multiple projects and initiatives in development across the globe, but bond trading is one area to which the bank has been dedicating its energy. Legrand explains that the

firm is using AI to produce predictive analytics on the price of bonds. The technology will incorporate machine learning to detect patterns and insights from historical data and pricing information to enable traders to make more informed investment decisions.

“Of course, it is not black or white science, but it gives you a price range and it helps the traders to be more effective in making decisions,” Legrand says. “This is an example of what I would call the bionic bank, where you still need the trader to say, ‘What do I want?’ But the individual is helped an awful lot by the technology to make faster and better decisions.”

### The Paradigm Shift

Although there is still a long way to go, Legrand is gradually seeing the fruits of his efforts in changing the bank’s approach to new technology, partnerships, and innovation. Competing with the heavyweight banks of the world is a daunting endeavor, but one that needs to be undertaken to guarantee the bank’s place in the future. As Legrand recalls, when Hamers evaluated the bank over five years ago, he knew it was important to start planning for the long term to ensure the bank would still be there in 10 years and could show that it had transformed in that period.

As part of the process, Legrand explains that it’s important to strike that balance and gradually work toward a long-term goal, “I think [it’s important to document] the results quarterly and yearly and show that we are effectively transforming and managing our costs,” he adds. “But also keep enough space in your mind for time and budget, because naturally, those things can fade.”

But making that change cannot be achieved alone and attracting the right talent is crucial. Since these changes, where there is a greater focus on innovation and agile working, Legrand says that recruiting the right people has become less of a challenge.



“Although digitization is not new, we have still not used that data in an effective way. We have not organized it in an effective way and there is a lot of work that now needs to be done to make it usable or interoperable.”

In most cases, new talent is more easily attracted to fintechs, working in labs, modern IT environments, projects that obtain fast results, and workplaces with less hierarchical management.

“Those guys are not there to make a career for 45 years. They want to learn, they want to solve a problem, so either that means [they are] in the

company to get those things, or they move on,” says Legrand.

People will continue to play a major role in shaping and transforming the bank for years to come. As technology advances, Legrand will ensure that there is always a human involved in making the final decision, monitoring its activity and ensuring the technology is effective in resolving the bank’s problems.

“There is always a valuable human being that needs to understand why it is teaching the machine do these kinds of things,” Legrand says, adding that firms need to understand quickly the problem that is being solved for and is this an effective solution? “That is why we see technology as an enabler to transforming the banking industry.” **wt**

# Spotlight on:

## The Initial Margin 'Big Bang' Split

As the final phase of the initial margin implementation for non-cleared derivatives has been split into two parts, questions emerge on whether tech preparations will stall.

By Josephine Gallagher



As the final phase of the so-called initial margin “big bang” implementation for non-cleared derivatives has been split into two parts, questions are emerging on whether tech preparations will stall and if the risk of a bottleneck remains.

Although some smaller buy-side firms will breathe a temporary sigh of relief due to the latest extension for initial margin (IM) rules on uncleared derivatives, concerns remain on whether the extended deadline will offer firms enough time for tech preparations and remove the risk of a bottleneck.

“My message wouldn’t be to not worry,” says John Pucciarelli, director of strategic initiatives at AcadiaSoft. “I still think there is going to be some level of bottlenecks, especially in the custodial space because that is what takes the longest time in terms of getting ready to comply, in terms of getting your segregation accounts and communicating between two different custodians, because there are two initial margins [calculated]. I do think it is going to help the bottleneck, but it is definitely not something that is going to alleviate it completely.”

On July 23, the Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commission (Iosco) announced that the fifth phase of the initial margin implementation—which was meant to be the last phase—will be divided into two parts: phases 5 and 6. What this means is that entities with an aggregate average notional amount (AANA) of non-cleared derivatives greater than €8 billion (\$8.9 billion) in phase 6 will have an extension of one year, to September 2021, to comply with the requirements. Those covered under phase 5 with an AANA of non-cleared derivatives of more than €50 billion (\$55.7 billion) will still have to comply with the original deadline of September 2020.



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**“This decision will reduce the risk of a compliance bottleneck in September 2020, and will help ensure smaller firms will have longer to get the necessary systems and processes in place.”**

**Scott O’Malia, Isda**

The timeline was extended “in the interest of supporting the smooth and orderly implementation of the margin requirements,” according to a release from BCBS and Iosco.

The regulatory bodies expect that “covered entities will act diligently to comply with the requirements by this revised timeline and strongly [encourage] market participants to make all relevant arrangements on a timely basis.”

The recent announcement has come as a significant relief for smaller buy-side firms, as it gives them more time to build out systems or outsource their initial margin or collateral management requirements to service providers. The technical challenges involved include managing counterparty workflow, collateral, the negotiation process and IM documentation. Counterparty firms are also tasked with making complex IM calculations in accordance with a common methodology, such as the

SIMM model, as well as capturing, processing, storing and formatting large amounts of legal data. The argument is that many smaller buy-side firms, accounted for in phase 6, are largely unable to obtain the necessary resources in time to prepare for, and comply with, the original September 2020 deadline.

### Breathing Room

Now that the date has been pushed back, those counterparty firms have more time to prepare accordingly.

“This doesn’t mean that you don’t have to do anything,” Pucciarelli says. “I think that this is an opportunity for firms to take a little bit more time and not rush through the process.”

The extension is seen as a response to industry concerns over the phase-5 threshold, where the International Swaps and Derivatives Association (Isda) submitted advocacy letters in a bid to raise the threshold to €50 billion. The industry body welcomed the latest announcement.

“We are grateful that the BCBS and Iosco have responded to the concerns that have been raised by the industry,” says Scott O’Malia, CEO of Isda. “The decision by BCBS/Iosco to split the phase-5 implementation over two years will reduce the risk of a compliance bottleneck in September 2020, and will help ensure smaller firms will have longer to get the necessary systems and processes in place.”

Earlier this year saw the launch of multiple offerings in response to the initial margin deadlines on uncleared derivatives as firms prepared for the next implementations in phase 4 this September and phase 5 in September 2020. Since January, there has been a significant push to digitize the initial margin and collateral management process, as well as vendors coming together to bridge offerings. [WT](#)



**Scott O’Malia**  
Isda



## >< In the Air


This year's Waters Rankings luncheon was held on July 10 at the Manhattan Penthouse near Union Square in New York City. Despite the fact that most of the winners had very different product offerings, there was one thing that tied them all together: cloud technology.

**W**hen I attended my first Waters Rankings almost a decade ago, there was absolutely no talk about cloud—at least not as the word pertains to technology. I can't remember for the life of me what the weather was like on that summer afternoon in 2011.

Today, almost every write-up in this issue that describes why our winners won has the word "cloud" in it, or perhaps a sort-of derivative, like "as-a-service" or "managed service," which use the cloud to deliver the vendor's software or service. Cloud technology has completely changed the way that the capital markets are run and that change is shown in the sophisticated tools on offer in the subsequent pages.

Unsurprisingly, it was technology and data behemoth Bloomberg leading the field in hardware won, taking home

four awards at this year's Waters Rankings, which was held at the Manhattan Penthouse on July 10 in New York. Bloomberg was followed by S&P Global Market Intelligence, which won three awards, and three subsidiaries of SS&C Technologies—Advent, Eze and Salentica—also took home awards.

The need to distill massive datasets into actionable insights, and the need to incorporate new tools—from machine learning to improved APIs and far beyond—will only make cloud-delivered tools and services more valuable going forward. This is not a trend, it's a revolution. 

**Anthony Malakian**  
Editor-in-Chief

### Winners' Circle

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*Waters honored the winners at a ceremony on July 10 in New York.*









## Best Crossing Network Provider

# Instinet

Liquidity is all-important in the capital markets—this is no secret. But sourcing for liquidity remains a big challenge: It's hard to find and is often fragmented, particularly as more trades are electronically executed. This has resulted in smaller trade sizes while the risk of information leakage has increased, which in turn leads to an impact in price and slippage in performance expectations.

This is where Instinet's BlockCross—the winner of the best crossing network provider category—has made a difference. The alternative trading system (ATS) offers users smart and configurable opportunities to aggregate quality liquidity from buy- and sell-side counterparties, and execute block-like transactions. BlockCross' conditional-order and proprietary-order blotter integration creates opportunities to execute large trades efficiently and anonymously, minimizing market impact.

In the past year, Instinet, a subsidiary of Nomura, has kept busy with enhancements to the platform that seeks to address the liquidity challenge. Mark Govoni, president of Instinet (Americas), says it enabled the BlockCross graphical user interface access to Instinet's advanced suite of algorithms and drove more liquidity into its ATS. Instinet doubled the platform's volume and now trades in more than 4,500 symbols.

Instinet completed the purchase of BlockCross from State Street in August 2017. By tapping into Instinet's broad client base, the number of firms and diversity of participants in BlockCross has grown—it now serves over 100 new firms.

Govoni says the firm is looking to expand BlockCross' global presence. He expects to offer US BlockCross clients the opportunity to trade EMEA stocks soon. It is also working on capabilities to launch the platform's conditional order management capabilities of BlockCross in EMEA and Asia-Pacific.

The firm also brought Ralston Roberts over as CEO in December 2018, after previous CEO Jonathan Kellner left to head the Members Exchange (MEMX), an equities venue formed by a group of nine financial services firms.

—WSW



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By tapping into Instinet's broad client base, the number of firms and diversity of participants in BlockCross has grown—it now serves over 100 new firms.

## Best Agency Broker

# ITG

This year's winner for best agency broker is ITG, beating out Weeden & Co., which had won the previous two years.

ITG has seen its business grow in the past year, particularly its international units in Europe and Asia, as interest in algorithmic trading and trading commissions through its Posit Alert tool increased, the company said in its annual filing with the Securities and Exchange Commission. Posit Alert is a block-indications tool that informs buy-side traders of the availability of blocks of liquidity.

In the past year, ITG has also invested heavily in its technology portfolio that supports its liquidity, execution, analytics and workflow technology solutions. The company has invested more than \$40 million in technology since the inception of its investment plan in July 2016.

But of course the biggest news around ITG is its acquisition by Virtu Financial in November 2018 for \$1 billion. The deal, which closed in March this year following regulatory approvals, allowed ITG to integrate Virtu's high-frequency trading technology and risk management operations into its offering. As part of the transaction, ITG changed its name to Virtu ITG.

The acquisition brings ITG's agency services suite of solutions, from transparent trading and execution management workflow services to liquidity solutions, to Virtu's global network and adds a layer of relationship trading to the company.

Virtu said in a statement in May that the company is busy integrating ITG's systems into its own network.

—ED

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**In the past year, ITG has also invested heavily in its technology portfolio that supports its liquidity, execution, analytics and workflow technology solutions.**

## Best Reconciliations Management Provider

# SmartStream Technologies

As more players in the reconciliations space turn to new technologies to streamline the reconciliations process, it's SmartStream Technologies taking home the title of best reconciliations management provider in this year's Rankings, unseating Broadridge, which had replaced two-time winner Electra.

SmartStream's offering, TLM Reconciliations Premium, aims to take the onerous process from a data-matching function and shift it to an exception-investigation and resolution resource by tackling three central challenges. Those challenges, says the company's product manager Robin Hasson, are reducing cost, managing increasing volumes and improving business intelligence.

"Volumes are being driven up by two forces: the centralization of all reconciliation activities onto a single platform and the consistently increasing use of digital payments," Hasson explains. He adds that while clients increasingly look to reduce infrastructure costs by migrating to public and private clouds, the use of its hosted and managed service offerings can further reduce the need for large back-office systems.

Several updates have been made to the platform over the last year. For instance, SmartStream introduced artificial intelligence modules to help onboard new reconciliations and reduce the number of manual matches required by automatically matching uncategorized data, helping speed up time-to-market. A new user interface, TLM View, was also added to the offering, allowing businesses to restructure and interact with its operations and management information systems without the need to engage IT. At the same time, businesses can also build and test new and existing reconciliations using TLM SmartRecs without IT involvement.

Looking ahead, Hasson says the company will look to add even more value using AI and machine learning in areas such as monitoring risk and automation endeavors, as well as maintain a heavy focus on digital payments.

—RN



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SmartStream's offering, TLM Reconciliations Premium, aims to take the onerous process from a data-matching function and shift it to an exception-investigation and resolution resource by tackling three central challenges.



# Winners' Circle: SmartStream Technologies Premium's Perennial Appeal

SmartStream Technologies won the best reconciliation management provider category at this year's Waters Rankings, following up its multiple successes in recent years in the Buy-Side Technology and Sell-Side Technology Awards. Victor Anderson speaks to SmartStream's Robin Hasson about TLM Reconciliations Premium's perennial appeal to both sides of the industry, what the firm's clients are looking for in a reconciliations platform right now, and its plans to incorporate AI and machine learning technology into its flagship offering.

**Q** SmartStream won the best reconciliation management provider category at this year's Waters Rankings. To what do you attribute TLM Reconciliations Premium's enduring success across both the buy side and the sell side in recent years?

**Robin Hasson, product manager, TLM Reconciliations, SmartStream Technologies:** I've been at the company for a number of years and have seen the evolution of the software from previous versions through to Premium. Although we started with domain reconciliations for cash and securities, we quickly identified that having a platform capable of reconciling any type of information is really what the market needed. So we established a standardized reconciliations process across cash, positions, futures, static, etc., coupled with best-practice domain features and exception management. Being able to easily customize and refine workflows and tailor the user experience are the other areas our clients like—for example, using the integrated workflow to solve edge-case but important issues.

Aside from the functions and features, as a team we challenge ourselves to keep the technology as current as possible. We invest significantly in our research and development to enable us to re-architect and innovate our engines and services, and this is most evident with TLM View, our user interface.

**Q** What are SmartStream's clients most struggling with right now with respect to their reconciliations processes, and how is SmartStream addressing those challenges?

**Hasson:** People are looking for topical things like artificial intelligence (AI) and machine learning, but they're also focusing on cost reduction right now. Banks are always looking to reduce their footprint in terms of cost, but there seems to be a particular drive to embrace an evergreen approach now—they're looking to redesign their back-office environment as a whole and reduce their costs for the foreseeable future. That includes things like the type of database platforms they use, whether they are hosting applications in a public or private cloud, whether they can use a service for parts of their operations or not, and also reducing the number of individual components that were a given in years gone by. These long-established components, such as operating systems and databases, are being compared with newer options

to establish a technical platform for the coming years. It is part of what people refer to as "digital transformation."

The other area of high interest is the move to standardize all reconciliations by replacing all spreadsheets and manual tasks with a single tool. This is not new, but the drive to enable the business themselves to manage this process without the need for IT support is.



Robin Hasson

**Q** I hear that SmartStream is getting ready to unveil a new product at Sibos this year in London that it believes will be a game-changer in the reconciliations space and which will feature extensive AI functionality. Can you give WatersTechnology's readers a flavor of what it might entail?

**Hasson:** I can't talk specifically about the new product right now, but we have been working on AI and machine learning in the last few years to help build and onboard reconciliations quicker. Clients want to be able to get a reconciliation from the receipt of data through to testing it within minutes. Through the TLM SmartRecs product that we launched last year, we can already do that without AI. We're now layering AI on top of that, which helps analyze and map the data into the system and identify matches automatically.

We're looking at AI across the board for machine learning, which we'll be launching in the coming months. Machine learning will be used to improve many areas, including automating manual matches, improving exception categorization and allocation, and system monitoring.

Full end-to-end AI matching will not pass scrutiny with auditors in certain markets without some level of assurance that it has been matched correctly and accurately. So what we're doing in Premium is incorporating AI to automatically find those matches as part of the standard model when you want it. Importantly, we then allow rules-based tests to assert the quality of those groups to show auditors that they meet the necessary criteria. This hybrid use of AI with rules is an example of the targeted, high-value innovation we are working into the product. [Wt](#)

## Best Algorithmic Trading Provider

# Clearpool

The winner for best algorithmic trading provider this year is Clearpool, besting Wolverine Execution Services, which had won this category the previous two years. It's quite the coup for the New York-based company, which is only five years old.

A big reason for the company's success is its growth, in both the number of clients adopting its Algorithmic Management System (AMS) and through its recent geographic expansion into Canada. Joe Wald, Clearpool CEO, says the Canadian expansion has laid the groundwork, which will help the vendor to move into other regions and coverage areas.

"Our entrance into the Canadian market [represents] a new region for us," Wald says. "This is a major part of our growth—basically it represents a blueprint for how we will continue to grow in the future."

Clearpool added Canadian equities to its coverage earlier this year, providing access to a host of new order types and venues through its AMS platform. Along with regional expansion, Wald points out that the company's network has grown to 140 broker-dealers.

And with that growing network, Clearpool is doubling down on its commitment to transparency, especially in terms of how customers can better oversee and customize the algorithms they use.

"There is fragmentation now in our market structure; with all the different venues available, you have to have tools that help you construct optimal order-routing protocols and allow you to make adjustments and respond quickly as the market changes," Wald says. "The power of Clearpool's AMS is that it is transparent and every client can customize their algos to differentiate themselves."

For the future, Clearpool is looking to expand into more regions. Wald says Clearpool is ready to enter any market where there is electronic trading and where its algorithms make sense to deploy. The company is also cognizant of where it can fit with new regulations coming out, particularly around best execution. Wald points out that its platform and commitment to transparency is very much in line with policies around best execution.

—ED



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With that growing network, Clearpool is doubling down on its commitment to transparency, especially in terms of how customers can better oversee and customize the algorithms they use.



# Your knowledge, our power. Better together.

Holistic trading technology powered by Clearpool  
puts you in control of your algorithmic trading.



The powerful combination of man + machine  
empowers brokers to deliver better quality executions  
for the buy side.



Helps the buy side and sell side engage to  
create custom strategies based on specific  
trading goal.



Allows you to monitor and adjust routing  
protocols in real-time using its Algorithmic  
Management System.



Analyze and make informed optimizations to  
algorithms with historical data to back it up.



## See it in action.

[ClearpoolGroup.com/Demo](http://ClearpoolGroup.com/Demo)



## Best Artificial Intelligence Technology Provider

# MarketAxess

The best artificial intelligence (AI) technology provider category is three years old. The first two winners were Sentieo and AlphaSense, both of which are startup specialists. This year's winner, however, is nearly two decades old: MarketAxess. And its win shows that the field of AI is spreading well beyond the buzzy startup community and filtering into the traditional capital markets.

MarketAxess won this year's award thanks to the incorporation of machine learning for its Composite+ algorithmic pricing engine for corporate bonds. The research platform allows for pre-trade price discovery, liquidity provision, transaction-cost analysis, auto-execution, and crossing. The automated engine algorithmically generates prices for over 24,000 corporate bonds from public TRACE data and MarketAxess's proprietary TRAXdata platform. Composite+ is updated every 15 to 60 seconds and generates nearly 20 million levels per day.

Composite+ uses a machine-learning technique known as a gradient boosting model to help produce more accurate prices in the corporate bond market. MarketAxess was sitting on a treasure trove of good data but it was too complex for a human to create a hand-built set of rules to aggregate, analyze and make sense of the data in a meaningful way, says David Krein, head of research for MarketAxess.

"If the trade occurred on MarketAxess, we have insight as to what actually transpires and the algo can effectively navigate this new insight and make sense of it," he says.

For example, if a trade is struck at 96 bps, that could be one client asking one dealer for a price, or it could be one client asking 10 or 20 dealers. Composite+ would give the former a lower weight and the latter a higher weight, because it can piece together the context around the trade. "The AI can make sense of the data and value those inputs quite a bit differently," Krein says.

—AM



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**Composite+ uses a machine-learning technique known as a gradient boosting model to help produce more accurate prices in the corporate bond market.**

## Best TCA System Provider

# Tradeweb

For the second year running, Tradeweb is taking home the best transaction-cost analysis (TCA) system provider award.

Conducting TCA—an increasingly vital component of trade management—is no easy feat, especially when there is a lack of quality data. It becomes exponentially more difficult when the data just isn't there. Tradeweb sees more than 40 products traded on its platform every day and on average handles \$630 billion in notional value daily. This allows it to provide composite data across platforms and liquidity providers.

Brian McElligott, managing director and head of data strategy at Tradeweb, says clients want and need reliable benchmarks, which makes Tradeweb's breadth of coverage a key differentiator.

"We then leverage our extensive market knowledge to help our clients review their costs on an asset-class basis. For example, we've seen an increase in usage among clients between Tradeweb TCA and their use of Automated Intelligent Execution (AiEX), Tradeweb's rules-based execution protocol. That's because clients are using TCA to refine those execution rules," he says.

Another challenge that financial firms face is uploading trades for TCA benchmarking, which can be a convoluted process, he adds. Tradeweb has been working to streamline this by uploading data in a variety of ways so that trades can be benchmarked overnight.

McElligott says Tradeweb is refining its TCA offering "all the time." For example, its Ai-Price module, which delivers advanced reference pricing for more than 15,000 bonds, gives clients in every region the same accurate and objective price estimate, which is also updated every 30 seconds. Tradeweb recently developed a US credit liquidity score that allows clients to review their costs by level of liquidity. It plans to add peer analysis to clients in Europe soon. The company is also currently looking to add mortgage-backed securities, global credit default swaps as well as net present value swaps.

—WSW



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Tradeweb sees more than 40 products traded on its platform every day and on average handles \$630 billion in notional value daily. This allows it to provide composite data across platforms and liquidity providers.

## Best Sell-Side OMS Provider

# Bloomberg

For the fourth straight year it is Bloomberg—thanks to its ubiquitous TOMS platform—taking home the best sell-side order-management system (OMS) provider award.

Phil McCabe, head of the TOMS product for Bloomberg, points to continued regulatory pressures—and how the platform helps users to overcome those challenges—as the key reason for Bloomberg's continued dominance in this category.

"The best way for firms to address these challenges is to reassess their technology stacks to simplify and streamline their workflows, making their business and compliance processes more efficient. Bloomberg TOMS enables hundreds of sell-side firms globally to create more efficient workflows, from pre-trade to post-trade, and to meet regulatory obligations such as Mifid II, the European Market Infrastructure Regulation, and the Fundamental Review of the Trading Book (FRTB)," he says. "Many of these regulations require breaking down silos, whether between front- and middle-office risk, or end-of-day and intraday risk data and modeling. For example, FRTB encourages alignment of front- and middle-office models and data for both its standardized and internal models approaches."

To further improve its suite of solutions, the tech giant recently completed the integration of its Multi-Asset Risk Solution (MARS) with TOMS, which means that clients are now able to access both solutions via a single interface, McCabe says.

It has also expanded its offering to facilitate investing in China. "We began a phased inclusion of Chinese bonds into the Bloomberg Barclays Global Aggregate earlier this year, which was a big step toward opening up those markets," he says. "To support our clients in this development, we built connectivity to Bond Connect and China's Interbank Bond Market (CIBM), which allow global investors to trade in Chinese bonds with local counterparts. We've also developed functionality to help Chinese sell-side firms make markets via TOMS. This allows us to provide a very efficient and powerful technology solution for firms in China and firms investing in China."

—AM



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To further improve its suite of solutions, the tech giant recently completed the integration of its Multi-Asset Risk Solution with TOMS, which means that clients are now able to access both solutions via a single interface.



# Thank you to our clients for recognizing Bloomberg TOMS as an innovative leader.

We are grateful to Waters readers for voting Bloomberg TOMS as the **Best Sell-Side Order Management System (OMS) Provider 2019**. TOMS delivers global, multi-asset solutions for front-end inventory, trading, and middle- and back-office operations. Our pioneering solutions help generate revenue, drive efficiency, increase global distribution, and manage risk and compliance.

[bloomberg.com/toms](https://bloomberg.com/toms)



**waters**

Rankings Winner 2019  
Best Sell-Side Order Management  
System (OMS) Provider  
Bloomberg TOMS

**Bloomberg**

## Best Buy-Side Order Management System (OMS) Provider

### SS&C Eze

SS&C Eze—the new entity formed after SS&C Technologies’ acquisition of Eze Software, which closed in October 2018—emerged on top in this year’s best buy-side order management system (OMS) category.

When it comes to buy-side technology, this category is arguably the most competitive. It’s the broadness of the Eze Investment Suite—the company’s front-to-back-office platform, which includes the Eze OMS—that resonated with *WatersTechnology’s* readers. This is the third win in four years for SS&C Eze in this category (the previous ones coming under the Eze Software banner); Charles River Development, now part of State Street, was victorious in this category in last year’s Rankings.

According to Frank Orzechowski, managing director, product management at SS&C Eze, the integration and productization of a number of the firm’s modules into the Eze Investment Suite can be traced back to the founding of Eze Software Group in early 2013 when the business was acquired from ConvergeX by private equity firm TPG.

“What we’ve seen over the years is that no collection of third-party systems, no matter how good each system is on its own, is sufficient for buy-side firms and their businesses. In particular, we’ve seen demands in terms of pressures—fees, limited time, regulation, and all the other responsibilities you have as you grow your business as an asset manager,” Orzechowski explains, articulating some of the challenges facing buy-side firms and their personnel, not only from a business perspective, but also in terms of operational efficiencies.

Orzechowski describes the rationale leading to the creation of the Eze Investment Suite—launched as a single, integrated platform for the first time just over three years ago—as capitalizing on the advantages the firm had realized by way of the same product strategies across its technology stable, the same source code, the same developmental processes, and the same vision, to the ultimate benefit of the firm’s clientele.

—VA



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It’s the broadness of the Eze Investment Suite—the company’s front-to-back-office platform, which includes the Eze OMS—that resonated with *WatersTechnology’s* readers.

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# Winners' Circle: SS&C Eze

## Automation Takes Center Stage at SS&C Eze

SS&C Eze followed up its success in last year's Buy-Side Technology Awards where it won the best integrated front-office platform category by winning the best order management system provider category in this year's Waters Rankings. [Victor Anderson](#) chats to SS&C Eze's Jeff Shoreman about the key modules comprising the firm's Eze Investment Suite, and the extent to which automation and integration are driving the firm's products and services.

**Q** SS&C Eze won the best buy-side order management system provider category at this year's Waters Rankings, a category it continues to feature prominently in across all of the *WatersTechnology* awards programs. To what do you owe its enduring success in what is a highly competitive market?

**Jeff Shoreman, senior vice president and general manager, SS&C Eze:** We have had a lot of success in this category and I think it's a testament to two things: The first is that we have a fantastic product, and second—and this has been true since the formation of Eze—we've built enduring partnerships with our clients and we've worked with them to keep pace with what is a dynamic and evolving industry. When you look at the enhancements we've made, both in terms of what we've built into our product but also in terms of how we service our customers and how we deliver our software to them, all of it is designed to ensure that they have the best tools in their hands to allow them to focus on driving alpha and the performance of their funds.

**Q** Eze Investment Suite features a number of the firm's best-of-breed applications. What are they and why did the firm decide to fold them into a single front-office platform?

**Shoreman:** Eze Investment Suite comprises a number of modules, the core of which is Eze OMS (order management system), focusing on portfolio construction and modeling, allocations, trading, compliance, and various post-trade functions. On top of that we've added Eze EMS (execution management system), which provides traders with advanced execution capabilities, including the ability to see Level II (bid and ask price) market data and transaction-cost analysis on their orders on a pre- and intra-order basis. It also provides them with the tools to manage complex workflows like pairs or program trading.

The other core module is Eze PMA (portfolio management and accounting) platform, which essentially allows buy-side firms to manage their books and records. We can strike a net-asset value (NAV) for them on a daily basis or we can shadow a fund that has an external fund administrator. One of the things we're proud of is an additional component, Eze Investor Accounting, where we can go all the way down to an individual investor's K-1, inclusive of performance fees and fee waterfalls.

**Q** What trends and challenges facing buy-side firms is SS&C Eze looking to address going forward, and what else is on the firm's release radar in terms of new products and services?

**Shoreman:** As we think about our roadmap going forward, there are a couple of themes that have emerged.

The first is automation. Asset managers are increasingly looking for automation across a number of areas. For portfolio managers, being able to automate portfolio construction with investment rules and allocations so that as they're generating their orders—especially with the increasing numbers of separately managed accounts and other account structures—we have functionality that can help them scale up their business. There is also demand for automation on the trading desk so that if an asset manager is executing high order volumes, we've got rules-based order routing and other automation tools that allow them to focus on the most complex orders where they can add the most value and use automation to execute the rest, while ensuring that they're getting the best execution possible for their investors.

As regulatory oversight and investor due diligence requirements continue to increase, Eze's ability to automate and program those rulesets into our suite and automate those checks for our customers is key. That automation theme also carries through to the middle and back offices.

**Q** What is SS&C Eze doing on the integration front?

**Shoreman:** There are a few different levels. The first is integration across our own suite. We will continue to integrate these modules and expand the suite; we will also continue to integrate into our clients' infrastructure, so that if they're running a quant strategy where their orders are generated by a black or gray box using machine learning, for example, we're able to integrate with that and automate the execution and compliance monitoring parts of that process. Finally, we'll continue to integrate our products with other SS&C offerings, including software packages like SS&C Advent and services like SS&C GlobeOp. The ability to bring together SS&C's suite of solutions and deliver them to our customers, leveraging the Eze front-end, will be an important differentiator in the marketplace. [wt](#)



Jeff Shoreman

## Best Performance Measurement & Attribution System Provider

### FactSet

Prior to 2019, there were five different winners of this category. But for the first time, there's a repeat winner: FactSet, which also won in 2017. StatPro, Bisam, S&P Capital IQ, Convergenx are the other previous winners. FactSet won thanks to its B-One and Portfolio Analysis (PA) offerings, which arose in response to three industry trends: consolidating workflows, optimizing data sharing between front and middle offices, and client demand for vendors to provide more of a service rather than multiple, independent tools.

"What we see is that the front [office] is demanding more and more precise numbers," says Sean Murray, director of product strategy at FactSet. "The B-One tool is designed to deliver precision, and the portfolio analysis tool is designed to deliver that precision to the front [office]." He adds that even small blips in the data—as small as mislabeled dates—can be detrimental, particularly in the growing space of passive investment, where returns are already smaller.

The last 12 months have seen a flurry of updates to the tools, namely the two becoming one through the introduction of a unique workflow. Clients need only provide data once. From there, the data runs through the calculation engine, essentially the legacy B-One component, while synchronizing to the PA tool.

Second, Murray says a lot of time was spent on enhancing FactSet's distribution technology. Some clients asked for a tool that would let them simply view results, he says, rather than power the results process, giving way to the new Portfolio Insights tool, a distribution tool that sends B-One results throughout a firm and directly on front-office desktops, and is packaged within Portfolio Analysis.

Looking ahead, Murray identifies the wealth space as a growth sector for the company. In terms of product development, the company will continue to be centered on attribution, and he predicts a strong emphasis will be placed on building out risk analysis and expanding existing multi-factor models.

—RN



“Clients need only provide data once. From there, the data runs through the calculation engine, essentially the legacy B-One component, while synchronizing to the PA tool.”

## Best Portfolio Management System Provider

# Charles River Development

Charles River Development, now part of State Street after its acquisition by the Boston-based financial services group, wins this year's best portfolio management system provider category at the Waters Rankings.

The bulk of the company's success has come on the back of its flagship offering, the Charles River Investment Management Suite, which will play a key role in bolstering State Street's buy-side-focused outsourcing services.

John Plansky, CEO of Charles River Development, who joined State Street in January 2017 before being installed as Charles River's CEO after its acquisition in the third quarter of 2018, is unequivocal about the firm's commitment with respect to supporting the core Charles River platform going forward, and also its research and development (R&D) plans around the firm's ancillary services.

"When State Street bought Charles River, we saw it as the centerpiece of our overall strategy, because we believed that our clients wanted to continue to invest in their technology agenda from the front to the back office, as well as in outsourced services and technology to firms like State Street," Plansky explains. "A key aspect of that means that when we acquired Charles River, we also decided to invest heavily in it as a company. We've doubled the R&D budget around what clients were expecting from Charles River across the whole product set. So, in addition to the existing capabilities—the portfolio management workbench, the OMS and compliance and trading—clients also want us to continue to invest in multi-asset-class support."

According to Plansky, Charles River is also actively investing in developing its software-as-a-service offering to be "very competitive" in the market, while clients are also increasingly looking for performance and risk support, a trend that has yielded a number of partnerships, the most high profile of which are those with Axioma and Northfield Information Services.

—VA



**“**  
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# Best Portfolio Management System Provider

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## Best Execution Management System

# Bloomberg

The Bloomberg Terminal is arguably the most well-known piece of hardware on Wall Street. It's the Terminal's ability to manage trade execution, and the data analytics it provides, that make it so valuable, and why it is this year's winner of the best execution management system (EMS) award.

Traders around the globe use Bloomberg to manage their orders across all asset classes, whether it's fixed income and derivatives through the TSOX EMS, or equities using the execution management system known as EMSX, or foreign exchange using FXEM.

Nicolas Bean, head of electronic trading solutions at Bloomberg, says the company has been working toward a more seamless trading experience across all asset classes, making it easier for clients to implement their cross-asset strategies using a single interface.

"We are also developing tools such as watch lists aimed at helping our clients maximize Bloomberg's high-quality data and analytics for trade idea generation and order creation," he says. "In addition, our transaction-cost analysis solution, BTCA, delivers pre-trade intelligence to traders to improve their execution, while supporting their best execution and reporting requirements, post-trade. We connect the dots between each of these parts of the trading process and the Bloomberg solutions used by clients, so we are streamlining trade idea generation, execution and post-trade services in one place."

Bloomberg is also working to combine "the growing amount of data generated through electronic trading with novel machine-learning techniques to develop decision support models that can be used by execution desks to implement their orders," Bean says.

And data is the all-powerful being in today's capital markets, as the thirst for new and more data is growing rapidly. So as you might expect, the company is also expanding its alternative data universe. "In execution management, we are both consumers and generators of alternative data," says Bean.

—AM



“Traders around the globe use Bloomberg to manage their orders across all asset classes, whether it's fixed income and derivatives through the TSOX EMS, or equities using the execution management system known as EMSX, or foreign exchange using FXEM.”

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Rankings Winner 2019

Best Execution Management  
System (EMS) Provider  
Bloomberg

# Bloomberg



## Best EDM System Provider

# Eagle Investment Systems

For the second time in four years, it's Eagle Investment Systems winning the best enterprise data management (EDM) system provider category. S&P Global won in 2018 and IHS Markit won in 2017.

The investment management space is constantly changing and increasingly complex. As such, banks and asset managers are looking for scale; they need a diverse set of solutions to better handle their data and analytics needs. This has led end-users to move away from region- and product-specific best-of-breed tools and toward "best-of-suite" solutions that can support a company's global operations, says Mal Cullen, CEO of Eagle Investment Systems.

"Efficiency gains come from examples like a single data repository, a single global security master or an investment book of record that follows the sun, all underpinned by a global data strategy," he says. "Investment management firms must adapt to stay relevant, and in taking these steps, the internal data function is tilting from production to analysis and analytics. Firms must also integrate vast new datasets with examples like alternative data and environmental, social and governance (ESG) data analytics. An EDM offering, like the BNY Mellon Eagle solution, helps firms to create a data foundation to support the organization."

To meet these needs, the company is turning to the cloud. Specifically, Eagle and BNY Mellon are working to develop a public cloud offering (it also has a private-cloud offering, called Eagle Access). Eagle has a client using the solution and is in the process of developing new solutions based off of that cloud infrastructure, Cullen says. It is also adding new resources to its Eagle Managed Services offering; it is growing its data offering, such as for ESG and sanctions data; and will build out new services offered through the Eagle Reference Data Center and Eagle Portfolio Data Center.

—AM



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To meet these needs, the company is turning to the cloud. Specifically, Eagle and BNY Mellon are working to develop a public cloud offering.

## Best Market Data Provider

# Bloomberg

Bloomberg has supplanted Numerix as the best market data provider in this year's Rankings.

In addition to investing in coverage, data quality, and an infrastructure comprised of global ticker plants to ensure low-latency data delivery, Bloomberg—which won the inaugural best market data provider award—has been upgrading key technology components by making its content more widely available.

Though the vendor is best-known for delivering its content via its premium-subscription Bloomberg Professional terminal, its latest initiatives focus more on administrative elements that allow firms to monitor costs, and allow Bloomberg to deliver content via other non-proprietary mechanisms.

For example, the vendor has made significant investment in putting its own technology into the cloud with fast connections back to Bloomberg's datacenters.

"We are seeing a lot of success with customers moving market data to the cloud," says Tony McManus, enterprise data CIO at Bloomberg. "Customers are benefiting from the elasticity that the cloud provides around storage, for example. In our mind, if a customer is deploying technology somewhere, Bloomberg should not be a barrier to that."

On the administrative side, Bloomberg is re-releasing its decade-old B-Pipe Appliance Monitoring System (BAMS) and Entitlements Management Reporting System (EMRS) desktop admin tools as web applications this year. Bloomberg expects to complete the new BAMS over the summer, and EMRS in the fall.

McManus says one reason behind the initiative is a changing customer base, and a more mobile workforce, making web and API access to tools around the vendor's data more important.

He says the vendor measures the success of its products not only by overall user numbers, but also by actual usage levels at existing customers, and on how it can better serve those users.

"Our UX design department did a tremendous amount of work to take those existing workflows and redesign them so that they are intuitive and easy to use," McManus says.

—MB



**Bloomberg—which won the inaugural best market data provider award—has been upgrading key technology components by making its content more widely available.**

## Best Reference Data Provider

# Bloomberg

Though best known for the data available via its Bloomberg Professional terminal, Bloomberg has actually spent the past year working on making the data from the terminal available via the vendor's other delivery mechanisms, and on expanding its reference data content, to win best reference data provider for the second year in a row.

For example, the vendor has begun exposing data from the terminal via its Data License service, which as a result has grown from supporting around 15,000 data fields to some 40,000 fields.

"We decided on a simple message to clients: one data, one source. We want to be that 'one' data vendor and source for clients," says Brad Foster, global head of enterprise data and content at Bloomberg. "We want to make sure that the data we provide is clean, tidy, and in a standardized format. ... Whether it's a human or a machine consuming our data, we want to make sure it's easy to consume and that we minimize the amount of 'wrangling' that our clients need to do."

To attain that "one vendor" status, Bloomberg has also bolstered its derivatives and corporate actions datasets, adding futures and options reference data "from a significant number of global exchanges," so that it now carries futures and options reference data for around 160 exchanges worldwide, compared to fewer than 50 before.

Over the same period, Bloomberg has added new corporate action types, enhancing existing ones—such as mergers and acquisitions, divestments, and spinoffs—and providing more timely delivery and greater accuracy. And while initially focused only on equities, Foster says he expects to expand the vendor's corporate actions offering to cover fixed-income assets.

The next 12 months will see the aforementioned projects continue, along with anticipated increases in demand for data to meet the requirements of the Basel Committee on Banking Supervision's Fundamental Review of the Trading Book (FRTB), Foster says.

—MB



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## Best Alternative Data Provider

# S&P Global Market Intelligence

As alpha has been mined from traditional strategies, investment managers are increasingly turning to alternative datasets for insight. An astonishing range of alternative data has become important to firms in recent years, from shopping receipts to satellite images.

This still-nascent industry is here to stay, a fact that is reflected in this new category of the Waters Rankings. And the first ever winner of the best alternative data provider award is S&P Global Market Intelligence.

The field of alternative data providers is growing rapidly, which is leading the big, established data providers to acquire some of these firms to add to their portfolio of datasets. One such example is S&P Global Market Intelligence buying Panjiva in February 2018.

Panjiva's import and export data on supply chain relationships, trade flows and other supply chain-related economic activity for companies globally spans sectors including electronics, automotive, capital goods, agriculture, food/beverage, pharmaceuticals and healthcare. Panjiva leverages supervised and unsupervised machine-learning technologies to surface insights from unstructured supply-chain data.

S&P Global offers this alternative data through its data management system, Xpressfeed, which itself won best enterprise data management system in the 2018 Waters Rankings.

Clients can combine information from the global supply chain with existing S&P Global datasets, as well as their own, to create forward-looking insights. Clients can view total import and export data to analyze global supplier and customer networks, or evaluate details on product lines, map company supply-chain data to stock price movements, leverage supply-chain data as an indicator of company inventory activity, cost of goods sold, or revenue, and enhance investment models to better understand relationships in the supply chain.

—JW



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S&P Global offers this alternative data through its data management system, Xpressfeed, which itself won best enterprise data management system in the 2018 Waters Rankings.

## Best Corporate Actions Solution Provider

### SIX

Insights pertaining to corporate actions have become a crucial component in making value-driven decisions and mitigating risk. In response, SIX has consistently built out its corporate actions services, particularly through the development of its Valordata Feed (VDF) and, more recently, with the rollout of SIX Flex, a self-service data-delivery system that was launched in early 2018.

Thanks to these efforts, it has claimed back the corporate actions title at this year's Waters Rankings, taking the prize from last year's winner, SmartStream. SIX was the champion in 2016.

Within the SIX Flex suite, the firm offers an easily accessible and customizable corporate actions package. Users have the ability to individually select the content sets or fields they would like to retrieve, schedule the frequency of data received, and receive reports in a variety of ways. Additionally, SIX Flex enables clients to easily integrate the corporate actions data into their systems or simply download a CSV file, which can be opened in a Microsoft Excel spreadsheet.

"There is a very user-orientated graphical interface that helps those within banks to program the retrieval of the different types of content sets in a very rapid way," says Frédéric Messein, executive director and head of product propositions for the vendor. "You download those files and you interface them with different applications within the bank, [such as] a security master or other dedicated applications that require that content."

SIX retrieves data from over 1,500 data sources. SIX has a pipeline of releases planned for the next few months, including building out the Flex suite by adding new data packages, such as a corporate actions tax offering and expanding content on its global regulations.

—JG



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Users have the ability to individually select the content sets or fields they would like to retrieve, schedule the frequency of data received, and receive reports in a variety of ways.

## Best Low-Latency Data Feed Provider

# Refinitiv

Even in a sea of change, it's Refinitiv taking home the best low-latency data feed provider award. The tech giant also won the category in 2018 and 2017 under the Thomson Reuters banner.

For Refinitiv, delivering low-latency data is not just about being fast, but about how much you can do fast—especially as flexibility and scale become more important considerations than raw speed alone.

And for the vendor—the former Thomson Reuters Financial & Risk business, which was spun out of its parent last year in a buyout led by Blackstone Group—2018 was as much about investing in what its Elektron Real Time low-latency infrastructure could carry as it was about carrying that data quickly.

For example, Refinitiv increased the number of instruments supported on the Elektron Data Platform from 60 million in 2017 to more than 84 million in 2018, while updates-per-second over the feed increased from 5.5 million to 7.3 million over the same period.

“You’re only as good as the quality of data you can provide: Do you have what the client needs, and is it timely and current?” says Marion Leslie, managing director of enterprise at Refinitiv. “This is a high-speed feed, the backbone of financial institutions, and the driver of revenue in the front office ... so we understand this is mission-critical for the customer base we serve.”

But looking ahead, the vendor's latency play is changing in response to the evolution of that customer base. And while Elektron can distribute data worldwide at sub-microsecond speeds, Refinitiv is now seeing more demand for cloud-based data delivery options from new classes of consumers, such as chief data officers, data scientists, risk professionals, and increasingly, buy-side firms with a growing appetite for data, which are prepared to stomach “good-enough” millisecond-level latency, compared to being the domain of CTOs, traders, and market data professionals, only a few years ago.

—MB



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## Best Data Analytics Provider

# S&P Global Market Intelligence

S&P Global Market Intelligence's Capital IQ platform wins the best data analytics provider category for 2019, making it two in a row for the data provider. Capital IQ also won this category in 2014.

Capital IQ is the research arm of S&P and provides research and analysis of the stock market to investment professionals. Its platform is designed to be a single source of financial data, analytics and research. The Capital IQ platform provides clients with information on public and private companies, markets and people worldwide with analytics tools.

The platform has a web portal that provides datafeeds to customers, including company profiles, executive summaries and analyst reports on millions of private and public companies and individuals. This data can be hard to come by, as private companies don't publish their financial data.

Clients can analyze a company's performance with S&P Capital IQ's data and technical capabilities, and overlay their own data to see connections to an individual or company. Users can also stream quotes, news and charts, and view snapshots for indices, mutual funds, futures, options, currencies and commodities.

The platform hosts financials with over 5,000 individual data items, including industry-specific metrics on 17 industries, which enables clients to tap into fundamental data, and view pricing and market data across all major quoted markets.

Features also include screening, targeted email alerts, a Microsoft Excel plug-in for building financial models, and click-through to audit data items back to the source document.

—JW



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The Capital IQ platform provides clients with information on public and private companies, markets and people worldwide with analytics tools.



## Best Distributed-Ledger Technology Provider

# AlphaPoint

AlphaPoint repeats as the winner of the best distributed-ledger technology provider award for its asset digitization and exchange technology.

The company has been in the process of enhancing its distributed-ledger offerings as it increases its capital markets reach. This includes upgrading its enterprise-grade technology to issue asset-backed security tokens, which the company announced back in March.

AlphaPoint's asset digitization program includes the ability to create digital assets like security tokens and cryptocurrencies, access to trade illiquid assets through digital tokens, and the deployment of smart contracts. Last year, the firm announced its Regulated Asset Backed Token framework to help guide clients when launching a digital asset, while also allowing for trading on an exchange.

The company has said its focus has always been on asset digitization and growing the adoption of digital assets in the institutional world since its founding in 2013. Some of AlphaPoint's institutional clients that use its asset-digitization platform include Muirfield Investment Partners and Laureate Digital Securities.

In the past year, AlphaPoint has also launched cryptocurrency indices aimed at providing asset managers and other market participants with benchmarks of their performance against the market. It has two indices, covering the high-value and liquid cryptocurrencies. One is the AlphaPoint Leaders Index, which includes the largest tokens covering around 80% of the global cryptocurrency market capitalization and reflects the highest valued assets. The second is its AlphaPoint Fast Movers Index, which tracks the top tokens by trading value and reflecting the most liquid crypto assets.

As evidence of its continued growth, and of the interest in digital assets worldwide, AlphaPoint recently expanded its global presence with the opening of an office in Zurich. It now has offices in New York, San Francisco, Charlotte and Pune, India. It also joined the Trust Square business community, a group that focuses on developing blockchain and cryptocurrency projects.

—ED

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**AlphaPoint's asset digitization program includes the ability to create digital assets like security tokens and cryptocurrencies, access to trade illiquid assets through digital tokens, and the deployment of smart contracts.**

## Best AML Compliance Solution Provider

# NICE Actimize

The United Nations Office on Drugs and Crime estimates that between \$800 billion and \$2 trillion dollars is laundered each year. Over the last two years, NICE Actimize has helped banks bolster their anti-money laundering (AML) capabilities by expanding its know-your-customer (KYC) and transaction-monitoring services. NICE Actimize was voted the best AML vendor at this year's Waters Rankings thanks to its Autonomous AML Solutions Suite.

Over the last 18 months, NICE Actimize has improved its Suspicious Activity Monitoring (SAM) offering, which leverages robotic process automation (RPA) and machine learning (ML) to better weed out false positives and alert users to suspicious activity.

"We are trying to do a better job of detecting alerts or bad actions, making it easier and faster for people to investigate those alerts, and understand if they have to file suspicious activity reports or not," says Stephen Taylor, general manager for AML at NICE Actimize.

NICE Actimize is working to further expand its machine-learning capabilities to improve its alert detection and investigation functions. It is also strengthening its customer due diligence (CDD) and watch-list filtering (WLF) products. It will also look to grow its X-Sight Marketplace, which aims to be a one-stop shop for financial crime solutions, similar to Apple's App Store. In order to grow the product, it will look to partner with other content providers to create a more robust market.

"When we are talking about content, we are talking about sanctions lists, ultimate beneficial ownership information, negative news, and even ID verification biometrics," Taylor says. "We are thinking about all of this information being pulled into our system to improve detection and the investigation process."

—JG



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NICE Actimize is working to further expand its machine-learning capabilities to improve its alert detection and investigation functions.

NICE ACTIMIZE

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Don't Compromise  
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**Case  
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One-for-All Intelligent  
Investigation Platform

## Best Market Risk Solution Provider

# Wolters Kluwer

For the third year in a row, there is a new winner in the market risk solution provider category, with Wolters Kluwer taking home the prize for 2019. Numerix and RiskVal won in 2018 and 2017, respectively. Wolters Kluwer scored the title thanks to its OneSumX Market Risk platform.

The solution helps clients to optimize their business, balance sheets and funding endeavors. It offers advanced risk metrics, a centralized data architecture and product modeling that enables product valuation, cash-flow generation and contract forecasting.

Ragat Somany, vice president of global product and platform management for Wolters Kluwer's finance, risk and reporting division, says companies now face market risk across their banking and trading books. He says in the past, market risk was most associated with the trading book, but the Basel II and Basel III regulations have focused on market risk for the banking book, and on market and credit risk integration, citing the new credit valuation adjustment (CVA) rules.

"The silo-based approach for risk is becoming a hindrance," Somany says. "Future-proofed solutions should give an integrated view of profit-and-loss and risk on the balance sheet, both from a risk perspective and from a business unit perspective. With the Wolters Kluwer OneSumX Market Risk solution, we offer this kind of integrated platform to manage all of the risks on clients' balance sheets."

Over the last year, Wolters Kluwer introduced improved in-memory processing and data virtualization to its offering, as well as advanced risk-factor modeling and market analytics. The firm also added enhanced instrument coverage along all verticals, such as liquidity, income, exposure and value, and embedded and exotic options.

Thinking about the future, Somany says Wolters Kluwer is "continuously looking to expand coverage of our product set and our presence in high-potential markets, and we are making investments in both areas."

—RN



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Over the last year, Wolters Kluwer introduced improved in-memory processing and data virtualization to its offering, as well as advanced risk-factor modeling and market analytics.



## Best Credit Risk Solution Provider

# Numerix

Judging by its recent track record across *WatersTechnology's* various awards programs, Numerix appears to be in a very good place, and the company continues its run by taking home the best credit risk solution award in this year's Rankings.

The bulk of the New York-based risk specialist's success is down to its Oneview offering, initially unveiled back in the first quarter of 2016, although the vast library of analytics and models comprising the brains of the platform goes back many years. Satyam Kancharla, chief strategy officer for Numerix, explains that success in this highly competitive market invariably requires calculating an array of complex pricing and risk data, and getting it into the hands of decision-makers when they need it—which increasingly means in real time. However, he says, many of the risk platforms Numerix encounters when working with clients are not capable of handling critical calculations, such as valuation adjustment (XVA) greeks or margin risk measures.

Numerix is currently making a push around automating certain functions supporting structured products and over-the-counter trading, markets that have traditionally been mired by their opaqueness, thin liquidity and manually intensive front-office processes.

"As market demand for structured notes grows in many parts of the world, issuers see a large opportunity to leverage technology to capture gains in the market," Kancharla says. "However, many issuers are struggling to realize these gains, as their legacy spreadsheets, clunky product structuring processes, and fragmented booking ecosystems are not up to the task. Oneview for Trading, launched earlier this year, enables issuers and distributors to profit from market opportunities by delivering speed, precision and flexibility from structuring and pricing, to hedging, risk analysis and lifecycle management."

According to Steve O'Hanlon, the firm's longstanding CEO, "significant" deals won and implemented over the past year include those pertaining to XVA and sell-side front-office analytics as a managed service.

—VA



**Numerix is currently making a push around automating certain functions supporting structured products and over-the-counter trading, markets that have traditionally been mired by their opaqueness, thin liquidity and manually intensive front-office processes.**

## Best Reporting System Provider

# Moody's Analytics

Regulatory reporting has emerged in recent years as a critical business function that needs to be managed accurately, efficiently and transparently, even though it is an area where capital markets firms tend not to be able to leverage as a competitive differentiator. It therefore makes sense for most capital markets firms to partner with a specialist so that the bulk of the heavy lifting around regulatory interpretation, calculations, report generation, validations and updates are taken care of.

Moody's Analytics wins its first reporting system provider category in the Waters Rankings, thanks to its Regulatory Reporting module, a single, integrated platform providing primarily sell-side firms and insurance companies with regulatory reporting support for Basel I, II, and III, as well support for the European Banking Authority, Comprehensive Capital Analysis and Review, and Dodd-Frank Act Stress Tests.

"One of the key features of the solution is that we fully take care of all regulatory updates for our clients," explains Nicolas Degruson, director of product management for regulatory reporting at Moody's Analytics. "Each time there is a regulatory update, we deliver a new configuration file, and we strive to do that three months before the submission so that clients have time to test it and use it. We have a regulatory surveillance team that monitors 100 supervisors' websites so that we stay up to date with regulations, and we also have a team of 10 product managers that analyze the regulatory instructions and do the specifications for the development team."

Degruson explains that in addition to pure regulatory reporting functionality, the module also supports regulatory risk calculations, including liquidity risk and regulatory capital calculations, via a variety of formats, such as Microsoft Excel, XML and XBRL.

Past winners of this category include FactSet, which emerged top last year, while Vermilion Software, now part of the FactSet stable, won the category in 2016 and 2017.

—VA



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Moody's Analytics wins its first reporting system provider category in the Waters Rankings, thanks to its Regulatory Reporting module.

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ANALYTICS



## Best Accounting System Provider

# SS&C Advent

As new and emerging asset classes seep into more portfolios, and businesses race to keep up with mounting reporting requirements, financial accounting isn't getting easier. If anything, it's more of a headache as businesses try to strike a balance between optimizing performance and not breaking the bank. SS&C Advent's suite of solutions—namely, Advent Portfolio Exchange (APX) and Geneva—secured its spot as the best accounting system provider in this year's Waters Rankings.

One of the key challenges for industry participants is in achieving good data governance, management and integration. With these in mind, SS&C Advent has made several updates to both offerings over the last year.

The vendor added to APX a new API for portfolios, token-based authentication capabilities and an end-to-end logging framework, allowing administrators to more easily monitor processes and automation. Accounting enhancements include a new tax-sensitive closing method and added dashboard visibility that provides accounts with an overview of custodial reconciliation progress. According to SS&C Advent, a select number of early adopter clients are currently piloting the initial release of a new web user interface that offers a lighter footprint, more intuitive navigation and simpler workflows.

This year, SS&C Advent strengthened the system's bank-debt accounting functionality, and added more flexibility to swap processing and other finance calculations. Katherine Pearce, vice president of solutions management, says asset managers particularly benefit from new features for asset-backed securities, which allow them to import and schedule future cash flows for amortization calculations.

"We're looking at ways to deploy emerging technologies into our solutions, including machine learning capabilities to enhance customer value in the near future," she says. Machine learning, natural-language processing and robotic process automation are three possible avenues, with the potential to "eliminate hundreds of hours of manual work for our customers."

—RN



“Accounting enhancements include a new tax-sensitive closing method and added dashboard visibility that provides accounts with an overview of custodial reconciliation progress.”



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## Winners' Circle: SS&C Advent

# The Secrets of SS&C Advent's Enduring Success

SS&C Advent followed up last year's success in the best accounting system provider category at the Waters Rankings by winning it again, thanks to a pair of products—Geneva and APX—that have served the business well over the years. Victor Anderson chats to SS&C Advent's Robert Roley about what differentiates these two products in what is a highly competitive market, and what the firm's buy-side clients are looking for right now in terms of functionality and support.

**Q** SS&C Advent won the best accounting system provider category at this year's Waters Rankings, thanks to Geneva and APX. How does the firm differentiate itself in what is now a mature and highly competitive marketplace?

**Robert Roley, senior vice president and general manager, SS&C Advent:** Yes, it is highly competitive and there are some mature players, but the industry continues to evolve. We remain squarely focused on innovation and client service to keep pace with those changes and our clients' expectations. That happens in a number of ways. First, we leverage the best technology trends, whether that's machine learning or automation, and of course we do benefit from being part of the larger SS&C organization in terms of access to great minds and talent. We also benefit from being practitioners—we're the biggest users of our own technology. And, it's essential that we partner with other firms in order to extend our solutions. That is key to having the most complete solution in the marketplace. In order to differentiate ourselves, we need to be excellent across the board—research and development, execution and client service—and we appreciate it when that is recognized by our clients and *Waters Technology's* readers.



**Q** APX and Geneva have long pedigrees in this market and have delivered consistent success over the years, initially for Advent Software, but more recently for SS&C Advent. To what do you attribute these two products' enduring success?

**Roley:** The success over a long period is a function of the loyalty we have for our clients and the loyalty they have for us. The challenges they face, their needs, and market forces evolve, and how we meet those needs also evolves, but our client focus doesn't really change. That starts with understanding what makes our clients successful—listening to them and understanding their challenges and opportunities—looking at things from our clients' perspectives and then stepping up and helping them to meet those challenges. We do that through investment in our platforms and through integration and service, although the enduring success is really only explained by understanding what success means for our clients.

**Q** APX and Geneva are aimed squarely at the buy side. What are their clients' current pain points right now and how is SS&C Advent addressing them?

**Roley:** There are some common themes that we hear from our clients, but the challenges tend to vary from firm to firm. Generally, our clients want to know that they are acting on timely and accurate information, both on the investment side and when servicing their investors; they want to win new business while keeping their existing clients happy; and they want to meet demands from both regulators and clients without a lot of overheads—they just want to be efficient. The pain points often boil down to those categories. In response, what we do is ensure that data is timely and accurate and that comes down to data governance. We've had probably the widest data network in the industry for a long time and we continue to augment that as well as build new tools to ensure the accuracy of that data. We're also enhancing a lot of our software with additional services that people would consider to be co-sourced arrangements, where we handle a lot of operational processes for our clients. That's different to the way Advent has done business in the past, but it's what our clients are demanding because they just want to focus on managing money and dealing with investors.

**Q** What's in the works in the immediate future in terms of new functionality within Geneva and APX?

**Roley:** Starting with Geneva, we're focusing on addressing data governance. By the end of this year there will be new functionality in the platform that focuses on data exception management, which leverages machine learning and predictive analytics to help users diagnose and resolve exceptions quicker. Also on the Geneva front there is massive growth in the private credit markets and we're also working on a better reporting solution that provides greater flexibility and customization.

APX is being enhanced to address the evolving needs of global asset and wealth managers through the creation of a better full front-to-back-office solution. We're enhancing the real-time data integration throughout the suite, offering broadened integration capabilities via new APIs so that firms can further extend the platform across their business, and we're adding new collaboration capabilities with Advent Outsourcing Services to address firms' ever-growing needs and volumes. [Wt](#)

## Best Market Surveillance Provider

# S&P Global Market Intelligence

This year, the winner of best market surveillance provider is S&P Global Market Intelligence, thanks to its RatingsDirect platform.

RatingsDirect has a module called Monitor, available since 2017, which is a data visualization portfolio monitoring tool that provides risk/return insights and helps track and analyze market movements for publicly traded companies rated by S&P Global Ratings. With Monitor, users can view credit ratings and market data on corporate issuers.

Recently, S&P updated the Capital IQ platform, so users can now find Ratings' local language credit research in Spanish, Portuguese and Chinese, with a redesigned interface for research updates.

Users also have access to performance metrics for European Structured Finance deals, including interest payment date and initial publication date (the date S&P Global Ratings posted the report to RatingsDirect on the Capital IQ platform).

These dates provide transparency required for deals eligible for funding under the European Central Bank asset purchase program.

Additionally, a new Environmental, Social and Governance article tag on the Capital IQ platform is now available so users can quickly search and set alerts on new research on this topic from S&P Global Ratings.

—JW



“Recently, S&P updated the Capital IQ platform, so users can now find Ratings' local language credit research in Spanish, Portuguese and Chinese, with a redesigned interface for research updates.

## Best Cybersecurity Provider

# Eze Castle Integration

This year's winner of the best cybersecurity provider award, Eze Castle Integration, has been quite busy over the past year, having launched two new offerings within its cybersecurity portfolio.

In April, it rolled out Eze Dark Web Monitoring, which lets cybersecurity intelligence analysts monitor the dark web. Mary Beth Hamilton, vice president of marketing, says its benefits include reduced account-takeover risk, meeting regulatory due diligence requirements, and deep "after the breach" scrutiny avoidance.

More recently, in July, it launched a Managed Security Information Event Management (SIEM) module, which provides real-time security analysis of data to proactively identify potential security risks. "Without SIEM, there are often too many alerts and too much information generated for a human or dispersed systems to decipher, which [creates significant threats]. SIEM acts as the centralizer that puts these alerts in context and takes security to the next level while addressing numerous security regulations," she says.

Hamilton says the vendor's wide variety of offerings allows clients to select the appropriate layers of security based on their risk profile, budget, and individual needs to create a bespoke package specific to their firm.

According to Hamilton, the number of artificial intelligence-enhanced cyber-attacks are now at "emergency" levels. She also reports a continuing rise in instances of ransomware and malware, as well as more sophisticated and targeted phishing attacks. Among the challenges that keep its clients up at night are internal training, cybersecurity awareness, multi-cloud computing security and choosing the right layers of security to fit their risk profile—this is where the company is finding a sweet spot.

Eze Castle Integration has experienced significant growth in the last year, adding several new members to its senior management team. Hamilton says the company will look to expand its team internationally.

—HA

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**In July, Eze Castle Integration launched a Managed Security Information Event Management module, which provides real-time security analysis of data to proactively identify potential security risks.**



## Best Network Provider

# BT

For the fifth consecutive year, BT has been voted the best network provider thanks to its Radianz Cloud offering. Its dominance in this competitive space is driven by a number of factors, chief among them its close attention to the latest technological and regulatory changes taking place in the capital markets.

According to Yousaf Hafeez, head of business development at BT Radianz, over the past 12 months, the provider has been growing the number of users on its managed services offering, as well as expanding geographically. Regions where it has seen increased interest include Latin America, the Middle East, and Africa.

One of its notable success stories is China, where Hafeez says it is actively working to grow the number of capital markets participants using BT Radianz. Last year, it became the first international telecommunications provider to receive a license from the China Ministry of Industry and Information Technology. "No other international carrier has the same license as we do," he says. "What that means is we are the first carrier who can offer services in China domestically, or take orders domestically."

Another milestone was its onboarding of Gemini, the crypto exchange started by the Winklevoss twins, which joined the BT Radianz Cloud broker community earlier this year. According to Hafeez, using mature technologies to explore crypto assets is becoming increasingly important for customers. "It is an area where we are continuing to progressively add more and more applications," he says. "What we are looking to do is have applications in the crypto area that cover the whole spectrum of trading from pre-trade, to some of the emerging clearing custodial services for crypto as well."

Additionally, Hafeez says BT is adding more alternative datafeeds to its BT Radianz network, such as sentiment data feeds, satellite imagery, phone records and credit card information.

—HA



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BT’s dominance in this competitive space is driven by a number of factors, chief among them its close attention to the latest technological and regulatory changes taking place in the capital markets.

## Best Outsourcing Service Provider

# Broadridge Financial Solutions

A recurring theme in the financial industry is the drive to improve efficiency while cutting costs. This has led to banks having to rely more on third-party solution providers to help them take on some workflows where they can be more efficient.

Broadridge Financial Solutions beats previous winner Electra Information Systems, which had won this category for two years running. Broadridge also won this category at this year's Sell-Side Technology Awards, held in April.

Kevin Moran, global head of managed services for Broadridge, says the provider's focus has been on cognitive solutions that combine machine learning and robotic process automation (RPA).

This has led to it introducing pre-trade solutions that perform trade analytics for illiquid securities, post-trade solutions that automate trade allocations for the middle office, and over 40 natural-language processing and machine-learning components that aim to provide a managed-service offering that streamlines workflows.

It also received a patent in 2018 for its proxy voting and repurchase agreements based on distributed-ledger technology. The patent shows how Broadridge's technology can streamline reconciliation processes, improve data management, and reduce non-value added costs, Moran adds.

Looking ahead, Broadridge will continue investing in its technology platforms and operations services. Moran says Broadridge is in the midst of creating its next-generation post-trade platform called Global Post Trade Management (GPTM), which aims to provide clients with a flexible componentized platform for growth.

The platform puts together Broadridge's global processing engines with modular components including a global sub ledger, global position manager, an industry-standard ontology housed within a data fabric, and a next-generation user interface.

"We have several tier-one financial institutions in various stages of transitioning to this new platform," he says. "We are supporting the industry's adoption of new regulations like the Consolidated Audit Trail with innovative solutions and expanding our operations outsourcing services to include foreign exchange operations."

—WSW



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Broadridge is in the midst of creating its next-generation post-trade platform called Global Post Trade Management, which aims to provide clients with a flexible componentized platform for growth.

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## Best Trading Floor Communications System Provider

### IPC

In the Waters Rankings, IPC taking home this category is about as close to a sure thing as there can be for an awards program in which end users vote for the winners. This win makes it 14 in a row for IPC, thanks to its Unigy platform.

As IPC has looked to expand its suite of services, it has partnered with GreenKey Technologies. In September, it teamed with the vendor to add a real-time transcription component to its offering and to leverage voice data generated on IPC's platforms for analytics. Then, in March 2019, IPC made a strategic investment in GreenKey.

Bruce Bolcer, vice president of enterprise engineering at IPC, says the vendor is constantly pushing for more flexible delivery options for its clients, as they want to better understand their voice data.

"We're focused on expanding our API and integration areas by exposing our data to other solutions, like in our partnership with GreenKey," Bolcer says. "At the same time, we're also expanding our cloud services, as we're offering alternative delivery of Unigy to users with a more on-premise distribution so they can take advantage of the cloud."

He adds that IPC will still offer support through a private cloud. IPC can also host a dedicated Unigy system in a datacenter, and offers a private network to companies for their trading turrets. He says this allows companies that want to know more about the health of their system to have access to it and solve any issues impacting the system much faster without sacrificing privacy.

Bolcer says IPC is continuing to talk with other potential partners and is brainstorming how to add more features to give broker-dealers even more control of their data.

—ED



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In the Waters Rankings, IPC taking home this category is about as close to a sure thing as there can be for an awards program in which end users vote for the winners.



## Best Mobile Solutions Provider

# FIS

Last year, the prize for the best mobile solutions provider went to Thomson Reuters (now Refinitiv) for its Eikon Messenger platform. This time around, FIS comes out on top for the impressive performance of its Monis Mobile offering.

The app, which was launched in 2017, offers high-quality data delivered around the clock to convertible bond market participants globally. “The app is a delivery mechanism that focuses on speed and ease-of-use,” says Andrew Bateman, senior vice president of buy-side solutions at FIS. “But what really makes the offering special are the people behind the app and the expert services they provide.”

According to Bateman, the product has evolved methodically over time. He says future versions may deliver more features, but for now the vendor is focused on the timeliness and quality of the underlying data supporting this complex asset class. New features are often rolled out in conjunction with its full suite of desktop, server-based and hosted applications for convertible bond trading, pricing and analytics.

“Over time, our mobile and web applications will receive more of the rich functionality currently provided by our on-premise applications,” he says. “For example, Monis has expanded modeling coverage from traditional convertibles to capital contingent bonds, along with data coverage of the more than 150 instruments already issued in the market.”

Properly modeling and evaluating convertible securities requires expertise, attention to detail, and speed in order to capture ever-shrinking windows for profitable trade opportunities, he adds. “Our clients look to us to provide that expert analysis on a wider universe of securities than they could cover on their own, allowing them to focus on their core competencies—generating alpha and superior returns for their investors,” he says.

FIS currently serves 20,000 financial clients in over 130 countries, with a presence in the US, Europe and Asia.

—HA

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The app, which was launched in 2017, offers high-quality data delivered around the clock to convertible bond market participants globally.

## Best Cloud-Based Application Provider

# SS&C Salentica

When it comes to deploying complex applications, scaling solutions, integrating with other vendors and processing vast sums of data, for many vendors today, there is no other option but to embrace the cloud. Capitalizing on these capabilities is key to the success of SS&C Salentica's client relationship management (CRM) offering. Over the last 12 months, the provider has consistently developed its cloud-based platform to strengthen its business management tools and expand its range of platform integrations.

These efforts have put the vendor on the map, and as a result, it has scooped up the title of best cloud-based application provider at this year's Waters Rankings.

Salentica CRM is a custom-built application that is deployed on the Microsoft Azure cloud. In September 2018, the firm released its Salentica Data Broker product, which is designed to enable secure data sharing and provide a 360-degree view of a client's profile, holdings, and information. Salentica applications are built on a core data model and use a hierarchy system that looks at the relationship level between the firm and its clients. Users have the ability to drill down into client relationship data such as portfolio allocation, financial accounts, and relevant third-party connections. In addition to client management, the CRM platform also manages business tasks and tracks activities such as internal expenses, internal processing, and vendor management.

"The idea is that it becomes sort of the central hub of managing your business," says Derek Landi, co-general manager of SS&C Salentica. "It doesn't exactly complete every function for you as a business management tool, but in a lot of ways it can be the starting point to know what needs to be done on a daily basis."

Over the next 12 months, SS&C Salentica is pushing to evolve its product offering in the cloud and develop its functionality in managing business operations.

—JG



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In addition to client management, the CRM platform also manages business tasks and tracks activities such as internal expenses, internal processing, and vendor management.

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## Best Cloud Infrastructure Provider

# Genesis Global Technology

Genesis Global Technology takes this year's prize in the hotly contested category for the best cloud infrastructure provider.

According to Stephen Murphy, CEO of Genesis, firms in the financial sector have been forced to embrace cloud technology because of factors such as cost, regulation and time to market, as well as the growing need to incorporate alternative datasets.

"Once [the number crunching] is done, it is not going to change again for let's say another day, or when there is a change in one of their portfolios," he says. "They don't need all of that infrastructure. If I have that on-premises, I have to buy all of that infrastructure and then it would be doing nothing for 90% of the time. So it kind of links to time to market, not just solutions but being able to be innovative and finding alpha. I think the cloud enables different types of solutions to be cost-effective and practical."

In May, Genesis launched Creative Studio to help clients speed up the delivery of web-based solutions without writing additional code. The aim is to help buy- and sell-side firms with their digitization efforts. It can help firms reduce technology and infrastructure costs by cutting the time it takes to run web applications to minutes, as opposed to weeks or months.

"Not only do we have this infrastructure tool for the cloud; we also leverage things like Slack, where I come right to the channel to see what environments are actually live right now, and also see the quality of the environment, and turn off or turn on the new environment. When we talk about cloud-enabled, we talk about not just the solutions run from the cloud, but our end-to-end development process is completely cloud-enabled as well."

—HA



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In May, Genesis launched Creative Studio to help clients speed up the delivery of web-based solutions without writing additional code.



# Winners' Circle: Genesis Global Technology

## Genesis' Microservices Platform Pays Dividends

In what was one of the biggest surprises of this year's Waters Rankings, Genesis Global Technology won the best cloud infrastructure provider category, thanks to its Application Acceleration Framework. [Victor Anderson](#) speaks to Genesis' CEO, Stephen Murphy, about the firm's value proposition for its capital markets clients, what their greatest pain points are right now, and what's on the horizon for the New York and London-based cloud specialist in terms of new services and functionality.

**Q** Genesis is a relative minnow compared to the bulge-bracket providers in what is now a highly competitive market. What does Genesis do and how does it manage to compete with the likes of Amazon Web Services, Microsoft Azure and Google Cloud Platform?

**Stephen Murphy, CEO, Genesis Global Technology:** What we do is leverage these infrastructure providers and combine them with our Microservices-based framework, business component library and tools to provide unprecedented time to market for solutions. This makes the cloud part of an overall solution relevant for the capital markets space and not just a pure infrastructure initiative. A good example of the tooling is GEM, or Genesis Environment Manager, a tool that is agnostic to the underlying cloud providers, featuring cloud management from the point of starting a new development environment through to going live in production and continuous integration of future releases. These cloud infrastructure providers are only one piece of a puzzle—they need to be relevant and part of solving our clients' needs.

**Q** In terms of cloud-based services, what are Genesis' clients most looking for right now, and what problems is Genesis solving for its capital markets clients?

**Murphy:** Our clients are looking for us to provide our technology and tools to help them transition from legacy technologies—both in-house-developed and from third-party technology vendors—to a Microservices-based technology stack, and in doing so transition to the cloud in one step. Our clients come to us because we solve the paradigm of not “build vs. buy” but “build and buy.” Clients use our framework and tooling where they can develop a solution just for themselves on our state-of-the-art technology platform. They can also partner with us to build a new product for the market and leverage our growing suite of products, which spans the capital markets, including the wealth management and asset management sectors.

**Q** Typically, what applications and functionality for specific business processes are Genesis' clients looking to build in the cloud, and how is that environment preferable for application development compared with traditional models?

**Murphy:** It is probably easier to say what clients are not asking us to build in the cloud. These include highly latency-sensitive solutions that need to be as close to market data as possible and

matching engine-type technology. Apart from that, everything is open to be on either the public cloud or on the client's private cloud. Very few use-cases are that latency-sensitive compared to the broad spectrum of use-cases across our clients' domains, from treasury desks through to asset management firms. Ultimately, our clients want and continuously expect time to market and agility. We provide that end-to-end, from the moment we start discussing a solution with our clients through to production releases. Imagine that in client meetings we can start to initiate an environment and build a solution right in front of them in a no-code and low-code manner, all of which is running on a state-of-the-art, Microservices-based technology framework.



Stephen Murphy

**Q** What's on the immediate horizon for Genesis in terms of technology/functionality/services? What is the firm working on right now that *WatersTechnology's* readers need to know about?

**Murphy:** We are currently focused on the tooling we provide around our framework, business component library, and solutions. We have tools we have developed and offer to our clients such as Creative Studio, which allows developers to build no-code and low-code web user interface solutions. Our GEM tool is another example of how we can help simplify the use of cloud infrastructure from starting development through to maintaining a mission-critical product solution. GEM is agnostic to the underlying cloud infrastructure provider. Where you will see us invest more and more is in these tools, which allow us and our clients to rethink how solutions are built, typically within hours. We have already drastically reduced time to market for application development, but we want to decrease this even further. We call this our “Microservices Platform-as-a-Service” strategy, which has been built specifically to cater to the complex needs of capital markets firms, where performance, scalability, security and resilience are critical. [wt](#)



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# Spotlight on:

## Deutsche Bank's Bot Program

The already-developed bot is now awaiting incremental testing before it goes into production within six months. *By Wei-Shen Wong*



**D**eutsche Bank (DB) is looking to automate parts of the price-discovery process for over-the-counter (OTC) trades.

It has created a bot that is able to monitor chat rooms to track and distribute requests-for-quotes (RFQs), collate responses, and obtain price information for accurate, near-real-time information. It also supports post-trade dispute resolution by automatically creating chat rooms with the relevant operation teams to facilitate resolving trades quickly.

The bot came off the back of a hackathon in Singapore in June, which was co-hosted by Deutsche Bank and messaging platform provider Symphony, ahead of Symphony's Innovate 2019 conference.

Teams from DB and nine other companies, including clients and competitors, participated in the hackathon. The Deep Waters team from DB won the award for most impactful business automation development at the Singapore hackathon.

Chris Bezuidenhout, CIO for Asia-Pacific for the corporate and investment bank at Deutsche Bank, tells *WatersTechnology* that the Deep Waters team successfully delivered a unique breakthrough during the hackathon, which involved automating new term sheets for total return swaps. In most cases, new term sheets are usually produced with certain information given, manually, to a data delivery system and only then passed on to a client.

"By virtue of that information, you would generate documentation that otherwise would be sent to an operations team downstream," Bezuidenhout says. "Currently, there's a bit of lag between that creation. There would be manual intervention and the potential for it to go wrong;



then the review process of that would need to kick off after that."

The bot automates the entire workflow and allows RFQs for OTC trades to be pushed out immediately. Bezuidenhout says very little incremental testing is needed before the bot is put into live production within six months.

"Instead of using email, the solution moves it to an interactive chat," he adds. "Instead of using different people to do price discovery, we can automate quoting. Essentially, it's the integration of quoting tools you would use for a specific financial product, and instead of a user having to look at three different systems, you would [see] the basic parameters that you've entered into the chat."

Then, rather than sending that information manually in an email to the operations team, which would create the documentation, the bot generates the template from the data in the chat.

Bezuidenhout adds that this will save at least 30 to 45 minutes from the normal manual workflow process.

### Working Together

Moving forward, Deutsche Bank wants to work with its clients and even competitors more directly, which could

include developing additional bots to streamline transaction processes.

At the hackathon, DB provided a few use-cases that might be useful to explore in the future, such as hyper-connectivity between firms and automation of workflows, to set the table for the next stage.

Participating teams were then left to decide which use-case to apply. "The challenge was to see how far teams could progress a particular idea, with the support we provided on the day on-site," Bezuidenhout says. "The judging that we did at the end of the day was essentially, 'How close to production did they get?' There was a reward for prizes based on if we can actually move this to production quickly based on a single day's worth of development."

Deutsche Bank is looking to replicate similar hackathons every few months. "The aim is to connect better when we do transactions with each other in both corporate and institutional client journeys," he adds.

Luc Meriochaud, global head of innovation at DB, says the proof of usefulness is in how hackathons like this are followed up. "All the winners we had from the Berlin hackathon, we invited to the Berlin Innovation Lab to spend a couple of weeks working on their products to get them to the production stage, one of which Deutsche Bank actually invested in," he says.

In 2016, DB hosted the API/Open hackathon in Berlin, in which Frankfurt-based company Dwins—a company founded by twins Alexander and Benjamin Michel—won with their Finanzguru prototype for personal finance. The Finanzguru app, which has more than 200,000 users, gives financial advice based on transaction history. DB took a 25% stake in the company in 2017. [WT](#)

# A Murky Future



As institutional interest in cryptocurrencies grows, new and old exchanges around the globe are now turning to futures contracts to grow institutional interest. **Rebecca Natale** explains that after fits and starts, crypto futures might be nearing a tipping point.

As bitcoin tripled in price to emerge from its first crypto winter, and as the last expiry of the Chicago Board Options Exchange's (CBOE's) cash-settled bitcoin futures expired, contracts of the same style offered by the Chicago Mercantile Exchange (CME) soared to a record \$508 million in May. But over the last year, a different method of connecting regulated institutions to nascent bitcoin spot markets has brewed within other exchanges: futures contracts that settle in bitcoin itself.

This summer, both ErisX and LedgerX received green lights from the Commodity Futures Trading Commission (CFTC) to launch this new type of product. Bakkt, which was created by the Intercontinental Exchange (ICE), already launched user-acceptance testing for bitcoin-settled futures on July 22, with the

promise to more broadly roll out the new platform by the end of the year. Though this marks a necessary step toward maturity for bitcoin as an asset class, traders, investors and the exchanges themselves still have some hoops to jump through when it comes to navigating the technological and regulatory landscapes of bitcoin-settled futures.

## Regulation

"Institutions have been pretty nervous [about bitcoin exchanges], and I would say somewhat rightfully so," says Hunter Merghart, head of US operations at Bitstamp, Europe's largest and oldest regulated cryptocurrency exchange. "There's an open question of how secure

are these exchanges? How secure is my crypto? Am I even allowed to trade on these from a mandate perspective?"

Crypto trading has largely resided within a hazy legal realm for institutional players, particularly in the US, but for many, the siren call to jump onboard has been loud and clear. Merghart says he sees a handful of occurrences that gave rise to cash-settled futures at CBOE and the CME, such as the need to hedge or short cryptos. He adds that from a counterparty-risk perspective, trading on some of the more unregulated exchanges might not have fit into mandates, but a futures product just might.

He says the goal of offering bitcoin-settled futures is to try and create a





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“Do people really need the regulatory clarity of these exchanges? At this point, probably not.”

Hunter Merghart, Bitstamp

spot market in “a very regulated environment.” By the product’s nature, custody is paramount, and given that the exchanges are paddling through mostly uncharted waters, clients have to be very confident they will carry out warehousing duties in the right ways.

And while an ICE-backed exchange like Bakkt or TD Ameritrade-supported ErisX can offer more familiar levels of institutional oversight and security, Merghart sees the unregulated or semi-regulated exchanges abroad as even bigger competitors than the spot markets. From a margin and collateral perspective, he adds, exchanges outside the US can garner leverage and hedge their books at a much lower cost.

“Do people really need the regulatory clarity of these exchanges? At this point, probably not,” he says. “Maybe in the coming months as regulators in the US start to clamp down on leverage, margin and who can trade what on what exchanges ... [but] right now it feels a little bit like it’s the cart before the horse.”

## Technology

Though they might have to compromise on price, traders hope to capitalize on the more advanced technologies that these exchanges can offer. One person who is calling bitcoin-delivered bitcoin “a massive game-changer” is Joe Piotrowski, COO of Mercury Digital Assets, a Chicago-based technology and solutions provider for

over-the-counter (OTC) cryptocurrency execution.

“The problem with the spot market is you have to individually fund your account, and then all of your assets are completely at risk at ‘Exchange X,’” Piotrowski says. “But by allowing a clearing firm now to manage like they do in the traditional market ... it helps to mitigate counterparty risk.” He predicts bitcoin is still at least a year away from establishing a “stable-ish” market, but as more reputable, regulated exchanges offer more products and options, institutions can expect to see less of the “old-school spot markets, where everything is completely unregulated, no rules, poor technology, all web-based.”

Most of the startup exchanges, he says, are just not up to the test. He recalls a string of volatile days in June, in which several of the major exchanges went down, leaving him without access to the platform he uses for more than 24 hours.

“[They] just couldn’t handle the volume,” he says. “In the capital markets, we deal with that kind of volume all the time. These guys got it, and it crushed them. Along with regulation and the product, technology needs to go in lockstep. A better example of how immature the technology is, is when some of the largest exchanges in the crypto world, with billions of dollars, can’t keep up on a high-volume day.”

But they are catching up, however incrementally. As it stands, Piotrowski

says the problem is that exchanges are using technology built in-house by people who don’t fully understand high-frequency trading and exchange technologies. To compensate, he’s seeing more and more of the exchanges recruit old colleagues of his from the capital markets space. Because it’s a race, the choice ultimately comes down to deciding where it makes sense to partner with tech vendors, and where to rebuild entirely.

“In my experience, rebuilding internal systems like this can be a political nightmare, which hinders progress,” he says. “I think exchanges, if they’re smart, will start to take a look and be honest with themselves about how fast they can get to institutional-grade technology. ... Likely the answer is not to build it themselves.”

## Exchanges

Robert Thrash, COO at ErisX, is one of those poached from the sell side, having worked at Barclays Investment Bank from 2007 to February of this year. He likens building a futures exchange to building a bank from scratch. Creating the clearinghouse function is a massive endeavor, not just in terms of technology, but operations, licensing and controls, he says.

“The regulators we worked with are very thoughtful about every single aspect of both the underlying asset class itself, as well as how they view the impact of introducing derivatives clearing into that asset class,” Thrash says. “One of [their] primary concerns is the integrity of your client asset and the process by which you manage client money.”

Since receiving its derivatives clearing organization (DCO) license from the CFTC on July 1, ErisX is continuing to work out its collection of expiries and contract specifications. At the same time,



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“I think bitcoin is superior to gold because it provides a fixed supply of all of the things that people like in a commodity.”  
Juthica Chou, LedgerX

Thrash says the exchange is building out and investing in “bread and butter” technologies that can match market participant orders and support an order book and matching engine. They have yet to announce a launch date for their bitcoin-settled futures product.

LedgerX received its DCO license in June, and co-founder and chief officer of risk and operations, Juthica Chou, a high-frequency trading vet from Goldman Sachs, says one of the larger issues with cash-settled products is that they don’t allow support for institutional funds and players, and there



is too much uncertainty around how those products settle.

“When we settle and clear transactions, all of those transactions are on our internal ledger,” she says. “We don’t have to touch the blockchain system on all of those transactions. The way we do it is that the derivatives settle, [and] they will be credited to the account.”

As an example, if a trader buys 50 bitcoin futures, they will get 50 bitcoin credited to their account and will be able to withdraw that bitcoin to their own wallet at any time. “But it’s only upon that withdrawal that we actually touch the bitcoin blockchain,” Chou says.

She echoes Thrash’s point that the clearing level is the space ripest for innovation for the futures market.

“Once you start taking bitcoin as collateral, that’s where you have at your disposal programmable collateral in a way that wasn’t really possible before—24/7, 365,” Chou says. “That’s where I could see new ways of thinking about clearing because, traditionally in the US, clearing is predominantly done through US dollar transfers and through the banking system.”

Chou compares the notion of programmable collateral to smart contracts—self-executing contractual states stored on the blockchain—which tie



together logic and algorithms to collateral without the need for any third party or intermediary.

### Good as Gold?

Thrash says it's not so much uncertainty about cash settlements that's prompting the migration to physical ones, but about getting a better trade-off. In a cash-settled futures contract, you reduce the delivery costs, while a bitcoin-delivered contract provides hedging efficiency. For investors that want to short bitcoin, clearly the best position would be to have the asset, and the ability to deliver it, he says.

"The relationship between holding the spot asset, being able to deliver and the settlement price is immutable," Thrash says. "The delivery itself is the mechanism by which the price is set. That level of transparency makes it a more efficient hedging instrument because it directly links the under-

lying market to that of the future settlement."

As a hedging instrument, bitcoin may see a shiny future, not unlike another familiar inflation-agnostic asset. LedgerX's Chou sees the comparison of bitcoin to gold as not quite exact. On one hand, bitcoin is at the mercy of news cycles and public perception in a way that gold isn't, as gold has a centuries-long track record that makes it more immune to such things. However, Chou thinks the asset has the capability to outpace its counterpart.

"I think bitcoin is superior to gold because it provides a fixed supply of all of the things that people like in a commodity," Chou says. "On top of that, it's actually useful for other things as a method of a payment. You can transfer it really easily. It's fungible. It's more practical as a means of payment than something like gold, which is typically [locked up] in the Federal Reserve."



**Robert Thrash**  
ErisX

For investors looking for uncorrelated returns, it's an interesting asset to look at, says Bitstamp's Merghart. "Everything I've seen in the space in the last two years, more and more people are thinking about [bitcoin] in that perspective," Merghart says. "Similar to how you would view gold or an early-stage startup is kind of how people view crypto in their portfolios."

The most interesting drama to play out in all of this, though, might be to see how a currency, engineered in rebellion against global finance and banking systems, fares as those same systems push to adopt it as one of their own. Particularly as exchanges race to invent new ways to provide custody, the irony there almost refuses to be overlooked—that bitcoin's purpose was to restore the control of money to owners. What was perhaps once an angsty teenager, may very well be maturing into a formidable adult—loss of idealism included. [WT](#)



# Regulating Cryptocurrencies and the Investors' Search for Clarity

Few regulations around cryptocurrencies exist but institutional investors, already wary of fully entering the market, want countries to provide clear statements laying out how these new assets will be treated. By Emilia David



In the institutional space, the fact that the various regulatory bodies have taken a soft touch when it comes to cryptocurrencies has stunted adoption, but Facebook's proposed virtual currency, Libra, has helped to put the spotlight back on digital-asset regulation.

The US, like most large economies, has been cautious in releasing regulations governing cryptocurrencies and their derivatives. While most countries have not enacted policies around these instruments, institutional investors are still interested in entering the cryptocurrency market and diversifying their investments. Some countries, particularly smaller economies, have managed to come up with a few rules, but there has not been a large take-up in many of the more established economies yet.

Institutional investors, however, have made it clear that their interest is not solely defined by regulation friendly to digital money and are seeking clarity from regulators in defining these assets. Investors see adoption of cryptocurrencies growing if regulators can say with certainty that financial instruments backed by these instruments are legal and fines will not be levied retroactively. Market participants agree there is no single regulatory model from other countries to follow, but that any rule coming out should ensure the assets and the investing process are clearly defined.

Ricky Li, founder of crypto-trading firm Altonomy, says institutional investors prefer clear definitions coming from regulators so risk is mitigated and they are assured they have legal cover.

"I don't think it matters how lenient or strict regulations are to attract more institutional investors; it really depends on clarifications of definitions," Li says. "The market will still be there even if it is a strict market. Investors shy away from assets if there is a lot of risk around it, which normally means there is no clear guidance on how they can avoid risk."

He adds any regulatory gray areas around how an asset is defined is where the potential risk comes in, as inves-



tors can take advantage of loopholes or aren't able to fully manage their risk tolerances.

There is a perception that countries with friendly cryptocurrency regulations attract more investment, but traders point out that it's not the regulation, itself, that lures digital-currency companies to set up shop, but rather these countries have laid out how they will treat the assets. Companies then feel more comfortable that regulators will not turn around and tell them they should treat these assets differently.

### Complicated Markets

In the US, cryptocurrencies fall under three different potential regulatory frameworks: as a commodity and a futures contract, a security through an initial coin offering (ICO) or an exchange-traded fund, or as currency traded for other digital currencies on an exchange.

The US has yet to fully enact rules around cryptocurrencies, which is partially due to the fact that it has somewhat of a complicated regulatory regime. The Commodity Futures Trading Commission (CFTC) focuses on the commodities and futures market while the Securities and Exchange Commission (SEC) oversees the securities market. Each state also has the ability to lay out additional rules, particularly for companies that move money—for example, New York requires a BitLicense for any firm that wants to trade crypto-to-crypto.

Laurian Cristea, general counsel of cryptocurrency derivatives exchange ErisX, says the complicated regulatory environment in the US proves how hard it can be to lay out regulations in the country.

"The regulatory environment in the US is complicated—the states don't substantively regulate and on the federal side, it's bifurcated on the part of securities and futures regulators. It's a testament to the approach of the CFTC that they looked at their core principles and rules and figured out how these can be extended to cryptocurrencies. They gave entities a path to comply with their principles

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"Singapore and France kind of have a trial period [for rules], while the US is on a wait-and-see pattern. Either way you do it, just adopt a position. I don't think the US is lagging, but it is looking around at the other policies being enacted."

**Ricky Li, Altonomy**

and as a result we've seen a lot of new licenses and products announced," Cristea says.

He adds that "the SEC is taking its time, and currently the market is awaiting the same degree of certainty from SEC's guidance."

The CFTC declared in 2014 that it believes some cryptocurrencies are commodities and therefore fall under its jurisdiction. It also clarified that futures contracts based on cryptocurrencies—particularly bitcoin—may be self-certified by exchanges. This allowed the CME Group and the CBOE Futures Exchange to self-certify and start trading bitcoin futures in 2017.

The SEC, on the other hand, has not yet released final guidance on cryptocurrencies in terms of whether they trade as normal securities or something different. The regulator did provide clarity on ICOs and has begun fining ICOs that break its rules. The SEC has not yet released any rules on cryptocurrency exchange-traded funds (ETFs). Its most recent release around cryptocurrencies dealt with the custody and clearing of cryptocurrency securities and other digital tokens, though some market participants believe the statement still did not provide enough clarity on post-trade processes for digital assets.

Cristea points out that institutional investors want much more clarity from regulators because they have a fiduciary duty unlike retail investors, which are the lifeblood of cryptocurrency trading.

"In retail, it's the individual involved who makes decisions based on their own risk profile, but when it comes



to institutional investing, most have a fiduciary duty and institutional investors cannot take undue risks, so there are additional due diligence and [risk] factors involved in transacting in crypto, which is why institutions need clarity and certainty," says Cristea.

Despite the lack of clarity around cryptocurrencies, some are still founding brokerages, exchanges and trading venues, sometimes in the US. Established firms like Eris Exchange and trueEx created trading venues like ErisX and trueDigital. But many of these firms do exercise an abundance of caution by applying for licenses. In many cases, companies decide to move their operations to a country that has more legal cover.

While there is no single model to follow in terms of regulations, market participants do believe countries like the US that are still figuring how best to provide guidance for use of cryptocurrencies can take best practices from first-mover jurisdictions.

### Small Size, Big Influence

Much has been said about the more crypto-friendly countries like Malta—where many of the largest cryptocurrency exchanges by volume are registered—which have managed to attract businesses around digital assets.

Two jurisdictions in particular—Malta and the Seychelles—were of interest to market participants. Both are smaller countries and therefore tend to



move more quickly around innovations like cryptocurrencies. Asian countries have also traditionally embraced things like crypto, though regulatory actions around it in the region have ranged from easing requirements to outwardly banning the trade of cryptocurrencies, as China did in 2017.

According to a report from crypto data provider Crypto Compare, Malta-registered exchanges traded the largest chunk of cryptocurrencies in the world at \$56.1 billion in March 2019, followed by Hong Kong at \$53.1 billion and South Korea at \$40.2 billion.

Other countries have also begun moving forward with cryptocurrency trading by releasing their own rules aimed at providing more transparency and accountability. The Monetary Authority of Singapore (MAS) said in 2017 that it must approve the trade

of digital assets by an exchange, and before virtual currencies can be traded, exchanges must verify identities of customers.

In April of this year, France announced it has approved its own rules around crypto trading, which came into force in July. Under French rules, crypto companies have to agree to follow capital requirements, identify a legal entity responsible for the issuance of the crypto offering and pay taxes in the country.

Another way countries and territories have tested out regulations around cryptocurrencies is to set up regulatory sandboxes. Hong Kong, for example, explored sandboxes that would experiment by allowing crypto exchanges to opt in and follow conceptual rules. Regulators in Hong Kong came out with rules stipulating

only professional investors—those with at least HK\$8 million in assets—can participate in the market and funds investing in digital currencies must be licensed by Hong Kong's Securities and Futures Commission (SFC). Trading platforms in Hong Kong must join the sandbox while they are negotiating with the SFC on licensing requirements.

But sandboxes have to provide some legal cover for companies that they can't be retroactively fined later. And conversely, Altonomy's Li points out that if a sandbox is too restrictive and unclear, there may not be a lot of take-up from companies.

Li says it's a good idea to look at the kinds of rules released by other countries and figure out how to implement something similar, or cherry-pick the best ideas for an individual market.



**Laurian Cristea**  
ErisX





“Singapore and France kind of have a trial period [for rules], while the US is in a wait-and-see pattern. Either way, you do it, just adopt a position. I don’t think the US is lagging, but it is looking around at the other policies being enacted,” he says. “Participants will always adapt to the market, but it’s best to provide best practices. Sometimes companies have an overabundance of caution and get every possible license there is and that can get expensive.”

Of course, regulation is just one of the issues concerning institutional investors when it comes to virtual currencies.

Market participants, though, in search of clarity coming from regulatory bodies, know there’s a reason why these rules are not yet forthcoming. Mike Belshe, CEO of digital wallet and custody provider BitGo, says it’s understandable that some countries have not even come out with

definitions for how they will treat these assets because they’re grappling with something fundamentally different from how money and traditional assets move.

“Regulators globally are still trying to understand and grasp what cryptocurrencies are and how they behave,” Belshe says. “They’re used to a world where there are borders and it’s easy to contain assets that trade in their jurisdiction, but cryptocurrencies don’t work that way. Each country has different rules—the US is known for strong regulatory enforcement while some countries, say in Asia, are not.”

But even if investors understand why some countries are taking their time to provide clarity around cryptocurrencies and its derivatives, many market participants still want regulators to offer more information so they can best plan how to go about their business.

## Extending Current Rules

In light of the potential to glean best practices from around the globe, some market participants have even started groups that call for the sharing of cryptocurrency policies and creating harmonized standards, as most cryptocurrency trades cross borders.

Simon Taylor, co-founder of Global Digital Finance, a group that is working on harmonized regulations, points out a huge part of promoting cryptocurrencies is to ensure cross-border trades are recognized and treated in accordance with traditional policies. He says he does accept that more countries first have to figure out how they are going to define cryptocurrencies.

There is also a possibility that regulators may not even have to come out with any new definitions at all. Cristea says a possible—and easier—path to clarity is extending existing regulations to cover cryptocurrencies and declare them as assets that function a lot like traditional assets.

“What investors want to hear from regulators is clarity and certainty—to know that what they need to do to comply and the regulators won’t turn around and tell them to materially change or shut down. So regulators either have to make new rules or extend the ones we currently have,” Cristea says. “The regulations are there and I believe that cryptocurrencies are an asset class that fits within existing regulations. It’s really in the interpretation of the regulations in light of the specific characteristics of the asset class that needs to be spelled out.”

Perhaps the greatest worry, though, is that as more time passes, it will lead to more knee-jerk-reaction regulations. The US House of Representatives held a hearing on Facebook’s Libra in July and is considering drafting a law that would regulate digital currencies and limit possible harm to consumers. The idea of the US House of Representatives leading the charge on regulation might not be the most comforting idea for many in the crypto space. [wt](#)



**Mike Belshe**  
BitGo

# How AI Could Tear Up the Risk Modeling Canon



BlackRock, MSCI, and La Française are among the firms looking to replace traditional, linear risk models. **By Faye Kilburn**

**A**pale Mark Zuckerberg blinked nervously and shifted in his chair. The Facebook chief sat before stony-faced members of a US Congressional committee in April facing interrogation over a scandal that saw the personal data of millions of users harvested for political campaigning.

The risk to the company's future was evident, as Zuckerberg's discomfort betrayed. Yet little of this risk was reflected in the standard financial metric for assessing the likelihood of corporate default, the Altman Z-score.

"Facebook was rated as a high-quality, low-risk company on almost all metrics, but there was this huge sleeper issue of its aggressive monetization of user data," says Gareth Shepherd, managing partner of hedge fund G Squared Capital. "But it's not showing up in something like an Altman Z-score."

The Z-score is one of a number of long-serving financial models developed in the 1960s and 1970s, alongside the capital asset pricing model and arbitrage pricing theory, which are linear in design. This means changes in their outputs are proportional to changes in the underlying variables, and can be graphically represented as a straight line.

The financial markets are not linear. Asset prices rarely obey fixed laws, and move in an elusive and transitory fashion. Andrew Chin, chief risk officer and head of quantitative research at asset manager AllianceBernstein, says most financial models used today are "wrong by definition" because they make simplifying assumptions about the real world.

Companies are now seeking to overturn the orthodoxy by developing a new breed of models using machine learning. BlackRock, the world's largest asset manager, has been working on liquidity risk models using neural networks, a machine learning technique. Analytics firm MSCI has forged a tool to gauge prepayment risk for mortgage securitizations, also featuring neural networks. And quant fund La Française Investment Solutions is building a risk management dashboard that harnesses natural-language processing, a subset of machine learning.

These initiatives hope to improve on what Shepherd describes as the "blunt tool" of linear models that miss much of the nuance in financial markets.



At the time of Zuckerberg's grilling by Congress, Facebook's Z-score was close to 15, indicating a low likelihood of default. Today it stands at an even healthier 16.8, way ahead of its peers in the so-called Faangs club of tech stocks: Apple, Amazon, Netflix and Google.

"The Z-score is one of the most recognized ways of measuring a company's solvency," Shepherd says. "But the idiosyncratic risk of Facebook's monetization of its data isn't even part of the equation."

## A Role for Vol

Aside from the work already underway in credit risk and liquidity risk, experts identify volatility forecasting as one of the most promising fields of research for machine learning.

A branch of artificial intelligence, machine learning refers to a range of pattern recognition techniques, the more sophisticated of which are capable of finding non-linear patterns and weird interactions that are not easily spotted by humans or traditional statistical approaches.

"To apply machine learning you must have a prior, fundamental reason to believe the dynamic relationship between the inputs of your model are non-linear," says Manoj Narang, CEO of hedge fund Mana Partners. "Volatility is one of those areas."

Traditional measures of volatility are underpinned by linear return models and normal distribution assumptions. From these linear return models, quants



**"The Z-score is one of the most recognized ways of measuring a company's solvency. But the idiosyncratic risk of Facebook's monetization of its data isn't even part of the equation."**

**Gareth Shepherd, G Squared Capital**

can construct covariance matrices, which are then used to generate a range of metrics including volatility.

Linear models are "easy to understand and do a reasonable job in 'normal' times," Chin says, adding: "Volatility assumes Gaussian distributions and for simplicity, we use this metric even though we know most aspects of the financial markets are not normal."

The popular belief is that volatility exists in regimes. That is, it goes through phases of behavior that depend on external factors, causing low-volatility states and high-volatility states. These phases are irregular and hard to model. "So in terms of thinking about how volatility evolves over time, that's an area where non-linear prediction has some natural appeal," says Seth Weingram, director of client advisory at Acadian Asset Management.

A popular measure of volatility as an exponentially weighted moving average was first proposed by RiskMetrics in 1996 in the first iteration of its

risk model. The "flexibility and intuitiveness" of the approach—which essentially over-weights the more recent observations—has made it a mainstay of the industry, says David Kuenzi, senior portfolio manager and research scientist at quant fund AlphaSimplex.

"But I think the weakness here is that it is somewhat formulaic in the way it depends on recent data. It's not as flexible in the way you can incorporate different ideas as to what volatility is," Kuenzi says. "It's a very simple formulation for estimating volatility. Perhaps it's ignoring other relevant pieces of information that would enable one to better estimate risk."

Kuenzi says the industry is exploring supervised machine learning techniques capable of modeling the "somewhat amorphous" nature of volatility. Techniques include random forests, which combine a group of decision trees; kernel ridge regression, a method for training models; and support vector machines, a way of classifying data.

## Random Walk

But not everyone is getting carried away with the potential of machine learning to upend volatility models. For some, the question of whether volatility is non-linear is still not settled. Quants accept that modeling volatility in a linear manner is hard partly because the metric is non-stationary, which means it wanders along its own path, untethered to a long-run average.

## Jesus in the Clouds

The lifeblood of machine learning is raw data, the trillions of ones and zeroes that power the algorithms. Experts question whether volatility generates enough data to be able to detect patterns in regimes beyond the typical business cycle and risk-on/risk-off regimes. Guillaume Garchery at La Française says machine learning is not necessarily suitable for detecting regime shifts because only daily data is available.

"Your primary available data will be daily data that is very sparse. You have 200 to 250 data points on a single asset, which is almost nothing," he says.

Just as a human can look up at the sky and see an image of Jesus in the clouds, machine learning algorithms can find false positives in data. This problem is known as overfitting, and is most pronounced when data is sparse or noisy—and it's worse in machine learning approaches as opposed to traditional statistical methods because of the larger datasets being analyzed and the increased complexity of algorithms.

"The risk of overfitting is high," says Kevin Cole, chief investment officer at systematic multi-strategy quant hedge fund Campbell & Co.

In response, quants aim to feed the right amount and type of data into the machine and teach it to weight the data appropriately. Inputs are, for example, ratios that influence risk: anything from profitability ratios to leverage ratios, liquidity ratios to solvency ratios. The machine will then figure out which combination of those ratios signals that a company is high-risk. Aside from grading the relevance of data, algorithms must also be able to spot

links between data points that the human eye, or traditional models, might miss. Cole says machine learning could help to improve current methods to measure risk that might be "somewhat naive in the real world." He gives the example of a mean variance optimizer that uses an unconstrained linear correlation matrix.

"We know that correlations can be noisy, and they are difficult to estimate with precision. They can have sudden changes depending on the regime that you're in, and machine learning is one way to make those correlation estimates more robust," he says.

Some data is too noisy even for AI to make sense of. Quant fund AQR waded into the debate in June when the firm panned the use of machine learning for return predictions, citing a low signal-to-noise ratio. The financial markets have a very low signal because efficient trading strategies Hoover up profit-making opportunities quickly, reducing the predictability of returns, the firm wrote in a research note. The complexity of financial markets is akin to training the algorithm to look for cats, only for the cats to "begin morphing into dogs once the algorithm becomes good at cat recognition."

However, the firm says risk management is fertile ground for machine learning because financial market risks are relatively predictable, which jacks up their signal-to-noise ratio, and "unlike return prediction, there is no obvious tendency for investor behavior to eliminate this predictability."

Garchery agrees: "It's easier to forecast volatility stats or correlation than forecasting returns, mainly because returns are a very noisy time series. I'm convinced that machine learning is better for managing risk than for stock price prediction."



While the relationship between market direction and implied volatility is usually negative, the forces occasionally move in sync. In the late 1990s, for example, the two moved in tandem during a strong bull market for equities (see figure 1). Even when they're moving in opposite directions, it's not always by a fixed or predictable amount.

"Just because that relationship is not stationary, just because the data of the Volatility Index (VIX) to the S&P 500 Index is not constant, doesn't mean that that relationship is non-linear," says Narang of Mana Partners. "There may be other factors that you have to put into your model besides the S&P 500 to get a proper forecast."

Narang says that simply applying machine learning heavy-handedly, to something that is not non-linear, could lead firms to miss important explanatory factors. In fact, Mana Partners continues to use a linear volatility

**“This AI produces a model in three hours. That's 100 times efficiency gain. It almost lets you look at the risk in real time, so you are able to pick up risk signals before they hit you.”**

**Jiawei David Zhang, MSCI**

model as it outperforms non-linear machine learning approaches.

"If you're just going to take the relationship between S&P 500 and VIX, and then attempt to model that with a machine-learning framework, not only will you not outperform a linear approach, but you will underperform it, because you'll be missing explanatory variables that give rise to that non-linearity," he says.

Away from the realms of volatility, firms have been experimenting with

machine learning for risk modeling, with mixed success. BlackRock has created a liquidity risk model based on neural networks, which attempt to mimic the alchemy of a human brain by calculating millions of possible combinations. Previous models used bid/ask spreads but BlackRock's adds elements such as time to liquidation, transaction cost and volume.

The asset manager soon ran up against a familiar barrier: how to interpret the output of the machine-learning algo. Toward the end of 2018, the research team shelved some areas of development, even ones that were outperforming the traditional non-AI methods, as the models' performance was impossible to explain to senior management.

Asked for an update on the firm's latest progress with machine-learning models, BlackRock declined to comment.

Elsewhere, MSCI has built a neural network model for credit investors to understand prepayment risk. Early

repayment of mortgages can cause problems for holders of mortgage-backed securities, which promise a fixed return over a set time period. Modeling this risk more effectively can help originators and investors.

Prepayment depends on between 30 and 100 variables which interact with each other in “highly non-linear” ways, says Jiawei David Zhang, managing director in securitized product research at MSCI. Most firms perform this intensive modeling manually, but the process is laborious and the models can end up largely redundant by the time the developers have built and back-tested them.

“Before, you would work on a model for a couple of months,” Zhang says. “This AI produces a model in three hours. That’s 100 times efficiency gain. It almost lets you look at the risk in real time, so you are able to pick up risk signals before they hit you.”

La Française Investment Solutions is seeking to use machine learning in a broader fashion, by building what it calls a real-time risk management dashboard. The year-long project uses natural-language processing to automatically filter and classify news, and detect keywords for companies. In effect, the dashboard will provide active risk monitoring of the fund’s universe, says Guillaume Garchery, senior portfolio manager at the fund.

The goal: early detection of indicators of qualitative risk that could cause drops in implied volatility, credit spread increases, and sector decorrelations.

“When the media starts to write a lot of articles on a company with bad keywords you may have some specific movement in prices or in implied volatility that machine-learning algorithms could pick up, for example,” Garchery says.

The fund is currently working to fully automate the dashboard. It is also testing the algorithm on historical data to see if advance signals are detected, and ensure that it doesn’t catch too many false positives.

In a related development, JP Morgan is using machine learning for options hedging. The main purpose is to improve the speed and efficiency of the process, and thus cut costs. The firm says the method improves on the

popular Black–Scholes model, which was developed in the 1970s for options pricing. JP Morgan’s global head of equities analytics, Hans Buehler, went so far as to say that if options hedging tools were being designed afresh today, “I don’t think you would sit there and build the Black–Scholes model.”

Reports of the demise of Black–Scholes are premature, some suggest. Greg Hayt, president and chief risk officer of hedge fund Paloma Partners, warns against getting “caught up in the hype” of machine learning’s ability to transform risk management.

### Tanks But No Tanks

Swaths of the market share Hayt’s skepticism of self-learning algos, and demand evidence and explanations for their performance. Gaining trust in the models’ murky methods is a challenge. Etienne Vincent, global head of quantitative portfolio management at BNP Paribas AM, recounts an anecdote—most likely apocryphal—about a project within the US military that used machine learning to detect the presence of camouflaged enemy tanks. The data was trained on a series of photographs with and without tanks. The algorithm successfully detected the tanks, but only because the photographs containing tanks were taken during sunny conditions, whereas the ones without were taken in cloudy conditions.

“I don’t think it will be helpful for the asset management industry, if we try to explain to the average person that now we’re managing risk with such approaches. It’s not what is expected of us,” Vincent says.



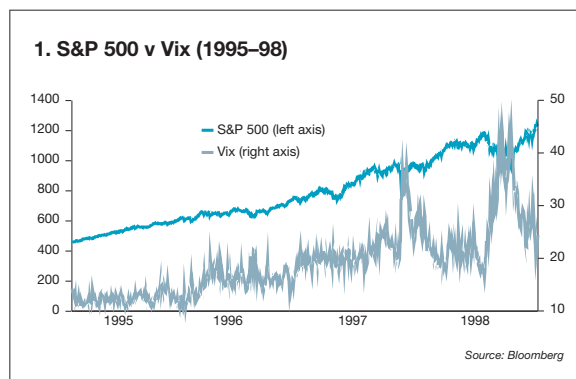
**Andrew Chin**  
AllianceBernstein

The prize may be worth the effort, though. A suite of next-generation models holds the tempting prospect of greater insight into the influences of risk on prospective investments.

“Machine learning has the capacity to find much more granular, complex patterns, and therefore the capacity to realize that, regardless of everything else lining up, if a company like Valeant Pharmaceuticals is aggressively building on debt and M&A, then that one element can override all of the other ones,” says Shepherd of G Squared Capital.

He is referring to the once darling of Wall Street, Valeant Pharmaceuticals, whose stock price rose to a high of \$260 between 2014 and 2017 thanks to investment from smart money, before a series of scandals involving price gouging and fraud slashed the stock to \$94. Pershing Capital’s Bill Ackman, who joined Valeant’s board in 2016, left in 2017 reportedly licking a \$2.8 billion wound. For most of its growth phase, Shepherd says, a stock like Valeant can score “pretty well” on linear models because most points in the model look healthy.

Investors who lost big on Valeant may be hoping for a bonfire of the linearities and for machine learning one day to give rise to a new era of risk models. [wt](#)





# The AI Ethics Dilemma

Financial firms and regulators are beginning to assess the ethical implications of artificial intelligence—and the trade-offs between good technology and innovation. **By Jo Wright**



**W**hile more than a half-century old, artificial intelligence (AI) is still an emerging field in finance, and with its growth have come concerns about the ethical implications of what is essentially the outsourcing of decision-making to machines.

Banks have always worried that the data they feed to their algorithms is not of sufficient quantity and quality to run effective models; this is a difficult but established problem. Now, though, the industry must deal with the far more nebulous problem of the socioeconomic ramifications of data—and get there before the regulators do.

“Folks are just beginning to recognize that even if you have great data, when you put it into these new technologies you have to interrogate the outcomes to understand how your decisions are affecting the socioeconomic or cultural situation,” says Diana Ascher, director of the Information Studies Research Lab at UCLA.

Ascher is also the founder of the Information Ethics and Equity Institute under the Enterprise Data Management (EDM) Council. The EDM Council is one of the many organizations starting to think about

data ethics, along with regulators, trade associations, and banks themselves. The Royal Bank of Canada (RBC) and Dutch bank ING are among an increasing number of firms with initiatives formally considering data ethics. The European Commission (EC) formed a high-level expert group on the topic and consulted on “ethics guidelines for trustworthy AI” to guide European companies. Last December, the Monetary Authority of Singapore (MAS) put out its own set of principles.

Clearly, the industry is worried about understanding the machines.



## Systemic Bias

Currently, the majority of AI in financial institutions is limited to relatively simple techniques, from robotic process automation (RPA) to low-level decision trees and basic linear regressions. But firms are innovating more and more in the quest for more sophisticated uses in risk management and forecasting. As these technologies become more advanced—such as deep neural networks—not only their inner workings but also their outcomes become more complicated to understand, and the stakes become higher.

Industry bodies say their members are currently most worried about the implications of AI that assess creditworthiness and lending, says John Bottega, an executive director at the EDM Council.

“If an organization in the capital markets or retail sector is looking to sell their products, they want to understand the creditworthiness of their customers or where they have the opportunity to sell products. The typical input into that that kind of algorithm would be FICO [credit] scores, looking at levels of education, historical buying patterns and things of that nature.”

This is all good, clean, accurate data, says Bottega, but “what is happening in these examples is that the outcome of that analytic was saying, ‘This part of town is ideal for selling these products, this part of town isn’t.’ And that implies that we have gone back to redlining—we are now basing decisions on socioeconomic, racial divides.”

This is not a theoretical worry; there is real evidence that this kind of discrimination exists in markets. A research paper jointly written by academics at several US universities and published in 2018 shows how historically black colleges in the US find it harder to raise money in the secondary markets, as they pay higher underwriting fees to issue tax-exempt bonds compared to colleges that were not historically black. The researchers found that credit quality played no role, as these colleges were AAA-rated and insured. Bonds issued by historically black colleges were more expensive to trade and when they did, sat in dealer inventory longer.



“The creepy line is when you approach a customer with some kind of marketing or offering and the customer feels uneasy with that.”

Umar Latif, ING

The research paper doesn’t mention AI. But this is the kind of inequity that could be perpetuated, completely unwittingly, by financial institutions plugging historical data into a machine-learning model without interrogating either the data going in, or the data coming out. And apart from the social impact, this kind of discrimination is a blind spot for a bank that could cause it to miss out on untapped or underserved markets.

## Horns of a Dilemma

Underlying ethics considerations is a major dilemma: When do you make the inevitable trade-off between the amazing products or tools you can create with huge datasets combined with AI, and the ethics of the products or tools? Where is that line and when is it crossed?

Umar Latif, head of data governance at ING, says his firm takes a customer-centric view, and customers’ comfort is its yardstick. ING could build innovative products with the data it has on its customers that would be completely legal from, say, a General

Data Protection Regulation (GDPR) standpoint, but would not necessarily be ethical. At some point, customers or stakeholders will become uncomfortable with how their data is being used. ING calls that point of discomfort the “creepy line,” Latif says.

“Where things get tricky is where we approach the creepy line for our customer, or any other stakeholder. We have data about ratings of customers or maybe transactional data about them—we can do a lot with that. But we need to be careful that we do it in an ethical manner, that we don’t intrude on the ethical rights of our stakeholders,” he says. “The creepy line is when you approach a customer with some kind of marketing or offering and the customer feels uneasy with that: ‘OK, you have my data and you are probably allowed to approach me in that manner, but am I comfortable with you doing that?’”

Latif says ING tells its staff to be responsible when using data and consider doing the right thing for people and society. “We ask: ‘Could you explain to family and friends and even elders what you are doing with this data?’” Latif says. “The data usage needs to be ethical. These are the key components we use from a values-based perspective.”

## Leveraging the CDO

From an enterprise standpoint, data ethics is a responsibility that should reside in the C-suite—but exactly with whom, and how the values or standards developed at the top permeate down into the bank, are topics that are beginning to be discussed.

Regulators have begun to define where the responsibility for ethical data and AI lies. The EC’s guidelines for trustworthy AI, for example, include suggestions for governance frameworks, including the appointment of a person in charge of AI ethics, or an internal or external ethics panel or board that could provide oversight or advice. The MAS’s principles illustrate a number of possible frameworks for internal and external accountability.

David Ostojtsch, technology and operations committee director at the Association for Financial Markets



in Europe (AFME), says individual organizations will figure out what works best for them. “All banks have different business models, product lines and organization structures. Some are cross-border. Everyone needs to look at it in their own way. Understanding its use needs to permeate from the board down in appropriate ways. But who exactly is responsible will be a mix guided by what people think is the right model,” he says.

The kind of structures and regulation of boards to facilitate this are already in place, like the Senior Managers Regime in the UK, he adds.

The EDM Council’s Bottega says that exactly who will take responsibility for data ethics is still an evolving consideration within financial firms, but from his perspective, one possibility is to leverage the model of the chief data officer (CDO).

Bottega himself was CDO of both Bank of America and the Federal Reserve Bank of New York. He says one of the reasons the CDO role came into being was that while there were

individuals with responsibility for technology, there was no individual responsible for the use of information. But the CDO was not ultimately responsible for the implementation of the data—that included business and technology people within the enterprise.

“Data management is a federated responsibility around the organization. And I would put ethics right into that model,” Bottega says.

While the CDO can be a champion as an executive in the C-suite and bring awareness, understanding, education and some type of policy or guidelines for the organization, “the accountability falls to everybody in the organization: the people running the models, the people running the businesses, the marketing teams that sell the products—everybody is involved,” Bottega says.

ING has tried to build its own data ethics model around this idea. ING’s framework, which it began to develop in 2016 and has been operational since last year, is founded on the bank’s existing corporate culture.

“The primary responsibility for data ethics lies with each and every employee within ING. We rolled out our data ethics framework as something that is clearly linked to our organizational culture,” Latif says. “We have values and principles and these tie into data ethics as well. We translated our corporate code into these data ethical values and principles.”

In practice, the framework rests on data ethics councils in ING’s regional banks all over the world. When an employee in one of these branches encounters an ethical dilemma in the course of their work, perhaps while developing new marketing practices, algorithms or products, they send it to their relevant council. These are collected in a repository in the central data ethics council in the banks’ Netherlands headquarters, says Carmen Gomez, a data governance specialist at ING and coordinator of the data ethics council.

“We have a data ethics council in each country. And next to that, we have one global data ethics council

where we safeguard the data ethics framework and collect and assess all the ethical dilemmas that have been discussed in the councils,” Gomez says. “We collect them to create consistency and to make sure we are aligned.”

The councils are intended to include a diverse array of people. “In each country where these councils are established, we have people from different areas involved,” Gomez adds. “So it’s not only architects, not only IT people or data management people. We have people from sustainability, we have people from legal, from compliance, people from AI and from the business itself. Together they advise on an ethical issue that an employee or department can have.”

### Regulatory Balancing Act

Firms and industry bodies see this as a good time to get in ahead of the regulators and be part of the conversation as

Ostojitsch says. “But we found that the guidelines could be quite restrictive if they were implemented, certainly in the earlier versions,” he adds.

In the consultation paper, Ostojitsch lays out some concerns that the industry body had, such as with the EC’s assertion that the more autonomy given to an AI system, the more extensive testing and stricter governance is required.

Greater human oversight might be appropriate for systems that interact directly with humans, rather than by the AI system’s overall level of autonomy, the paper says.

Ostojitsch explains: “If, for example, you are using AI for something that a bank has determined is very low risk—it doesn’t touch any counterparties, it doesn’t touch any clients, it has got very limited internal focus—then in essence you should be able to have limited human oversight on it, even if that AI was automated.”



Diana Ascher  
UCLA

use of AI, that could put the brakes on how these technologies develop over the next few years.”

Neural networks, for example, he says, are essentially black boxes when it comes to interpreting data and making decisions.

“To try and provide an explanation of even a basic neural network is very complicated because of all the different factors that the neural network might be considering,” he says. “You could also argue in some cases, like the use of AI in catching financial crime or anti-money laundering, the less that’s known about the inner workings of that AI the better. Otherwise, people would be able to circumnavigate those rules.”

Ostojitsch says the MAS’s principles—formally named the Principles to Promote Fairness, Ethics, Accountability and Transparency in the use of AI and data analytics in Singapore’s financial sector—are the kind of non-prescriptive, principles-based guidelines that the financial industry would like to see.

Actual rules and regulations of AI driven by ethical concerns are a long way off, and there are other regulations that touch on these issues that are in place already, whether data privacy laws or governance standards like BCBS 239. But there are many measures banks can take now to future-proof against reputational and regulatory risk.

They can start ethics committees and working groups, like ING has. They can promote the awareness at every level that decisions can have far-flung consequences, and run that education program under the auspices of the CDO’s office.

And, perhaps most importantly, they can build diversity into their organizations. Diverse experiences and opinions within the company make it easier to understand the ripple effects of an algorithm’s decision, says the UCLA’s Ascher. “You want to have folks that can look at an algorithm and say, ‘I wonder what is going to happen to this population if we use this particular proxy variable to make the decision,’” she says. “Getting these different perspectives is essential.” **WT**



“Data management is a federated responsibility around the organization. And I would put ethics right into that model.”

John Bottega, EDM Council

it develops. A major concern for banks is that while there are obviously ethical issues at stake, overly prescriptive regulation will stifle innovation.

AFME says in its consultation response on the EC’s guidelines for trustworthy AI that “too quickly prescribing formal requirements and assessment criteria may fail to capture, or limit the maturity and continued adoption of AI.”

The EC’s consultation had the right focus and the Commission is moving early on this topic, which is a good thing,

Another issue AFME had with the EC’s conceptualizing of the guidelines was its idea of explainability, which is the ability to explain the technical processes of an AI system and the related human decisions. Explainability has its limits, Ostojitsch says.

“The simpler uses of AI are very explainable. However, when you start getting to more sophisticated uses, or when you start to be more innovative, that is where explainability gets more difficult,” he says. “If an explanation is required at a detailed level for every



# Have You Ever Been Mistaken for a Data Vendor?



Max used to take a jab at people by asking them a question that was tinged with snark. In today's environment, that insult has become an important question.

In 43 years, I've been told that I look like a celebrity exactly twice. The first time, the year I arrived in New York, two teens on the subway told me I looked like Saturday Night Live's Chris Farley. I thanked them, not knowing who Farley was, only later reading about his cocaine issues and death from an overdose at age 33. The second time, last year, I was told by a pollster that I reminded them of roly-poly *The Late Late Show* host James Corden—I like to think because of my great sense of humor rather than just my waistline and British accent.

I think they meant it as a compliment ... unlike when I used to ask vendors if they'd ever been mistaken for a data vendor. In the past, that question would slip out if an interviewee was shamelessly dodging my questions or trying to tell me that being a B2B journalist should somehow give me a different set of ethics than reporters in the mainstream press. Or if someone was otherwise being rude, pompous, antagonistic, etc. If you never heard me say that, congratulations: You're probably an OK person.

Now, however, I find myself asking the question with increasing frequency not intended as an insult, but genuinely questioning a company's motives and lines of business. For example, alternative data providers: Not all companies currently selling sources of alternative data see themselves as data vendors. Their primary business may be something completely different, and the data—a by-product of that primary business—is merely a sideline that brings in a little (or perhaps a lot of) extra money.

In particular, I'm thinking of those who provide a raw data service that others transform into something more valuable, such as a satellite operator selling aerial imagery to companies that use it to analyze crop yield or oil storage facilities. Or credit card companies selling anonymized transaction data. And especially other financial firms ferreting between the couch cushions for loose change in the form of internally developed datasets that might now have value above and beyond their original intended uses.

“**Basically, when you're changing your IT to support the collection and sale of your data by-products, that's a sure sign that you're a vendor.**”

For example, continuing an internal treasure hunt that began last year, inter-dealer broker TP Icap has launched more than 10 new data products this year by “identifying businesses where we have a strong market position and offering ... and are looking to make data from those available via different channels to enhance risk management and price discovery,” says Ovie Koloko, global head of product management at TP Icap. The broker has more product launches planned for the second half of this year, covering regional markets, and is upgrading its internal technology platforms to capture and process broking data from these markets. Basically, when you're changing your IT to support the collection and sale of your

data by-products, that's a sure sign that you're a vendor.

But while brokers have long been sources of data, banks and asset managers are also trying to get in on the act, but are rightly hesitant to set up internal data sales operations that require the kinds of data distribution platforms and sales forces as full-time data vendors. Hence, those who operate platforms that aggregate alternative data sources—such as Quandl, Intrinio, and Adaptive Management—find themselves serving two masters: the data consumers who subscribe to their services, and often the data sources seeking a channel to market.

Brad Schneider, CEO of Adaptive Management, says most banks are trying to figure out a strategy to get their “research” (a catch-all term that now encompasses datasets ranging far beyond just broker research) to potential clients, and adds that part of Adaptive's role is to help these firms to position and monetize their offerings. The company currently has relationships with more than 110 data partners, and, I would argue, is as much—or more so—a vendor as the companies whose data it provides access to.

“Have you ever been mistaken for a data vendor?” is also a legitimate question to ask exchanges, which seem to be moving ever-further into that space. The London Stock Exchange Group's proposed acquisition of Refinitiv is the latest—and most visible—in a growing number of deals where exchanges have acquired vendors or other sources of data to make their portfolio more valuable.

From insult to genuine, the question is getting trickier. **wt**



# Concentrated Cloud



Could AWS and Azure be in the regulators' sights? Jo says the dawn of Big Tech Regulation is drawing near.

**B**uried in the Bank of England's *Future of Finance* report, released in June, there is a short paragraph that, to me, seems to show that the regulators are worried about how systemically important the major cloud providers are becoming.

The report, chaired by BoE adviser Huw van Steenis, is a review on the outlook of the UK financial system and what it means for the central bank, and it touches on a number of topics and priorities, from payment systems to climate change to cloud adoption.

It shows the BoE to be thrilled by the possibilities of cloud technologies for cost savings and efficiency across financial enterprises, and solicitous about the caution banks have apparently shown in adopting cloud. The report pledges to help firms move forward with cloud by clarifying regulatory expectations, for instance.

But the report also expresses concerns that almost half of services are concentrated with Amazon and Microsoft, forming a single potential point of failure—or at least very few of them.

The problem is also that, as the report acknowledges, this oligopoly of tech giants is precisely what makes these firms so good at what they do, as their size and revenues enable them to deliver scale and efficiency. So what to do?

This brings me to that paragraph. On page 51, the report says: “Regulators may have to engage with service providers directly to ensure they meet supervisory expectations. Alternatively, cloud providers could

become regulated public utilities, creating a ‘certified cloud.’”

Surely this has not been the regulatory approach hitherto. Regulators, by and large, have placed the onus for responsible cloud usage on the user, relying on customers of platform- and software-as-a-service (SaaS) providers to look through to their underlying fourth parties and understand the full supply chain.

As the report itself says, “Concentration risk raises the question of whether regulation of cloud providers should go beyond reliance on guidance for firms’ risk management of outsourcing arrangements. Supervisory

future—and the tech giants are already being scrutinized.

The report draws parallels with central counterparties (CCPs), the venues that in the wake of the crisis are now mandated to clear some over-the-counter derivatives. Generally, these are considered one of the most successful of the post-crisis reforms in the US and Europe—they have provided not only visibility, but also efficiency and most clearing members (big banks) have come around to them.

But among academics and policy types, there has been a worry that these CCPs now function as highly concentrated nodes of risk. What happens if a CCP, exposed to so many different counterparties, many of which are systemically important banks, defaults? The idea is that the clearing members all pitch in to suffer some losses after such an event—but unsurprisingly clearing members have expressed great reluctance to do that. Financial interests will always trump safety considerations—to continue the analogy with CCPs, what will the equivalent battles be among the cloud providers?

Whatever their feelings on the matter might be, authorities are clearly intending to be involved. The bank’s report says the UK’s Prudential Regulation Authority “must ensure its information sources, supervisory skills and approach keeps pace. It should also consider whether it needs new powers, such as giving supervisors sufficient access to cloud providers to monitor risks appropriately.”

In other words, cloud providers, you have been warned. [WI](#)

“  
Whatever their feelings on the matter might be, authorities are clearly intending to be involved.

powers might have to be extended if supervising ‘through’ regulated firms is no longer deemed sufficient.”

The actual concentration risk is probably not yet very high, as financial firms have been relatively slow to adopt cloud and still do many activities internally that could be outsourced, and are not using cloud for critical services. But cloud usage is growing: The report quotes stats from McKinsey that 40% to 90% of banks’ workloads globally could be hosted on public cloud or delivered via a SaaS model in a decade. And as the BoE report says, this is entirely desirable. It does mean, however, that the risks will need addressing in the

# AI on Our Minds

The hype of artificial intelligence is far from fading—actually, it's more like a building tidal wave. Wei-Shen wonders if the capital markets will catch the wave, or get smothered by the tide.



Previously just a topic for technologists, artificial intelligence (AI) is now on the lips of most everyone, from associates on up to the C-level. In my previous column, I also touched on AI: how financial institutions should not approach AI like one would approach a Whac-A-Mole game at a carnival. And in the pages of this issue of *Waters Technology*, there are several articles explaining how firms are trying to harness AI, and the challenges therein.

AI is, indeed, everywhere—at least as a topic of conversation. So far, curiosity hasn't killed the cat, but maybe it's draining some of its energy. It comes down to how firms are tackling AI and what it is being used for, and even deeper, what specific techniques within AI are being used and what datasets are needed for it.

Do we have an existing problem that AI can help with? Do we have enough data surrounding that problem? Is the data clean? Is it easily consumable? The questions keep on coming. It can be like going down a rabbit hole.

The message passed down from top management matters too. Often, when it comes to the topic of AI, employees are afraid that their jobs will become redundant, but this is not the way it should be looked at, said Ryusuke Sato, head of data science at Tokio Marine Holdings, speaking at this year's Tokyo Financial Information and Technology Summit.

"Management [at times] can't see what can and can't be done in AI," he said. "They think as long as you have the data that AI will deprive jobs for human beings." Instead, to him, AI

can best be used for tasks that are too difficult to employ robotic process automation (RPA).

A live poll was conducted during the session, and 36% of the audience said they already have an AI strategy. Subsequently, 53% said their firm already has an AI strategy for a specific business area. Following my previous column, at least they're not Whac-a-Mole-ing at problems.

An interesting way property/casualty insurance company Tokio Marine is using AI is with satellite imagery and geological data that helps it determine flood assessments in Japan, and hence, if it should pay out claims. Sato explained that Tokio Marine uses AI to analyze the images to measure the depth of the submerged areas.

“**There seems to be more of a willingness to cooperate with clients, competitors, and other industry participants when addressing technologies such as AI.**

This reduces the time necessary for on-site assessments and speeds up the process of payouts, while helping them to better decide if a payout is necessary at all. Tokio Marine is working with satellite analytics platform provider Orbital Insight for this particular use-case. Sato said the insurer is now working on collecting accident images to feed into its database of traffic accidents, which will help it calculate and analyze the probability of accidents.

Also during the panel, 40% of the audience answered through a live poll that they would turn to tech companies or consulting firms as their primary source of AI expertise, rather than having to hire internally.

There seems to be more of a willingness to cooperate with clients, competitors, and other industry participants when addressing technologies such as AI. For example, Mizuho Bank formed Blue Lab with WiL LLC—short for World Innovation Lab—for the purpose of creating new businesses based on technological advances. Tatsuya Shirakawa, senior digital strategist at the bank, also said Mizuho is looking at more collaborative opportunities with other financial institutions and banking groups to share know-how and information on improving efficiency.

Deutsche Bank has also indicated that it wants to work with its clients and even competitors more directly with the aim of making transactions between corporate and institutional clients a more efficient endeavor. It recently hosted a hackathon in Singapore with messaging platform provider Symphony, which saw nine companies—including both clients and competitors—participate side-by-side with DB teams in creating a solution aimed at hyper-connectivity among firms and automation of workflows.

Moving forward, it will be interesting to see how firms come together as a community to work on making the financial ecosystem more efficient, or if they decide to go back to the old days of doing it alone. [wt](#)

# Human Capital



## Deutsche Poaches AQR's CTO

Deutsche Bank has hired Neal Pawar as group chief information officer. He will start at the bank in September and will be based in New York.

Al Tarasiuk, the current group CIO, will become a senior strategic advisor to Bernd Leukert. Tarasiuk joined Deutsche Bank in 2015, and prior to becoming CIO held the positions of chief information security officer and chief security officer.

Pawar served as the CIO for wealth management at UBS in Zurich before moving to AQR Capital Management in 2014 to serve as the investment manager's CTO.

## MarketAxess Recruits BlackRock Retiree to Board

New York-based fixed-income electronic trading platform MarketAxess has elected Richard Prager to its board of directors.

Prager retired on July 1 from BlackRock, where he was a senior managing director on the firm's global executive committee, and head of the trading, liquidity and investment



**James Donaldson**



**Tom Edwards**

platform. Prior to his 10-year stint at BlackRock, he worked as a managing director for Bank of America, and headed the bank's rates, currencies and commodities division.

Prager is also currently an advisor for Tresata, a data analytics software company in Charlotte, NC.

## Donaldson to Lead Financial Planning for Calastone

Calastone, the London-based global funds transaction network, has hired James Donaldson as chief financial officer to lead the business on all finance, corporate development, legal and compliance fronts.

Donaldson has been CFO at several firms, most recently at Ciklum, a digital solutions company headquartered in Ukraine, and at Travelocity Group, where he was also COO.

Donaldson began his career in the audit division at Arthur Andersen in 1992, and qualified as a chartered accountant in 1995.

## tZERO Taps Barclays, Imax Vets

tZERO, the blockchain and tokenization subsidiary owned by Overstock, has made three hires in New York focused on growth and brand building: Brooke Navarro as head of issuance, Michael Mougias as head of investor relations and Alexandra Sotiropoulos as head of communications.

Navarro, who spent the past 10 years at Barclays' investment bank as a managing director, will work with broker-dealers and other firms to develop partnerships to scale adoption of tZERO's technology.

Mougias will lead the development and execution of tZERO's investor relations strategy. He was formerly head of investor relations for Imax Corporation.

Sotiropoulos, who will oversee the firm's external communications, joins from public relations and marketing provider Intermarket.

## Xceptor Hires GBST Exec as COO

Xceptor, the London-based provider of automated data solutions and software, has appointed Tom Edwards as COO. Edwards will support the firm's growth strategy as it expands its global reach.

He joins from GBST, where he held several titles throughout seven years, most recently as head of project delivery practice. His financial services career spans more than 30 years in leadership roles at firms including Aquila Heywood and PA Consulting Group.

## Dalzell Recruits Former BlackRock Trader

Dalzell Trading, an outsourced US equity and options trading firm, has appointed John Stefanelli to direct its equity trading desk in Philadelphia.

Stefanelli spent 16 years at BlackRock, and since 2016 has been an equities trader at Schneider Capital Management.

## Tradition Aims to Grow Data Sales with New Hire

Interdealer broker Tradition has recruited Chris McGuigan as head of data sales for the Americas, in an effort to grow its data business revenues by hiring more sales staff.

McGuigan has spent more than 20 years in financial services, most recently as head of global sales for the data and analytics division at rival broker TP Icap. He was also head of Americas and European sales at Tullett Prebon Information and head of information services at MarketAxess.

In his new role, McGuigan reports to James Watson, global head of sales.



**Neal Pawar**

### RapidAddition Names Former Thomson Reuters Exec CEO

RapidAddition, a solutions provider for electronic traders, has hired Mike Powell as CEO. Powell will implement the company's growth plans, while assuming operational responsibilities from majority shareholder and executive chairman Kevin Houstoun, who will remain in his role.

Powell has spent more than 17 years in various roles at Thomson Reuters, serving as managing director under the Elektron brand from 2014 to 2016. He is the founder and director of Inkblue, an advisory and consultancy firm focused on fintech, data and analytics.

At RapidAddition, he will be based in London.

### Rob Hegarty Joins DataRobot

DataRobot, a specialist firm in enterprise AI and automated machine learning, has appointed Rob Hegarty as general manager of financial markets and fintech. He is tasked with encouraging more industry organizations to leverage such tools, and expanding DataRobot's reach within capital markets.

Hegarty was most recently founder and managing partner at Hegarty Group, a research and consultancy firm covering data, markets and technology.

### Tradewind Markets Secures BNY Mellon Exec as CTO

Tradewind Markets, a provider of blockchain solutions, has hired Leon Shklar as CTO. He will oversee all aspects of the firm's technology efforts, including architecture, infrastructure, business applications and innovation.

Shklar most recently served as managing director of technology at BNY Mellon, where he led the development of a platform integrating business applications across the bank.

### CFTC External Affairs Chief Exits

The Commodity Futures Trading Commission (CFTC) has announced the departure of its external affairs

## TOMBINI LINED UP TO HEAD BIS EXPANSION IN AMERICAS

Alexandre Tombini, currently an executive board director at the International Monetary Fund, is joining the Bank for International Settlements (BIS) as chief representative for the Americas. In his new role, he will collaborate with central banks and financial organizations throughout the Americas, and work to

expand the BIS's banking operations, including establishing a dealing room in its Mexico City-based office.

Until 2016, Tombini had been president of the Central Bank of Brazil, a member of the BIS board, and chairman of the Financial Stability Board's Standing Committee on Budget Resources.



Alexandre Tombini

He replaces Enrique Alberola, who has been chief representative for the Americas since 2014.



Rob Hegarty

director, Erica Richardson. She will conclude her role later this summer.

Richardson joined the CFTC in 2017 as head of the Office of the Public Affairs (OPA). She spent nearly 10 years working for the US Congress, serving as communications director for major-whip Kevin McCarthy in 2010.

### Glue42 Names Stephens CRO

Glue42, the London-based desktop interoperability provider used by JP Morgan, has hired Sean Stephens as chief revenue officer. He will guide the start-up through its next growth phase and aim to bolster revenues, as well as collaborate with clients worldwide on current and future aspects of the platform.

Stephens was formerly vice president of cloud solutions at Software AG, where he pioneered a new business unit by bringing process management automation solutions into the cloud.

He reports to Glue42's COO, James Wooster.

### BTON Recruits Two Directors

BTON Financial, an independent outsourced trading desk for asset managers, has hired two electronic trading veterans, Brian Schwieger and Tony Walker, as non-executive directors.

Schwieger has served as global head of equities at London Stock Exchange Group since 2013, dealing with equity markets in London and Milan.

Walker is co-founder and independent non-executive director of

London-based Armadillo Financial Technologies, and is on the board of Citadel Securities Europe.

### Mullooly to Drive Growth at Tora

Tora, a provider of cloud-based tools and software for financial services, has named Thomas Mullooly as head of US sales, reporting to managing director Chris Jenkins. Mullooly will lead all sales efforts in the US, particularly the adoption of Tora's order and execution management system.

He joins from TradingScreen, where he was director of forex sales. He has held various sales roles at BidFX, EBS BrokerTec and FXall.

### SEC Swaps Chiefs of Staff

Sean Memon will serve as the new chief of staff at the Securities and Exchange Commission (SEC), replacing Lukas Moskowitz, who will return to the private sector after more than five years at the commission. Memon has served as deputy chief of staff since Moskowitz's appointment by SEC chairman Jay Clayton in May 2017.

Prior to joining the SEC, Memon practised law at Sullivan & Cromwell, and was a member of Time Warner's Finance and Acquisitions department.

Moskowitz first joined the SEC in 2010, serving as an attorney in the Division of Enforcement and, later, as a counsel to former commissioner Daniel Gallagher, before leaving to become managing director at Patomak Global Partners. [WT](#)



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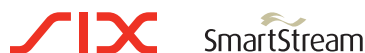
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