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**Editor-in-Chief** Victor Anderson  
victor.anderson@infopro-digital.com  
tel: +44 (0) 20 7316 9090

**Managing Editor** Max Bowie  
max.bowie@infopro-digital.com

**US Editor** James Rundle  
james.rundle@infopro-digital.com

**European Editor** Jamie Hyman  
jamie.hyman@infopro-digital.com

**Editor at Large** Anthony Malakian  
anthony.malakian@infopro-digital.com

**Editor, Asia** Wei-Shen Wong  
wei-shen.wong@infopro-digital.com

**US Reporter** Emilia David  
emilia.david@infopro-digital.com

**Senior Reporter** Josephine Gallagher  
josephine.gallagher@infopro-digital.com

**European Reporter** Hamad Ali  
hamad.ali@infopro-digital.com

**Head of Editorial Operations** Elina Patler  
elina.patler@infopro-digital.com

**Commercial Director** Ince Saleem  
Tel: +44 (0)20 7316 9258

ince.saleem@infopro-digital.com

**Business Development Executive** Arnaud Morell-Coll  
Tel: +1 646 736 1887

arnaud.morell-coll@infopro-digital.com

**Account Manager** Daniel De-Bruce  
Tel: +44 (0)20 7316 9126

daniel.debruce@infopro-digital.com

**Marketing Manager** Louise Sheppey  
tel: +44 (0)20 7316 9476

louise.sheppey@infopro-digital.com

**Design** Lisa Ling

**Corporate and Single Subscriptions**

Europe: Tsetso Bikov tel: +44 (0)20 7316 9326

US: Barbara Faiman tel +1 646 736 1852

info@waterstechnology.com

**Global Brand Director** Katie Palisoul  
katie.palisoul@infopro-digital.com

**Global Editorial Director** Duncan Wood

duncan.wood@infopro-digital.com

**Group Publishing Director** Lee Hartt

lee.hartt@infopro-digital.com

**Managing Director** David Pagliaro

david.pagliaro@infopro-digital.com

**Infopro Digital Head Office**

Haymarket House

28–29 Haymarket

London SW1Y 4RX

tel: +44 (0)20 7316 9000

fax: +44 (0)20 7930 2238

**Infopro Digital US**

55 Broad Street, 22nd Floor

New York, NY 10004

tel: +1 646 736 1888

**Infopro Digital Asia**

Unit 1704-05

Berkshire House, Taikoo Place

25 Westlands Road

Quarry Bay

Hong Kong

tel: +852 3411 4888

**Infopro Digital Customer Services**

tel: +44(0) 1858 438 800

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# The Power of Potential

This month's edition of *WatersTechnology* contains a thick supplement profiling the winning entries in this year's Sell-Side Technology Awards—all instances of players in the financial technology industry reaching their full potential and reaping the rewards. The achievements that the awards recognize may come only after many years of development. To understand how those winners came into being or into their current state, you have to read the full back-story. And at their core, all are carpe diem stories about recognizing opportunities and the people who put in the hard work to make them succeed.


Many of the other stories in this issue also chronicle steps along the path to success for various initiatives that may not yet have fulfilled their full potential.

For example, Emilia David investigates how blockchain technologies are moving to lessen—if not sever—their close ties to the cryptocurrency world, whose recent “crypto winter” has threatened to drag blockchain down with them. Experts—and private equity investments in blockchain—suggest that distributed-ledger technologies (DLTs) have far greater and broader applications outside capital markets, which should only serve to strengthen DLT’s credibility in the often-staid financial industry.

Meanwhile, Hamad Ali discusses efforts to bake a US-style consolidated tape for European equities markets. Since the first Markets in Financial Instruments Directive in 2007, the lack of an official record of pan-European trading activity has been an obstacle to trading firms obtaining the full view of trading necessary for best execution and regulatory reporting. With industry-led efforts having failed to deliver a nutritious consolidated tape, and no vendor prepared to serve one up on a silver platter, the European Securities and Markets Authority may have to cook its own dinner.

Jamie Hyman’s last story as a member of the *WatersTechnology* staff paints a picture of the political pitfalls of Bloomberg’s foray into the standards space with its FIGI identifier. After being rejected for consideration as an ISO standard after other standards operators objected, Bloomberg is resubmitting FIGI—which some say has the potential to be more comprehensive than existing offerings—via a different technical committee in the hope of realizing its full potential.

And while no one could accuse the New York Stock Exchange (or its owner, Intercontinental Exchange) of not having fulfilled its potential, the exchange faces constant challenges to evolve successfully in an ever-changing marketplace, as NYSE president Stacey Cunningham and Intercontinental Exchange CEO Jeff Sprecher reveal to Anthony Malakian in this month’s profile.

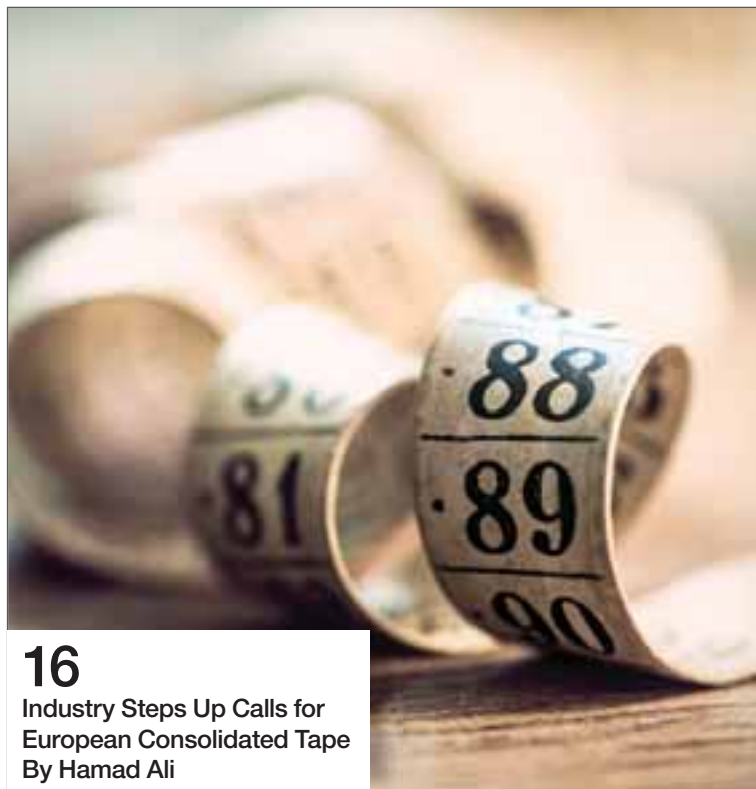
Potential is a great thing: It gives us hope for the future, and inspires us all to achieve more. Today’s potential is tomorrow’s success. 

**Max Bowie**  
Managing Editor

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Americas Opinion:  
Banks Find Tech Firms  
Have Big Risks Too

# Google Plans Foray into Asset Management with AI Data Tools

The technology giant is rolling out tools to asset managers who need to use machine learning but have limited in-house experience. By [Hamad Ali](#)



Google is ramping up its advanced analytical capabilities to target asset management firms, with tools it says can simplify data scientists' work.

Given its size and access to consumer and business data, the technology giant's potential to disrupt the financial services space has been speculated about for years. Although many asset managers and technology vendors remain unsure about Google's end-game, buy-side firms have expressed interest in engaging with it.

"Increasingly, we are working with asset management firms to provide tools and capabilities for parsing and understanding alternative datasets without necessarily having to build machine-

learning capabilities from scratch," says Sufyaan Kazi, asset management lead for Google Cloud in the UK.

Kazi says not all asset management firms Google has engaged with have access to a data science team. Google's Cloud AutoML—its suite of machine-learning products that allow inexperienced developers to train models—has become popular, he says, as it lets asset managers with limited data science expertise create models along its three primary product lines: Vision, focusing on photographic analysis; Natural Language, which centers on text classification; and Translation. Kazi says data scientists can leverage Google Cloud Platform without needing to build a complex infrastructure

for processing large datasets. They also won't need to acquire the latest hardware that is optimized for machine learning, as this is handled automatically. Kazi explains that a developer can incorporate Google's pre-built APIs directly into spreadsheets, applications or workbooks easily without needing to understand machine learning inside and out. "In many of the firms I work with, Google Cloud has lowered the entry bar required to apply machine learning by offering a broad spectrum of capability choice," he says.

## All the Gear and No Idea

But how much of a data scientist's work are asset managers prepared to hand over to Google? Octavio Marenzi,



CEO at consultancy and research firm Opimas, says that at many large asset managers, portfolio managers may not be very quantitative by nature or well-versed in data analysis and data science. However, while Google can make the jobs of data scientists easier, it cannot replace them.

“Let’s say you are a carpenter, for example. Google is offering a very nice set of tools, chisels, and hammers, but they are not going to replace the carpenters,” he says. “They are going to make them more effective, and perhaps [make it] easy to get ahold of data, and store, analyze and manipulate it. But you do need to have a very clear sense of what you are doing with it, and that would require a data scientist to manage that process.” He says Google has a head start compared to other big cloud providers such as Amazon and Microsoft through its advanced analytical capabilities.

Among the tools that Google offers asset managers is the Vision API, which can be embedded in an application’s code to enable asset management firms to understand image content, without the need for a dedicated data science team. This can be applied to reading documents like annual reports and regulatory filings, as well as using the data for fresh insights.

Google also partners with organizations to make data available on its online store, Marketplace, where it can be accessed by cloud-native technologies such as BigQuery. “We recently worked with a financial services company to help them analyze approximately 1,000 financial instruments’ worth of data from a leading market data provider,” says Kazi.

According to Opimas’ Marenzi, one of Google’s big advantages is having lots of “interesting” data that it could potentially sell, as well as the analytical tools for it. But he says there has been limited discussion about that possibility.

“Google has huge amounts of mobile geolocation data from people using Google Maps and other applica-



“Google has huge amounts of mobile geolocation data from people using Google Maps and other applications.... So, there is a huge wealth of data that they can leverage in the asset management space.”

**Octavio Marenzi, Opimas**

tions they provide,” he says. “They have search histories, they have emails, potentially, and they could look at email receipts and see what things people are buying and selling, things of that sort. So, there is a huge wealth of data that Google has that they can leverage in the asset management space, which I really don’t think they have done so far.”

Marenzi says he is cautious about big technology firms that lack deep domain knowledge. Rather than being a threat to more traditional technology

vendors, Marenzi sees Google working in partnership with existing software vendors in the space, in order to plug that knowledge gap.

### Fit for Purpose

These tools are also not for everyone, given the diversity of the asset management sector, which can range from short-term quant shops through to long-only houses. One representative of an asset management firm that is not using Google’s services says the technology giant is viewed as providing tools for short-term horizons, whereas the firm services long-term investors. According to Marenzi, some long-only fund managers might question the applicability of machine learning at all to their investment strategies, while those looking for short-term signals in their data could lean more naturally toward it. However, he says that in the future, more asset managers will be using machine learning to inform their decision-making processes.

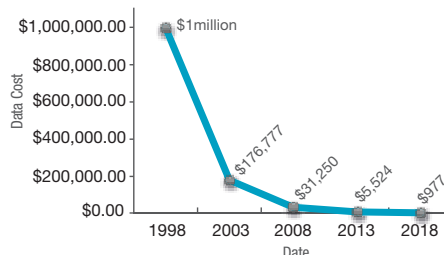
Marenzi says the kinds of tools Google is providing will appeal to a relatively small segment of the market—very sophisticated firms with large amounts of alternative data. He notes a lot of firms that Google would attract are very secretive about what they do. They don’t like things being hosted in the cloud because they don’t want anyone to see what kind of data they are looking at or how they are analyzing it. That leads to a slight conflict between the kinds of people most likely to want to use these kinds of tools, and how they like to deploy the applications, he says.

Yet, Google’s Kazi says, the security of a firm’s information is a top priority. “At Google Cloud, we invest billions of dollars annually in security,” he says. “Our platform meets security and compliance requirements and has required certifications to meet industry standards.” He adds that Google has worked with a wide range of asset management firms, varying in size and location. [WT](#)

### Computing Power Over 20 Years

Part of the rise of AI has been the availability of cheap computing power.

\$1 million of computing power in 1998 is now worth...



Source: Wells Fargo Asset Management, “AI and big data, the changing investment landscape,” January 2019

# Digital Asset and Isda Create Rosetta Stone for Derivatives Smart Contracts

Industry efforts to digitize derivatives trading have progressed steadily, but cumbersome post-trade processes have often been a roadblock. Now, two of the largest entities in this space believe they may have cracked the code. [James Rundle](#) and [Luke Clancy](#) report.

**T**he International Swaps and Derivatives Association (Isda) and Digital Asset have announced an open-source reference code library, which they say will accelerate the adoption of Isda's digitization project, known as the Common Domain Model (CDM). The initial form of the library is focused on DAML, Digital Asset's proprietary programming language.

"The specification module we have built is a reference library that we've created using DAML that will simplify and standardize the generation of those lifecycle events for a derivatives transaction," says Kelly Mathieson, head of enterprise solutions at Digital Asset. "By doing that, it will allow developers to unambiguously construct lifecycle events with a machine-executable specification."

These events, such as calculating interest amounts and payments, are often handled manually today. With CDM, Isda is building a machine-readable representation of these processes. Linking this to DAML will allow for interoperability with distributed ledger technology (DLT) and the use of smart contracts—self-executing code that can mimic processes such as margin calls or coupon payments, but which require standardized processes and machine-readable information to function, all to the same specification.

This, the two parties hope, will allow greater automation within CDM projects by creating a core set of templates for handling lifecycle events in a derivatives trade.

"There is an opportunity for derivatives market participants who are direct participants to leverage it



Standardizing the generation of trade lifecycle events

for their operating processes and their risk-management governance of those lifecycle events, but also for providers of those services from either an agency or custody perspective to handle the actions and the reporting of those events," Mathieson adds.

## Functional Focus

Work has been progressing on the CDM for over a year, with the first version being made publicly available in June 2018. While the project will deal with rates and credit to begin with, it will move into collateral, reporting and equity derivatives, as well as swaps and potentially currencies in the future. In addition to its work on the reference code library, Digital Asset will also make its digital expression of a swaps trade using the CDM public.

The initial inclusion of DAML rather than other languages is not coincidental—Digital Asset won Isda's DerivHack CDM hackathon event, held in London in September last year. The winning project in question was for a front-office task—contract negotiation—given CDM's eventual move beyond post-trade processing.

"The CDM is applicable beyond

post-trade processes. At DerivHack, we modeled a contract negotiation process, which serves as a basis that could be extended into the front office," says Viv Diwakar, a member of Digital Asset's hackathon team.

Mathieson says that while the library will initially be specific to DAML, the smart contract language used by Digital Asset, the vendor has also translated it into Haskell. Both are functional programming languages, which have seen growing adoption among financial firms of all stripes in recent years. The use of DAML, in particular, is set to rise given Digital Asset's involvement with the replacement of the Australian Securities Exchange's equity settlement system, Chess, with a DLT platform.

The CDM project as a whole, while focused on streamlining and standardizing post-trade processes for derivatives trading in general, is specifically targeted at DLT.

"If you look at the current state, you've got silos of data with messaging between them. Common standards are enforced strictly on the messaging protocols, but not on the hosted data or the business processes that are run separately within each firm," says Lee Braine, a DLT specialist in the chief technology office at Barclays. "We don't want that same scenario to migrate across to blockchain. We envisage interoperability of business processes across DLT platforms—from Ethereum, to Corda, to Fabric, to Digital Asset Platform."

Hackathon participants estimated that the CDM project has the potential to save the industry at least \$3 billion per year by standardizing and automating lifecycle events. [WT](#)



# Asset Control Makes a 'Pass' at Buy Side with Managed Service

The vendor believes that offering its software platform as a managed service will future-proof its delivery model, as well as open it up to new classes of clients, officials tell [Max Bowie](#).

Data management software platform provider Asset Control has unveiled AC Pass (Platform as a Scalable Service), a data management service that delivers the functionality of its on-site AC Plus platform, but as a managed service, to appeal to a broader base of buy-side firms and tier-two banks beyond the vendor's core base of major banks.

"Clients have a lot on their plate—a combination of still dealing with regulation such as Mifid II while FRTB is becoming very active this year, and we see clients trying to run more data-driven businesses and service a more data-hungry business person, while increasing operational efficiency," says Asset Control CEO Mark Hepsworth. "We felt it was important for clients that we take on a managed services perspective. We need to be able to respond to the trend of building less and buying more, and leveraging more from a services perspective."

Running the platform as a managed service will enable Asset Control to target AC Pass at smaller firms that don't need the full features of AC Plus, by supporting more flexible and scalable offerings, while allowing clients to access data as a service where the vendor manages everything and can structure contracts for specific use cases, with service-level agreements to maintain quality.

"Clients want something that is not necessarily entire enterprise data management, but which handles specific solutions for evaluations, risk, and new securities setup, and trading opportunities," says Nathan Wolaver, managing director of Asset Control. "Clients are asking us to give them something that is more specific to individual use cases,



and not sell the idea that everything needs a golden copy, but rather something that can drive specific use cases."

Wolaver likens adopting AC Pass instead of traditional installed data platforms to cutting wood with a chainsaw instead of a handsaw. "Clients think, 'If we have these guys sawing away, why change things and get a chainsaw?' We're saying, 'How much wood do you need cut? We'll guarantee to take care of it,'" he says, adding that firms that shift costs—and risks—upstream to vendors can find it easier to get sign-off on implementations.

The managed service also speeds up time-to-market and allows firms to eliminate infrastructure associated with in-house installations. This not only allows firms to grow or shrink their usage as required without having to hire or fire staff, or pull them off other projects, but also reduces complexities associated with in-house implementations.

"We have typically been a Unix stack... and buy-side firms typically don't have the expertise to run that in-house. Now, through an initiative with Oracle and OCI [Oracle Cloud Infrastructure]... we can stand up these environments very quickly and run them very effectively," Wolaver says. "We are able to spin up all sorts of environ-

"We need to be able to respond to the trend of building less and buying more, and leveraging more from a services perspective."

**Mark Hepsworth, Asset Control**

ments—from testing to production—within 24 hours. Previously, the client would have to do that themselves, so we are taking all that heavy lifting off the client and putting it onto us.

"We've been providing managed data services for more than 15 years—the 'Plus' in AC Plus was managing that for clients. What we hadn't done was to take that to the next level of running the solution for the client, which needs investment, foresight, and the mindset to deliver a service where you're accountable to the client for the outcomes," Wolaver says.

On the "investment" side, Asset Control has had a positive and supportive experience under the new ownership of UK-based private equity firm Sovereign Capital Partners, which acquired the vendor last year and hired ex-FIS, SunGard and Reuters veteran Brian Traquair as independent chairman.

"Managed services were a big part [of those roles]. So his expertise in understanding the pitfalls... has been very helpful," Hepsworth says. "There is definitely an investment that we've had to make—and recognition that you won't cover your costs on the first client. We see the potential, and as we leverage the platform for more clients, it becomes more profitable for us—but there is a clear industry trend here, and we can't ignore it." [WT](#)

# Data Standardization Tops ESG Roadblocks

As asset managers seek to incorporate ESG factors into their portfolios, they face challenges—particularly around data consistency. Some say custodians could offer solutions. [Josephine Gallagher](#) reports.

**D**ata remains the “number one barrier,” to adopting strong environmental, social, and governance (ESG) portfolios, says Florence Fontan, head of asset owners at BNP Paribas Securities Services.

Based on the recent ESG Global Survey 2019 conducted by BNP Paribas Securities Services, which includes responses from more than 347 asset managers and asset owners with assets under management ranging from \$1 billion to over \$25 billion, two-thirds of respondents cited data as one of the biggest challenges in the space. Over the years, the problems have shifted from the amount of data available to the quality and consistency of data on offer from various providers.

As it stands, asset managers have to acquire data from multiple sources and third parties to make better-informed trading decisions on ESG investments. This is increasingly problematic when trying to aggregate or extract value from large amounts of data from various sources lacking in consistency or standardization.

## Conflicting Standards

Technology and outsourcing costs also make ESG adoption challenging, as asset managers struggle to determine where to invest their resources. And the technology landscape has yet to mature, given the lack of advanced analytical tools or quantitative models available to provide a holistic view of the ESG landscape. According to the BNP Paribas study, asset managers require an industry-wide methodology for analyzing ESG, where data sources can be compared and weighted based on their value.

Frank Roden, head of asset managers for EMEA and head of UK investors at BNP Paribas Securities

Services, explained at a BNP Paribas panel discussion on April 9 in London that although the ESG space has seen exponential growth in the number of third-party data providers, there is a long way to go when it comes to extracting real value from the data available.

“The data quality across all of the [ESG] asset classes is not necessarily consistent. You have different indices and rating standards, and in some cases they are conflicting. You have the actual cost of investing in technology and understanding not only the technology but also how to analyze the data you receive—because of course you also want to use these types of ESG factors to be forward-looking, but there is still a lack of forward-looking scenario analysis,” said Roden.

Another growing issue is the lack of education and skills around understanding and taking advantage of emerging asset classes. As asset managers and buy-side firms are looking to embed ESG principles, they are having to introduce fresh talent from other industries or disciplines to help train existing teams within financial institutions. This might involve hiring recent graduates with education in ESG subject areas or plucking expertise from other firms outside the industry.

Fontan explained that the survey results show a shift in how asset managers approach obtaining talent, with some looking to broaden the scope of their teams’ skills by hiring individuals from non-traditional places, such as non-governmental organizations.

## Role of the Custodian

Historically, the role of a custodian has been to ensure the security and safety of assets. Some say this has



Data aggregation could help boost ESG adoption

evolved to the extent that they now act as custodians of their clients’ data. According to Farah Docrat, product sales specialist at BNP Paribas Securities Services, this can be taken one step further by providing advanced analytics and metrics based on internal inflows from asset managers combined with data from selected third-party providers.

The idea is that custodians and asset servicers are in a position to aggregate the data from various portfolios and provide metrics based on sustainability risk, exposure, ESG performance, and forecasting analytics. BNP Paribas and other custodians also use a consistent methodology for creating analytics around the data gathered from the trade lifecycle or third-party providers. BNP Paribas collects the data from ESG rating agencies and data providers, and compares that with investment portfolios to provide a weighted score or benchmark on its sustainability risk.

“Through our tools you can see that the ESG rating of your portfolio is, let’s say, 80, but the benchmark is 90. You can then see where the score of your portfolio is being dragged down and literally go in and drill through all of the consolidation layers into the underlying stock contributions to see where that difference is coming from,” explains Docrat.

BNP Paribas Securities Services was the first global custodian to sign up to the Principles for Responsible Investment, a global sustainable investments framework, in 2016. Since then, it has developed reporting tools for ESG investments, later building customized analytics. The securities services arm is collating its analytics capabilities and packaging them to roll out over the next 12 to 18 months. [WT](#)



# Buy-Side Firms Turn to AI for Efficiency Amid Barriers to Adoption

Artificial intelligence may hold the key to unlocking fragmented datasets, but the absence of standardized models coupled with regulatory concerns remain barriers to adoption, reports [Josephine Gallagher](#).

**B**uy-side firms are allocating more of their budgets to manage an influx of complex data—aggregated across various business lines throughout the front-to-back office and in multiple formats—which is proving to be a colossal challenge for the industry, bringing with it a significant drain on time and resources.

“It’s the million-dollar question. I think it’s so complex, and we make it more complex. The world is evolving. It used to be whether you could deal with voice [-related data] but now you have to manage voice, video, WeChat, Symphony, and all these other platforms,” said Phil Fry, vice president of product strategy at Verint, during an artificial intelligence (AI) and automation panel discussion at TradeTech Europe on April 24.

The consensus during the discussion was that modern-day data challenges cannot be effectively resolved without the implementation of AI or machine-learning capabilities. Trading firms must capture, clean and manipulate vast amounts of data in order to extract valuable and tangible insights—a task that is proving increasingly difficult to manage via humans or traditional IT infrastructures.

As well as building proprietary AI technologies in house, some firms are turning to third-party experts for help. JP Morgan Asset Management, for instance, is looking to leverage cloud providers’ advanced AI toolkits, which are built into virtual environments.

“Services like transcribing, taking audio and being able to pull that data—a lot of those things are easily available at our fingertips, so being able to leverage the public cloud to its full



Standardized models lacking in buy-side trading

potential and then deploy that relatively easily across our business is what I see as the next step in where we want to take this,” said Ashwin Venkatraman, head of equity trading execution technology at JP Morgan Asset Management.

## Lacking the Human Benchmark

The adoption of AI technology has proven revolutionary in other industries, including commercial technology, medicine, and even self-driving cars. The common denominator among each of these use cases is an existing human benchmark from which to build AI models.

“Doctors are able to detect diseases most of the time, and humans can drive cars most of the time. So we have benchmarks to train our models against or even go beyond that in terms of performance, but it is unclear what that would be in the financial markets,” said Frank Steffen, managing director and co-founder at CapTec Partners.

With active managers failing to meet their own performance benchmarks, according to the latest S&P 500 report published in March, building successful AI trading systems has proven incredibly complex. Today the industry lacks a standardized model whereby AI subsets such as machine learning, deep learning, natural-language processing, and others can be applied to buy-side trading practices.

Another major hurdle to adoption of AI-powered trading includes exposure to unpredictable or non-traditional datasets. In many cases, AI systems could be easily disrupted due to the erratic nature of some alternative data sources, such as social media.

Programming a machine to make a trading decision based on Twitter or live feeds is not only complex but also opens the door to bias and issues around governance.

## Under the Regulators’ Watchful AI

Although AI technology and the exploration of intelligent trading tools have existed for some time, recent growth in their adoption has caused regulators to take notice. As buy-side firms are responsible for justifying their best-execution methods under regulations such as Mifid II, one concern is that AI trading strategies and sophisticated algos could become too complex to explain how they work to investors and regulators, and the panel highlighted the danger of creating an “AI black box” and the issues of effectively controlling or managing a technology that is too difficult to understand.

Institutional firms may have to implement systematic processes for benchmark testing or verifying algos and AI systems in the future. Gerard Walsh, head of business development for institutional equities at Northern Trust, explained that if regulatory changes or standardized methods of implementing the technology come into play, firms will have to adapt their practices, and allocate teams or use a third-party provider to manage the verification processes.

“The last decade [involved] hiring quants to build algos and smart technologies, now we are going to have to hire more clever quants to check the quants. So you would need properly built system surveillance, built by people with a naturally cynical mindset,” Walsh said. [WT](#)

# Banks Forge Cloud Deals to Split Accountability

Banks are trying to split responsibility for their operating environments with the major cloud providers. But, as [Josephine Gallagher](#) reports, regulators are having none of it.

Today, many regulators classify cloud technology as a form of outsourcing, essentially putting the onus on institutions for their assets and the continuity of services. But the lines of accountability have been blurred since cloud providers have introduced a shared responsibility model.

The model is a contractual agreement between the cloud provider and an end-user, outlining how accountability is divided between the parties, and has become more popular as trading firms increasingly move operations to the cloud, hoping to redirect some of the regulatory burdens onto cloud providers.

“You have to come up with a different model in terms of how you assign accountability and how you demonstrate that nothing is falling through the cracks when you do that. That is a real challenge with the public cloud in particular,” says Tom Gilbert, global head of cloud, application and integration platforms at Deutsche Bank.

Because the term “cloud” covers a variety of services—including platform-, infrastructure- and software-as-a-service—providers have mapped out individual guidelines around who is accountable for what. In most cases, the cloud provider is responsible for the hardware and software components, including datacenters, servers, networks, and the virtual environment, whereas end users are liable for their data, platforms, applications, operating systems, and implementation of security checks.

Negotiating the legal requirements of a contract becomes even more complex when offloading critical control functions to the cloud. Traditionally, in the event of a security breach or technical failure on-site, internal teams can assess systems, and identify and fix the issue. But in this case, the security controls are run



Shared responsibility is blurring accountability

and managed by the cloud provider.

From a regulatory perspective, at least, regardless of shared responsibility agreements, the buck still stops with the trading firm when it comes to cloud outages and cybersecurity incidents.

“It is another form of outsourcing, and from the regulatory perspective, it is the regulated firm that remains responsible for the security of its data and for its outsourcing arrangements,” says Nausicaa Delfas, executive director of international at the UK Financial Conduct Authority.

But while the evolving landscape pivots towards a unique model of thinking, regulators are keeping watch, and some question whether cloud providers should even become regulated entities.

## Over-reliance and Reversibility

On February 14, the Financial Stability Board released a report, *Fintech and Market Structure in Financial Services*, which discussed how financial firms are turning to big tech providers such as Google, Amazon, and Microsoft to clamp down on inefficiencies and the huge cost of legacy infrastructure. The report indicated that the accelerated uptake could expose a new form of risk regarding cloud concentration and over-reliance on the technology.

“The issue on concentration risk is

one that we have to continue discussing going forward. The reality is that the cloud isn’t just one thing. There are many different arrangements between firms and cloud providers, and it is something that I think needs further discussion as to what the risk is and how it can best be managed,” says Delfas.

Regulators are intent on ensuring banks and asset managers have a backup plan to reverse engineer their deployed data and applications to the cloud—for example, where the relationship between a service provider and client goes sour, or in the unlikely scenario of a cloud provider going into administration.

“The regulators are always concerned about those situations developing, where we are overly reliant on a single vendor or single venue, and so multi-cloud will let us offset that risk,” Gilbert says.

Deutsche Bank is currently undergoing a global transformation project to migrate about 85% of its IT infrastructure to the cloud. At the moment, the bank uses Microsoft Azure and is looking to acquire multi-cloud capabilities. It has currently completed 43% of its migration and is, on average, moving at a rate of 1% per month. It is not the only institution undertaking such a project—Bank of America is also in the process of migrating around 80% of its operating systems to the cloud, while private equity giant Blackstone is undertaking its own cloud transformation, even acquiring cloud consultancy Cloudreach to help manage it.

As the technology advances and more of the industry warms to the idea of the cloud, the increasing volume of workloads, services and data will have to be considered. Firms will have to plan for future potential risks where it is necessary to pull back all operations onto an alternative venue. [WT](#)

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# Open API Opportunities Outweigh the Challenges for Banks

The financial industry has traditionally lagged in adopting open technologies, but its continued evolution may rely on one, in particular, argues Lisa Iagatta, chair of ISITC North America.

**W**hile many financial services firms may have, historically, been reticent to embrace open technologies, many have realized that they are behind the curve when it comes to APIs.

To those in finance and asset management, APIs—which, in a nutshell, allow two computer applications to “talk” to each other using a mutually understood language—may seem new. This is because the industry has traditionally focused on managing the risk of sharing data versus the opportunity of embracing open platforms.

Now, with regulations such as the Payment Services Directive 2 (PSD2) and Open Banking taking hold in the European Union, and the Securities and Exchange Commission modernization in the US, more attention is being paid to the concept of open APIs in banking.

Moreover, as tech giants and fintech startups encroach further on the business of traditional financial firms, even those at the highest level recognize the need to adapt. JP Morgan CEO Jamie Dimon made this point clear at the bank’s Investor Day last year when he quoted Amazon CEO Jeff Bezos’ famous warning: “Your margin is my opportunity.”

While APIs may seem revolutionary, the concepts and philosophy behind them have been around for decades—long before companies like Amazon or Google exploited these capabilities to become pioneers in connected ecosystems.

As with any technology that will usher in change, open APIs encounter challenges. These center on three



**Lisa Iagatta**  
ISITC North  
America

common obstacles: infrastructure changes; cybersecurity; and exposure to competitors. While these are all legitimate concerns, there are known solutions to address each of them.

From an infrastructure perspective, investing in modular architecture will enable financial institutions to provide accessible, easy-to-use APIs. This investment is necessary and long overdue. Although the up-front cost can invoke sticker shock, the long-term savings are monumental and more than make up for the investment over time.

Take legacy systems, which become more inefficient with each passing year, in part because they’re not interoperable with new technologies and modern digital systems. Firms will typically triage these challenges through point-to-point integrations, which is why banks often spend the bulk of their IT budgets on maintenance. To make matters worse, as custom, one-off integrations pile up over time, fragile and complicated dependencies create new business continuity risks, which also makes future modernization much more difficult.

On cybersecurity, having the right processes for authentication and documentation is the foundation of a successful API strategy. Published standards and documentation, such as the Regulatory Technical Standards on Strong Customer Authentication, have helped institutions moderate cybersecurity threats.

Even on the competitive front, as peers gain access to open APIs, concerns about threats have been tempered by evolving philosophies around the platform model and the substantial

value-creation opportunities available through open interfaces and their ability to facilitate access to information.

In tech, companies like Microsoft have long since demonstrated the value of an open ecosystem. By providing a core service, product, or technology that other firms could build complementary offerings on top of, Microsoft unlocked an entire business ecosystem for innovation, and became larger than it ever could have on its own.

## The way forward

Open APIs unlock the ability to share information faster, which then accelerates innovation. Financial services firms and vendors need to come together to combine complementary expertise, advance the industry, and optimize the experience for the end-user. As different institutions begin building out their API strategies, it will be key to confer with vendors and other industry players to build on each other’s success.

Apple, Google, Airbnb and Uber have understood that to innovate it’s necessary to take advantage of the API ecosystem to bring a more seamless and efficient experience to users. Perhaps more telling are the names that eschewed the platform model to create closed and incompatible networks—think BlackBerry or Nokia. A closed API system is a recipe for stifling innovation and growth. Developing a robust API ecosystem is critical and is shaping up as we speak—firms that are making it a priority will reap the benefits. Those that wait will find themselves on the outside looking in. [wt](#)

# OPEN OUTCRY

What the key figures in fintech are saying this month

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“We’re living in a world of misinformation, [and] propaganda has never been as sophisticated as it is today. We have to focus on sources that we can attribute, that we can trace back and that we can account for. We have to validate their existence, that they’re real people or a real publication. Without that, I think that especially for finance, we face situations where fake news and other types of information will affect or distort our models.”

Armand Gonzalez, CEO, RavenPack

» see page 86 for full feature...

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[The SC8 vote] was up against the holidays, with a vote scheduled right after the new year, with people on X9 who for the most part were there for payment processing or security standards. Almost none of them knew about instrument identification. I got on the phone and started talking to people and realized they were voting on something they didn’t really care about or understand, and they were doing so because they were there for a different reason.”

Mike Atkin, strategic advisor, EDM Council

» see page 30 for full feature...

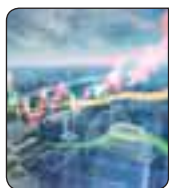
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A large majority of onshore

bonds get rated AA, which is classified as investment grade and high-yield. It’s probably more like a BBB.”

Manager at a Chinese onshore asset manager

» see page 96 for full feature...



“

We saw that many of the [ICO] teams seemed inexperienced, and their milestones were unrealistic. Basically, it looked to be an excuse for people to get a large amount of money.”

Pierre Lavaux, venture partner, SGH Capital

» see page 92 for full feature...



“

Given that we have waited so

long for a commercial organization to do that, and it hasn’t happened, yes I think we have definitely reached a point where the regulator needs to own this problem and solve it, either directly or by outsourcing that and controlling that. That would include capping the price.”

Richard Semark, head of UBS MTF

» see page 16 for full feature...



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“When you let somebody else tell the story for you, they don’t always tell it accurately, and it’s much harder to rewrite a narrative than to tell it yourself upfront. So, things like market data fees; innovation; things like finance and the perception that financial markets have, we need to do a much better job of telling the story that we know is true, because if we let others tell it, it might not be reflective of reality.”

Stacey Cunningham, president, New York Stock Exchange

» see page 24 for full feature...



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In those discussions, it gets kind of scary in terms of how immature the crypto market space is or how communication is done. When you’re looking

to figure out how to actually provide access, we’ve even had potential market makers or exchanges tell us that we can send them orders over Skype, and that’s kind of scary.”

James Putra, head of product development, Tradestation

» see page 22 for full feature...

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“It’s a completely different

approach to IT development, infrastructure and operations, which means that we had to train the IT team. We have to think differently about IT architecture, security, resource allocation. ... Everything is code. This provides agility if you adapt and transform the way you used to build and run IT.”

Nicolas Rivard, chief innovation officer, Euronext



# NEWSDesk

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

## INTL FCStone Mulls Outsourced Trading Tool



Service would take on the full function of a trading desk

INTL FCStone is considering an outsourced trading service for buy-side clients, in a possible extension of its foray into prime brokerage.

Douglas Nelson, managing director and co-head of prime brokerage at INTL FCStone, says expanding into outsourced trading

complements this service.

"Prime brokers and outsourced trading fit into each other well because our market for outsourced trading sits just above our typical prime client asset level. This is an opportunity to be strong with outsourced trading," Nelson says. "It's another area that we're going to be aggressively getting into as well."

The outsourced trading model that INTL FCStone is considering would see it take over the full function of a trading desk and act on behalf of buy-side clients, either trading within the day for them or on an overnight basis. Nelson says this provides more economies of scale, by allowing for more control of the order flow and even adding another client to the mix. It can also significantly cut costs for firms as it will negate the need to hire a full team to trade for some funds.

[Emilia David](#)

## Startup Scottish Exchange Places Security First

A planned Scottish Stock Exchange that is expected to launch this year says it is placing security at the front and center of its design methodology. According to Richard Deans, head of operations at operator Project Heather, cloud infrastructure is the key to this approach.

"We have planned our build to allow us to adapt quickly, operate from multiple sites and



New Scottish exchange would be based in Edinburgh

allow our operational technologies to work seamlessly, and of course quickly, with each other," he says. "The only way to achieve this is through the use of hybrid cloud infrastructures."

The exchange, which still needs to get approval from the UK's Financial Conduct Authority, will be based in Edinburgh, the fourth-largest financial center in Europe.

It has partnered with Euronext to provide its trading platform. "Euronext's Optiq solution and their support of our vision made them the logical partner for a Scotland-based exchange," says Deans.

[Hamad Ali](#)

## Intrinio Raises \$5 Million for Data R&D, Institutional Investor Push



Plans for proprietary dataset expansion

Low-cost data marketplace operator Intrinio plans to expand its proprietary datasets and increase its presence among institutional investors after raising \$5 million in Series A funding led by venture capital firm Nyca Partners.

Originally founded to provide access to data scraped from regulators' databases using machine-learning algorithms, Intrinio has since also partnered with data providers such as Quodd Financial Information Services and Zacks Investment Research to provide information it cannot develop on its own.

[Emilia David](#)

## Meta Selects Rival Systems

Chicago-based prop shop Meta Trading has selected Rival Systems as a vendor. The risk platform will give the firm access to automated alerting among other functionality.

## Dubai Bourse Connects to Mackay

The Dubai Gold and Commodities Exchange has connected to the Mackay Brothers International network. The provider offers microsecond-level latency for venues and trading firms.

## Liquidnet Debuts Ecosystem Pro

Liquidnet has launched an execution-management workflow designed to assist strategies across multiple symbols simultaneously. Ecosystem Pro is now available for all of Liquidnet's buy-side clients.

## Bakkt Acquires DACC

Bakkt, the cryptocurrency trading platform being developed by the Intercontinental Exchange, has acquired the Digital Asset Custody Company. The startup has said current clients should expect business as usual as it joins Bakkt.

## Big XYT Adds TCA to Platform

Frankfurt-headquartered data specialist Big XYT has added transaction-cost analysis functionality to its platform. The new tools were added following consultation with clients, the firm says.

## Vela Partners with Enyx

Tech vendor Vela has entered into a strategic partnership with Enyx. Under the terms of the agreement, Vela clients will gain access to Enyx's field-programmable gate array technology for low-latency market-data access.



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# Industry Steps Up Calls for European Consolidated Tape

Traders in Europe face rising data acquisition costs and increasing regulatory reporting pressures argue that a pan-European consolidated tape is long overdue. But with no one stepping forward to provide a tape, the task may fall to Esma—and some question the regulator's technical prowess. By [Hamad Ali](#)

Until the introduction of the first Markets in Financial Instruments Directive (Mifid) in 2007, European stocks usually traded on domestic exchanges. If a firm didn't trade any French stocks, it didn't need to connect to Euronext Paris. But while Mifid allowed all markets to trade stocks listed elsewhere, one significant hurdle remained: Pan-European trading required a pan-European consolidated tape of price activity, yet the regulation did not mandate one.

More than a decade later, provisions for a consolidated tape now exist, but are far from concrete, with financial firms growing increasingly frustrated by the lack of progress. The rollout of Mifid II in 2018 further transformed the trading landscape in Europe, placing more reporting requirements on buy-side firms than ever before. This, coupled with the explosive growth in

data over recent years, has given greater urgency to the buy side's calls for a consolidated view of the market.

Neil Bond, head of trading at Ardevora Asset Management, which has £5 billion (\$6.5 billion) in assets under management, says the firm currently can't afford the amount of data needed to create its own consolidated tape internally. "We get data from multiple venues, but not all venues. And while we would like a more complete set of data, it is not worth paying the extra for the small amount that we are missing," he says.

According to Bond, trends such as increased automation and the use of artificial intelligence (AI) are driving even greater demand for data. "It is important that the data we use is

correct, and the focus on getting the correct data reported is very apparent in the industry lately," he says, adding that a consolidated tape would improve transparency in a complex market where trading is fragmented across multiple trading venues, rather than trading in a stock being consolidated around a single venue, as in the past.

## 'Incomplete Information'

One challenge of not having a comprehensive, mandated consolidated tape is that firms may be missing market information and simply not be aware of what they are missing. "I am not saying we certainly have incomplete information, but without knowing whether you do, you can only guess that you may have

incomplete information,” says Keshava Shastry, head of capital markets at DWS Investments, part of Deutsche Bank’s asset management division.

“For example, Bloomberg started showing a consolidated volume for many of the ETFs,” he says. “But initially they start with a few venues, and then we ourselves knew certain venues were not there. We encouraged them to add those venues, and we built that partnership. So, on an ongoing basis they are adding more and more venues. It came as a surprise to them that they were missing some venues that we knew about, so it’s important for them to work with people in the market to get the full picture.”

Having the complete data would be beneficial for activities like transaction-cost analysis (TCA) or pre-trade analysis, or looking at overall volume, Shastry adds.

Between a consolidated tape and currently available datasets, all data should be accounted for, says John Mason, global head of middle- and back-office enterprise solutions at Refinitiv, adding that the buy side’s appetite for data has increased overall—especially in response to innovations like AI and machine learning.

“That extends from alternative data to the other end of the spectrum of consuming tick data, and consuming real-time feeds so that they can run their algorithms and their quants can do what their quants need to do,” he says, adding that he believes a consolidated tape is a low priority for many firms in the context of their overall data acquisition strategy.

Also skeptical is Christian Voigt, senior regulatory advisor at Ion, who likens being a consolidated tape provider (CTP) to holding a special kind of driver’s license. He says the reason there have been no takers wanting to become CTPs is because the way Mifid II and the obligations of a CTP are structured is overly complicated and provides little incentive for potential CTPs.

Nevertheless, financial firms on the buy and sell side have been pushing hard for a consolidated tape in recent years, says Richard Semark, head of UBS MTF.

For example, Mifid II requires the reporting of all European ETF trades,

“But initially they start with a few venues, and then we ourselves knew certain venues were not there. So we encouraged them to add those venues, and we built that partnership. So, on an ongoing basis they are adding more and more venues. It came as a surprise to them that they were missing some venues that we knew about, so it’s important for them to work with people in the market to get the full picture.”

**Keshava Shastry, DWS Investments**

whether executed on- or off-exchange. This was welcomed by the industry as it improves price and volume transparency, but—given the venue fragmentation of European ETF trading—has resulted in a large volume of post-trade ETF data. Jason Warr, EMEA head of iShares global markets at BlackRock, estimates that the universe of more than 3,000 ETFs in Europe has created more than 250,000 reporting line items. “Consolidation of this data is vital to make it useful and provide an effective means of improving transparency of the European ETF market,” Warr says.

Semark says there is “disappointment” among market participants that Mifid II didn’t simply mandate a consolidated tape as a core part of its market infrastructure reforms, instead of first encouraging the industry to collectively agree on a solution. He adds that while the European Securities and Markets Authority (Esma)—having created this situation—is now obliged to address this itself, it seems “fearful” of getting involved in operating a commercial entity.

### Reluctant Regulator?

Indeed, some feel Esma has been too slow in pushing for the consolidated tape, or to ensure pan-European data is made available in an affordable manner.

“We have seen no effort by the regulators to enforce the concept of fair and reasonable pricing,” Semark says.



**Jason Warr**  
BlackRock



**Paul Squires**  
FIX Trading  
Community

Many on the buy side say Esma should be pushing harder for a tape because they believe it could support regulatory compliance.

“We believe it could present a significant improvement for both the buy and sell side on themes like best execution benchmarking,” says a spokesperson at DNB Asset Management. “We also believe a CTP would offer greater visibility for the market as a whole if pre- and post-trade data were to be aggregated and distributed freely.”

Paul Squires, former co-chair of industry standards body FIX Trading Community’s EMEA Buy-Side Committee, concurs, saying the consolidated tape “will probably be number one on my list of preferred outcomes through all the regulatory changes since 2012.”

However, despite the demand, there have been no takers for the role of CTP. “Esma understands that market participants do not consider there to be a sufficient business case for operating a consolidated tape right now,” an Esma spokesperson says. “The idea was for market participants to have a consolidated overview of post-trade data at a reasonable cost. The consolidated tape only concerns trade reporting and has nothing to do with transaction reporting to regulators.”

Data vendors who already collect market data are best placed to perform the role of a CTP, but remain reluctant.





Some, such as Refinitiv's Mason, believe they are already fulfilling the requirements. He notes that the existence of consolidated tapes in the US market only satisfies a small part of firms' data requirements, while others say becoming a CTP warrants careful consideration.

"We know we have that capability and we still can see it is not something that we would want to jump into without some very careful consideration," says Mark Montgomery, head of strategy and business development at web services data provider Big XYT, which has looked into starting a CTP. "We have spoken to some industry bodies as well, and at a high level they have said, 'You seem to be an independent provider of data analysis, and you seem to have this consolidated view of the market on T+1. Would you be able to help?' Certainly theoretically and practically, it is possible. But I am not sure whether it would

**“**  
"Having a tape of record that is governed, a decision made as to which venues are included, a decision made as to which of the off-exchange volumes are included ... which shows you the volume and the prices that were traded on a particular day—I think that is what is missing."  
**Richard Semark, UBS MTF**

compromise our ability to provide a lot of other services if we had to focus all of our time and energy on this one single regulated provision."

So, if there are so many obstacles, why bother building a consolidated tape?

"When somebody asks what volume traded in a particular stock on a particular day, there needs to be an answer to that question, rather than 10 answers to that question," says UBS' Semark. "Having a tape of record that is governed, a decision made as to which venues are included,

a decision made as to which of the off-exchange volumes are included ... which shows you the volume and the prices that were traded on a particular day—I think that is what is missing."

### **How Much? And Who Pays?**

Having these requirements mandated by the regulator at reasonable cost is key, sources say. A constant complaint among buy-side firms is that it is too hard to obtain a proper view across the European market, says Ion's Voigt.

“The problem, if we were to do this, is that it would be very pricey, and most buy sides simply can’t afford this,” he says. “Whether you put a legal label of consolidated tape on it or not, I would say it is secondary. Because, as you can see, the industry works quite well today without having one. Therefore what we need to distinguish between is: Are you interested in the actual data, or are you interested in having this legal label put on it?”

Esma recently launched a data-collection exercise to gather information on the application of data provision obligations—including price developments following the application of Mifid II—by trading venues and Approved Publication Arrangements (APAs). “Based on the feedback received, Esma has already provided guidance to ensure a convergent application of the Mifid II/Mifir provisions and to contribute to ensuring that all market participants can access market data on a reasonable commercial basis,” the Esma spokesperson says.

Aside from reasonable subscription fees for the data, a further challenge is how a regulator-appointed CTP would be funded to get the project off the ground. For example, the DNB spokesperson says that depending on Esma’s mandate, there will be need for some sort of funding mechanism to get the project started, adding that direct budgetary contributions or a cost-sharing scheme could be considered next. “It’s imperative for the market that the principle of ‘data democratization’ still stands and that the CTP does not end up monopolizing and re-selling data,” the spokesperson says.

To expedite the process, Warr says BlackRock is encouraging regulators to consider “a solution that involves designating a central body to implement a consolidated tape, similar to the Securities and Exchange Commission appointment of a Securities Information Processor (SIP) in the US.”

FIX’s Squires says that with all the data that trading firms are obliged to report to Esma, the regulator is “very well positioned to support a utility, taking all of that data and providing it into a format that becomes something that looks like

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**“I think [Esma] would be ultimately the right one to do it because it is a regulated entity. That is why people want it. There are a lot of data providers out there, and a lot of data available where people can do similar things to what we are doing. People can look at this data, examine it and benchmark against it.” Mark Montgomery, Big XYT**

a consolidated tape,” at a fraction of the cost that primary exchanges currently charge for market data—though he questions whether the regulator will have the appetite to prioritize the initiative. “It is also unfortunate that the regulators seem to be so reluctant to clamp down on the cost of market data [charged by most exchanges]. How can that go unchallenged when it is so clearly at the detriment of market transparency?” he adds.

### Esma Dilemma

Others agree that the regulator should be the body charged with providing the consolidated tape.

“I think that would be ultimately the right one to do it because it is a regulated entity. That is why people want it. There are a lot of data providers out there, and a lot of data available where people can do similar things to what we are doing. People can look at this data, examine it and benchmark against it,” says Big XYT’s Montgomery. “There will be information that the regulator sees that other organizations or data providers would not have access to,” and therefore need to make calculations and assumptions based on the data available to them.

But while Esma might have the governance chops to complete such a project, the infrastructure required to consume all of the data across all of the venues in Europe cannot be underestimated, and the prospect of building that from scratch carries significant time and technical risks, says Refinitiv’s Mason—not to mention the risk that the industry may reassess its support for a consolidated tape if Esma expects market participants to fund the initiative.

“I think the regulator would be taking on a real technical challenge to do that,” Mason says. “Organizations that are in the business of consuming data from

venues, aggregating it and publishing it have built up that infrastructure, that skill set, that capability, over decades. And that is not something that can spring up overnight.”

Technology challenges aside, there are many in the industry who would welcome a consolidated tape provided or enforced by the regulator. “Given that we have waited so long for a commercial organization to do that, and it hasn’t happened, yes, I think we have definitely reached a point where the regulator needs to own this problem and solve it, either directly or by outsourcing that and controlling that. That would include capping the price,” says UBS’s Semark.

But when asked directly whether Esma would provide the consolidated tape, the spokesperson says this is “not in our legal mandate,” highlighting the review clause that allows Esma to appoint “a single consolidated tape provider if current arrangements are assessed as being inadequate.”

When asked to clarify whether this meant appointing a CTP, and what the timeframe for such a move could be, the regulator did not respond. But if no independent CTP emerges, assuming that Esma does not want to agree onerous terms with a reluctant provider, the regulator may have to build the tape itself—or at least threaten to, if it wants to spur others to action.

“The current charges for market data are at least excessive, if not egregious. And so I think it is definitely within the regulator’s remit to make sure that there is reasonably priced, clear, transparent market data available,” says Semark.

With overwhelming support for a tape to support transparency, compliance, and lower data costs, the ball is in the regulator’s court. And at the end of the day, if Esma wants a consolidated tape, it needs to be prepared to build it itself. [wt](#)



**Mark Montgomery**  
Big XYT

# Less Than Half of EMIR Swaps Trade Reports Match Correctly

Data from Esma shows that just 40% of swaps trade reports match under two-sided reporting regime. *Risk.net's* Samuel Wilkes reports.



**T**he majority of swaps trades reported to specialist repositories under European trading rules do not match correctly, *WatersTechnology* stablemate *Risk.net* has learned, raising concerns over the quality and completeness of records regarding the derivatives market in the EU.

Only 40% of swaps trades reported under the European Market Infrastructure Regulation (EMIR) are correctly matched up at trade repositories, according to data from the European Securities and Markets Authority (Esma), which the regulator released in response to a Freedom of Information request by *Risk.net*.

This release is thought to be the first time the European supervisory agency has disclosed an official matching rate since EMIR entered into force in January 2014. Although still low, the matching rates are higher than most market participants expected. An industry source says they were told matching

rates were in single digits, while the treasurer at a multinational company was told they were higher than single digits, but not by much.

"I was pleasantly surprised at the 40% figure, because, from my discussions with trade repositories, I thought the matching rates would be lower," says the industry source, adding "I don't think we can pat ourselves on the back as regulators would remain unhappy that rates are at 40%."

The treasurer concurs, saying the rate is "still devastating." Low matching rates limit the usefulness of swaps data submitted to regulators for monitoring systemic risk as they cannot be sure all the information is correct. Since January 2014, EU swaps counterparties have been reporting details of deals to trade repositories under

EMIR. Unlike US legislation, the EU requires both counterparties of a trade to report the swap, known as dual-sided reporting. Regulators have justified this practice as a way to verify reported information is correct. Repositories must therefore start by pairing up the same unique code representing a single transaction, and then 58 of the data fields considered key by Esma need to be identical or almost identical in both reports to count as a successful match.

Matching rates have been a closely guarded secret. A source who spoke to *Risk.net* in September 2015 said repositories had been explicitly instructed by Esma not to discuss their pairing and matching rates publicly, although Esma declined to comment on the claim at the time.



Today, sources are still wary, mainly trade repositories, to disclose matching or pairing rates. Esma's November 2017 annual report only disclosed pairing and not matching rates—something sources suspected was because matching rates were significantly lower. According to the report, pairing rates stood at 87% at that point.

But, in response to *Risk.net's* Freedom of Information request, Esma has disclosed that pairing and matching rates in February this year stood at 86% and 40%, respectively. These figures are averages of the rates of all reports submitted by each trade repository in February and include the rates for reports reconciled between different repositories. The need to match so many different fields is a significant contributor to failures in matching rates and is not completely necessary, says the industry source.

"There are too many fields that need to be matched to count as a successful match," says the industry source. "There may need to be a recalibration to assess exactly what fields are systemically important to conduct matching on. If you have 40-plus fields then it is really a very high watermark for success."

David Nowell, a senior regulatory reporting specialist at consultancy Kaizen Reporting, agrees: "Those 58 fields that need to match, they are extensive and the chances of them matching are slim."

### Many a Slip

Differences in the interpretation of data fields also lead to lower matching rates as parties to a trade do not always agree on how all of the fields should be completed.

"Despite an EMIR requirement that counterparties should agree details before reporting, a lack of accessible trade confirmation mechanisms means trade details may not be agreed before a trade is reported," says a source at a trade repository.

The same problem, however, can also occur due to separate reports of the same trade being stored in different repositories, because they sometimes store information differently, says the treasurer at the multinational company. He says small differences such as swaps having two legs can lead to unmatched reports: Some repositories treat a two-leg trade as

**"An increased regulator focus on the need to improve reporting quality, completeness and reconciliations has obviously increased the focus on operational improvements."**

**Mark Husler, UnaVista**

two separate reports, while others record it in only one report.

Text fields also lead to reports being unmatched, as trade repositories express the same information differently. For example, if a trade is governed by an International Swaps and Derivatives Association (Isda) master agreement, some repositories may store the information as "Isda," while others refer to it as "Isda master agreement." Nowell says give-up trades, whereby a broker executes a trade, but another dealer clears it, also trigger breaks in a pairing. Under EMIR, the end-user and clearing member must report the details of the trade and not the broker. However, brokers often still report the trade, which can lead to pairing errors if either the dealer or end-user uses the unique code generated by the broker or identifies the counterparty in their report as the broker.

The source at the trade repository says sometimes reporting entities still do not report details of trades, especially if they use derivatives only occasionally and so don't have an institutional memory of which trades fall under EMIR and how they should be reported. All of these factors drive down pairing and matching rates.

### Progress Made

Esma's figures do show improvement has been made since the start of EMIR, at least for pairing rates. Esma previously disclosed that pairing rates were just 55% in November 2016. But, given that rate rose to 87% in November 2017, the response to *Risk.net's* Freedom of Information request shows this improvement has now stagnated.

The introduction of a hierarchy assigning which counterparty to a trade

generates a unique transaction identifier has led to significant improvements in pairing rates. More focus from reporting institutions on remediating errors has also improved pairing and matching rates, according to market participants.

"There has been a lot of focus by institutions to carry out exception management and remediation," says Mark Husler, CEO of London Stock Exchange Group-owned trade repository UnaVista. "An increased regulator focus on the need to improve reporting quality, completeness and reconciliations has obviously increased the focus on operational improvements."

Husler adds that repositories have also helped improve matching rates by allowing values in data fields that have a marginal difference to count as a match.

"Where we have been able to introduce tolerance levels for matching, it has helped significantly in enabling regulators to match off the transactions and the legs of derivatives positions," says Husler. "It means even if certain attributes are a decimal place off due to a rounding error, those reports can still match." While Esma has not previously published matching rates, one repository estimated this to be about one-third for over-the-counter derivatives and just 3% for exchange-traded derivatives in June 2014.

"Given time and resources, everything is achievable, but, as we know, there are many compliance demands on firms and they can only go so far," says Nowell. "Trades with third-country firms cannot be paired, and even if the two counterparties are reporting, they have got to identify each other correctly." That is not as easy as it sounds, he adds, because there is scope to choose the wrong legal entity identifier if two companies have similar sounding names.

Failure to report trades led to one of the most infamous cases of sanctions being meted out under EMIR in November 2017, when the Financial Conduct Authority issued Merrill Lynch International, part of banking group Bank of America, a £34.3 million (\$44.2 million) fine for failing to report 68.5 million exchange-traded derivatives. This was considered a substantial penalty for a purely technical violation. [WT](#)



**Mark Husler**  
UnaVista



**David Nowell**  
Kaizen Reporting

# Institutional Crypto Faces Prospect of a Nuclear Winter

While digital currency prices endure what enthusiasts call a 'crypto winter,' the problem appears to be far more acute when it comes to institutional appetites. [James Rundle](#) and [Rebecca Natale](#) report.



**T**he coldest temperature in Chicago in over 30 years struck the city on January 30, 2019, when the mercury hit 23 below zero degrees Fahrenheit. However, that pales in comparison to the industry's cooling enthusiasm for digital currencies. For financial firms in the Windy City looking to engage with cryptocurrencies, that chill is rapidly becoming an ice age.

The first frosts came with bitcoin's precipitous fall from grace during 2018, when the price of a single coin plunged from \$20,000 to less than \$3,200. Then, when most of the world's deriva-

tives brass were sunning themselves at the Futures Industry Association's annual conference in Boca Raton, Fla., during March 2019, Cboe Global Markets sounded—almost silently—one of the first warnings of an iceberg, dead ahead, when the exchange quietly announced that it would no longer be listing new contracts for its XBT bitcoin future. The contract, which launched just before the end of the 2017 bitcoin

bull run, was the very first of its kind, and many believe its launch helped contribute to the subsequent bear market.

CME Group lists its own bitcoin futures contract, which is similar to Cboe's design, but is weightier, given that each contract represents five bitcoins, and is ostensibly more popular. Though CME said it had no plans to delist its contract, the damage was already done.

Then came a *Wall Street Journal* article on April 23, which took the wind out of institutional crypto's sails even more. Coinbase, the largest and most respected crypto exchange operator, which had previously announced a big push into institutional trading, was canceling plans for radical upgrades to its technology base designed to lure high-frequency traders, the *Journal* reported. The company subsequently laid off 30 employees from its Chicago office.

Taken individually, these are harsh blows to absorb for a nascent tradable asset. Put them together, and—without dramatic intervention—they could be the first nails in crypto's coffin.

### Peter Pan Syndrome

Part of the problem with the current state of the crypto market is its inability—and in some cases, unwillingness—to embrace its maturation as an asset class. Flaws in market structure, rosey technology, and shoddy practices have characterized the growth of cryptocurrencies overall. Historically, while not ideal, these have been forgivable as the market matures and has been forced to adopt practices it was ill-prepared to handle. Indeed, some segments of the professional market have even (somewhat breathlessly) described these faults as part of crypto's charm, painting a rose-tinted vision of a frontier asset class where free-spirited cowboys still roam.

But those segments overlook what made the “wild west” wild: claim jumping, cattle rustling, spiraling murder rates, and city streets that doubled as open sewers. In reality, cryptocurrency exchanges have had sufficient time and exposure to institutional practices to get their house in order, but for the most part, have not.

On April 10, the New York Department of Financial Services denied crypto exchange Bittrex a license to operate in the state, releasing a damning letter that claimed traders on the exchange were operating under names such as “Donald Duck,” and “Elvis Presley.” Even more alarmingly, some users appeared to originate from sanctioned nations, such as North Korea.

“I think it's unfair to paint them all with the same brush, but in many cases, they're not all that concerned about compliance and market manipulation, etc., and they're just not compatible with the way that institutions work.”  
Don Wilson, DRW Holdings

Bittrex's problems are the latest in a series of cases that periodically rock cryptocurrency markets, and although many of the more popular exchanges have deployed professional-grade technology from vendors such as Nasdaq, much of the industry remains in a poor state of repair, technology-wise. James Putra, head of product development at broker Tradestation, found this out firsthand when the company decided to build out a crypto brokerage offering tailored toward clients who require institutional tooling and liquidity provision. It approached several exchanges and rapidly discovered that all was not well behind the scenes.

“In those discussions, it gets kind of scary in terms of how immature the crypto market space is or how communication is done,” Putra says. “When you're looking to figure out how to actually provide access, we've even had potential market-makers or exchanges tell us that we can send them orders over Skype—and that's kind of scary.”

Tradestation ended up partnering with Deltix, a provider of electronic trading platforms for traditional asset classes for its crypto offering, which is due to go live later this year.

It's not just new entrants to the crypto space that are alarmed by its immaturity: Some of its most ardent supporters among high finance acknowledge this is a problem that continues to hold back institutional involvement.

“I think that the term ‘exchange’ is generous for most of these entities,” said Don Wilson, CEO of market-maker DRW Holdings. “I think that you could call them trading venues, but to call them exchanges is probably a misnomer.”

Wilson's assessment, delivered at the Synchronize conference, held in New York on April 18, is particularly crushing. He is one of the co-founders of Digital Asset, a pre-eminent blockchain company involved in some of the highest profile projects in the industry (see page 92). Cumberland, one of the largest market-makers in cryptocurrency trading, was also launched by DRW.

“They generally haven't, for the most part, operated in a way that's consistent with the types of exchanges that we're all used to operating on, and their technology isn't up to snuff,” Wilson continued. “I think it's unfair to paint them all with the same brush, but in many cases, they're not all that concerned about compliance and market manipulation, etc., and they're just not compatible with the way institutions work.”

ErisX, another company co-founded by DRW, is preparing to launch a regulated exchange and clearinghouse for trading spot crypto and futures later this year. However, previously established regulated exchanges are also finding that the asset class is losing its luster.

Paul Chou, CEO of LedgerX, which was one of the first exchanges regulated by the Commodity Futures Trading Commission (CFTC) to offer bitcoin options, told the *New York Times* on April 2 that he was “wrong” about institutional money being ready to engage with the market. Likewise, Bakkt, a well-publicized attempt by the Intercontinental Exchange Group to launch a crypto venue, has had several delays to its start date, reportedly due to CFTC concerns around custody mechanisms.

Supporters often paint crypto as an asset class merely going through a difficult birth, much like the emergence of oil as a tradable asset in the 1980s. However, if recent events are anything to go by, it seems that the crypto winter is still in full force, and it may yet be some time before the big dogs of the mainstream financial markets thaw on the concept of cryptocurrencies. **WT**



The New York Stock Exchange has gone through significant change in the last few years. With the foundation in place, it is Stacey Cunningham's job to manage the centuries-old institution's evolution. By Anthony Malakian, photos by Timothy Fadek

### After 226 years, in 2018,

the New York Stock Exchange (NYSE) appointed Stacey Cunningham president, the first woman to head the exchange. You probably already know this. Moreover, the venerable NYSE is now owned by the Intercontinental Exchange (ICE), founded in 2000—or nearly 76,000 days after the Buttonwood Agreement. Even if you didn't know the number of days, you should know that ICE now owns the Big Board.

However, this is 2019 and Cunningham's thoughts are not focused on these things. Instead, she leads an exchange in transition. For a decade, the famed trading floor has become decidedly less human and more electronic. It's also one that has been under attack of late. Celebrated author Michael Lewis exalted the virtues of a startup called the Investors Exchange (IEX) while denigrating the at-times-maligned Wall Street institution—and others perceived to be in the old boys club—in the book *Flash Boys*.

At the same time, there's an all-fronts attack on exchange fees across the industry, with the likes of NYSE, Nasdaq, and Cboe Global Markets finding themselves to be unlikely allies. This battle helped to spawn the Members Exchange (MEMX), a proposed competitor to traditional equities exchanges. If it gets approved, it will be the 14th stock exchange in the US. Additionally, major tech companies are waiting longer to go public and the fight to list companies is getting increasingly competitive in a fragmented market. There are also flash crashes to contend with, increasing volatility and a raft of new regulations.

As if that weren't enough, cloud technology has completely changed the way that companies store, send and use data; computational power is improving exponentially; advancements in artificial intelligence (AI) are helping to revolutionize the way that humans interact with data and technology; and blockchain is still being explored, even if the hype has died down. And the exchange itself is transitioning to a brand new trading platform, Pillar.

Change is, indeed, constant, perhaps especially for centuries-old institutions.





# Stacey Cunningham:

## From Buttonwood to Machines

Stacey Cunningham



### Homecoming

For Cunningham's part, she was hooked by the NYSE from day one, as an intern. Her father, a stockbroker at the Canadian trading house Nesbitt Burns, was able to help her get the job, even though at the time, she was a civil engineer at Lehigh University in Bethlehem, Penn., and wasn't looking for a corporate internship. Instead, she wanted to be a waitress, but since she had no experience waitressing, the fallback was the most iconic financial institution in the world. "I, frankly, think I would've been a fantastic waitress, but I didn't have the opportunity," she says.

It's that confidence that helped her to not just survive on the testosterone-fueled trading floor of the 1990s, but to enjoy the experience enough to change her major to industrial engineering—a more general discipline—and she came back after she graduated from Lehigh.

"I fell in love with the trading floor almost instantly," she says. "I was so fascinated by the markets, the pace and the energy that I wanted to go work there full-time. It was almost like you were problem-solving because you were trying to get what seemed like an unreasonable amount of work done in a finite period—it was, how fast can you keep up? I just loved that nature of it. I loved the culture and the fact that it wasn't about politics—you didn't have time on the trading floor to worry about whose fault something was or what was the appropriate, or the best way to phrase something. You just had to be a clear communicator and get right to the point. I found that very liberating."

In 2005, she left the exchange to pursue another passion of hers—cooking—and joined a culinary training course. She departed the NYSE in part because she felt that tech and humans weren't integrating at the exchange.

"When I left, it felt as if we were using sophisticated technology and we had the benefit of people on the floor, but they weren't integrated, they were



**“I fell in love with the trading floor almost instantly. I was so fascinated by the markets, the pace and the energy that I wanted to go work there full-time. It was almost like you were problem-solving because you were trying to get what seemed like an unreasonable amount of work done in a finite period—it was, how fast can you keep up?”**

side-by-side—almost in conflict. The evolution of technology was so fast that we really needed to rethink the way it was integrated. As a trader on the floor, it was almost as if I was fighting technology.”

Her time as a chef was brief, and she was soon at rival exchange operator Nasdaq, where she served a five-year stint, rising to head sales for its US transaction services business. The siren song of the Big Board continued to call, though, and she rejoined the exchange in 2012. She was named COO in 2015.

“I came back home. I grew up on the trading floor. I love the NYSE. I left at a crossroads in time where it was unclear how technology was going to be integrated—and it was clear to me that technology needed to be integrated more effectively. When I came back a few years later, it was clear to me that the NYSE was on a path toward the future and really making sure that we were able to scale our business like never before. That was exciting, and being able to be part of a team whose job it was to reinvent a global icon is not an opportunity you want to pass up,” she says.

Cunningham felt that the exchange had improved its tech footing in the interim, and she was excited to embrace yet another change. She didn't know just how significant that change would be—she agreed to leave Nasdaq to rejoin the NYSE in 2012, 10 days before ICE purchased the iconic institution.

“It was shocking,” Cunningham, says. “I have been fortunate that I understand the value of change and that with change often comes great opportunity and new challenges.”



### 'Not World-Class'

Telling the story of how Cunningham is driving the next phase of the NYSE's evolution requires an understanding of its parent company, ICE.

Some CEOs in the capital markets talk about big-T "Technology" but can't get into the nitty gritty as to how the plumbing works. Jeffrey Sprecher is certainly not that. He received a degree in chemical engineering from the University of Wisconsin-Madison in 1978 before getting his MBA from Pepperdine University in 1984. Today, Sprecher is the chairman and CEO of ICE and is the Atlanta-based exchange group's founder. He was hands-on in designing the first version of ICE's trading platform.

When ICE acquired the NYSE, it was called NYSE Euronext, and had grown through several high-profile acquisitions. Sprecher says the first thing to do was to run an assessment of the company's business lines and tech platforms. The results weren't encouraging—the organization was too massive, and the technology was not up to scratch.

"Around the acquisition, there were a lot of moving parts," he says. "So the first thing we did is looked at the technology at the NYSE and concluded that it was not world-class." Additionally, NYSE Euronext had about 5,000 full-time employees and another 1,000 permanent contractors globally, and the Euronext piece did not fit into ICE's plans for the NYSE. "There was just too much in the company for our management team to focus on at one time; we didn't feel like we could focus on the unique challenges in Europe, so we spun that out."

After divesting Euronext, ICE took the technology businesses that were part of NYSE Euronext, restructuring or merging some, and selling others. That left the Universal Trading Platform (UTP), which was anything but universal. The UTP was a hodgepodge of five different trading platforms—there were, at the time, three equity markets—the

NYSE platform, the old American Stock Exchange (Amex) platform and the legacy Arca platform—and the two options markets—Arca Options and Amex Options. That means that behind the UTP's API were five different systems that were running in parallel.

"We benchmarked those five platforms to see if there was one of them that we could standardize the entire business around and we came to the conclusion that they were all legacy platforms, that they were expensive to operate, they wouldn't scale, and they would ultimately become uncompetitive in a highly competitive market," Sprecher says. "We decided to build a brand new platform from scratch, and that is known as the Pillar platform."

While this was unfolding, NYSE Group thinned its workforce from 6,000 in 2012 to a little over 940 employees, Sprecher says.

Cunningham is now a year into the job as president of the NYSE, at a period of unprecedented change for the exchange and the industry. Like Sprecher, she has a degree in engineering, though hers is in industrial and not chemical disciplines.

(Showing the engineering heft at the C-level, Mark Wassersug, ICE's COO, and Charles Vice, ICE's vice chairman, also have engineering degrees.) With Cunningham, Sprecher says that he and the board found someone who could bridge the gap between the trading floor, the technologists and the business executives.

"Stacey had the right background, and we thought she was the right person to come in and really deal with the fine-tuning of a repositioned company," Sprecher says. "She has a deep background in equity markets. As we're finalizing Pillar, the NYSE has a unique model, which is a combination of technology and people. Getting the Pillar platform to optimize around that is really important to us, and Stacey is perfectly positioned to bring those last nuances that we need to that technology that we really think will differentiate our company."

### Hello, My Name Is Human

The opening and closing bells of Nasdaq and the NYSE—Cunningham's two homes—are vastly different. Nasdaq holds its ceremonies in a quiet studio, with a few dozen attendees to help





**“I think it’s important to look at the social good that financial markets provide. It’s about helping companies raise money so that they can grow and scale their services, change the world and provide investors with opportunities along the way.”**

bring up the energy in the room by clapping and cheering. The trading floor of Nasdaq, like many others around the world, is one of machines, monitored by humans.

NYSE, on the other hand, still has human traders on the floor. Some would argue that the floor traders serve more like props for the television cameras, and as numerous stock exchanges around the world have demonstrated, it is not necessary to have human traders on the floor to operate a market. However, Cunningham says, flesh and blood are still needed at the NYSE, mainly when the markets open and close, which serve as the most significant liquidity events in the world.

“We leverage technologies to give the human beings algorithms that are learning and adjusting and identifying trends in the market,” she says. “So the people on the floor are using algorithms to trade, and those algorithms are learning and are informed by all of the events out there, but then [people can] step in and apply human judgment just when it’s needed, at the critical moments.”

However, while humans are valuable to the trading floor, ICE is also making sure that NYSE evolves into more of a technology company. Pillar is at the heart of that plan.

As of mid-April 2019, the Arca, American and National exchanges have migrated onto the Pillar platform. ICE has also started migrating the New York Stock Exchange onto Pillar. For the first time in its history, NYSE allows trading on all companies listed in the US, regardless of which exchange

they call home. The NYSE migration to Pillar started with all the companies that do not list on NYSE. This summer, they will migrate the companies that do list on the Big Board. Later this year, the Chicago Stock Exchange, which was acquired by ICE in 2018, will migrate over to Pillar. The options markets will migrate over in 2020, if not later. “We haven’t started that project in earnest, yet,” says Cunningham.

It hasn’t all been smooth. As ICE rolls out the platform, it’s had to slow down the migration as customers make adjustments to their workflows and how the NYSE’s disaster recovery responds to different market events. For instance, for NYSE Arca, Cunningham says that if it ever found the system to be in a state where an event was unexpected, such as a fat-finger mistake sending the market spiraling, it would stop operating by design to mitigate risk.

“We’ll take the risk of slowing down, stopping, and restarting in a clean state,” she says.

### Image and Reality

One of the more pressing issues facing Cunningham is one of image. First, there’s this whole fight that’s been unfolding between market participants and exchanges over fees, a battle that’s currently raging on two fronts.

In December, the Securities and Exchange Commission adopted new Rule 610T of Regulation NMS to conduct a Transaction Fee Pilot in NMS stocks to measure the effects of maker-taker rebates on equity trade execution. Before the SEC could announce a start date, the agency had to put the project on hold—in mid-February 2019, the NYSE, Cboe, and Nasdaq filed petitions with the US Court of Appeals for the District of Columbia Circuit for a review of the rule.

Cunningham says the new rule amounts to an unnecessary exercise in government price-setting, which will add a new layer of complexity to the equity markets in volatile times, a move that could have dire consequences for

investors. She also says the pilot will impose government control on the incentives that public markets can offer; thus, market-maker benefits will be sharply reduced for some securities and eliminated for others.

Cunningham admits that transaction fees are rising for the industry as a whole, but that is not the fault of NYSE—instead, it’s a byproduct of there being 13 national stock exchanges to connect to, with two more potentially on the way, others rumored, and more than 50 dark pools entering into the space. She also says that transaction fees at NYSE, itself, have come down “dramatically,” but that the overall costs to connect to all these different venues have risen a lot in a competitive market because now firms must connect to so many places.

Additionally, market data has become incredibly valuable thanks to Reg NMS and the need to connect all these different venues, mainly to satisfy best-execution requirements. Historically, when the vast majority of trading occurred on the exchange where the stock was listed, you just had to go to that exchange to get the best prices and know what the value of the market was. Now, if you’re trading across all of the exchanges and pools, you need to stitch that market back together, so you must subscribe to data from all those different platforms.

Cunningham says it’s crucial to recognize that the all-in cost to trade on the NYSE is lower than what it was, meaning trading fees, the market data fees, the access fees through services like co-location and connectivity bundled together. She says if you take all of those fees and look at that per share, it’s roughly \$.05 per 100 shares executed. “That’s a very small amount,” she says. “But understandably, the industry is paying more in connectivity and market data because they’re paying it across so many different venues. There’s a little bit of revisionist history. If you look back in time, exchanges were member-owned, so all the profits

accrued to the members. Now they're shareholder-owned, so the profits accrue to public shareholders, and so the members are complaining about some of the fees that exist."

Speaking of members, the MEMX represents a consortium of some of the largest financial institutions and their proposal is a simplified trading model focused on market data feeds, not transaction fees. While the exchange has yet to gain regulatory approval and the startup has been fairly radio silent since its splashy announcement, it does show trading houses are getting fed up with costs and will muddy the waters if necessary.

### Big Board, Big Companies

As NYSE fights a battle with its regulator and with new entrants into the market, it also needs to continue to get cutting-edge tech firms listed on the Big Board, an area that has traditionally been perceived as the heartland of its Midtown rival, Nasdaq.

There is a perception that many unicorn tech startups are waiting to go public. By and large, it's true, but it's also been a bit overplayed in the media. From 2014 through 2018, according to a study by Ipreo and NYSE, about 70% of tech proceeds were raised on the NYSE. In 2019, Pinterest, Tufin, PagerDuty, and Jumia have had IPOs on the exchange, and Cunningham says there's a good pipeline of tech companies that will hit the market later this year.

The exchange has also modernized its listing standards, such as making it so that companies that want to list on the NYSE do not have to be profitable when they go public, which many tech startups are not in the beginning. However, she does acknowledge that they can be better at attracting companies to come out of the woodwork.

"The tech companies are out there. Some of them have been waiting," Cunningham says. "I think some of the volatility that we saw in the market actually made them think that now



might be the time to come out to the public markets in case there is a pull-back in the markets, overall."

The other area for the exchange that could use some image rehabilitation is finance, itself. From the "greed is good" era of the 1980s to the Occupy Wall Street movement post-2008, the public perception of financial firms hasn't always been positive. Along with the White House, the Capitol Building, and the Supreme Court, the pillars of the New York Stock Exchange represent America in the form of architecture. For any traveler that heads to New York, it is a must-see landmark. However, being the face of US capitalism can have side effects.

Cunningham says it's become harder to attract new talent because of the financial industry's reputation. She says many younger people do not feel as though the financial markets are contributing to society—something that she will look improve in her new high-profile position.

"I think it's important to look at the social good that financial markets provide," she says. "It's about helping companies raise money so that they can grow and scale their services

and change the world and provide investors with opportunities along the way. That's a meaningful thing that happens, and if people vilify financial markets, instead of recognizing the value that they contribute, it's harder to attract talent."

For her, being president of the NYSE is as much about winning hearts and minds, as it is about technology and evolution. Yes, she's the first female to run the NYSE, and she's proud of that. She hopes to serve as a role model for young women; she wants to show that the capital markets do not represent an all-boys club. More than that, she wants people to know that the NYSE, while in a period of great transition, serves a vital role in the US and global economies.

"When you let somebody else tell the story for you, they don't always tell it accurately, and it's much harder to rewrite a narrative than to tell it yourself upfront," she says. "So, things like market data [fees]; innovation; things like finance and the perception that financial markets have, we need to tell a much better story that we know is true because if we let others tell it, it might not be reflective of reality." **WT**



# How Bloomberg's Failed FIGI Vote Reveals a Substandard Standards Process

A lack of participation in the approval process for global standards has led to a stacked deck, where producers make the decisions that affect consumers. **Jamie Hyman** investigates how a failed ballot for a Bloomberg-backed identifier reveals the enormous consequences of industry tendencies toward complacency and cost-cutting

**B**loomberg doesn't get outplayed very often. Yet an attempt to get the Bloomberg-backed Financial Instrument Global Identifier (FIGI) accredited by the International Organization for Standardization (ISO) lost by a landslide vote in early 2019, a defeat that represents more than merely an unsuccessful push to get FIGI approved as a global standard. FIGI's failure to become ISO-approved exposes the extraordinary passion and politics that surround standards, and demonstrates how firms' unquenchable thirst for cost-cutting ultimately can result in diminished political pull when it comes to market-changing decisions.

FIGI is an instrument identifier under the domain of the Object Management Group (OMG) standards consortium. Bloomberg was the FIGI's registration authority until OMG adopted it in 2014; the standard was called the Bloomberg Global Identifier (BBGID) until then. OMG, supported by Bloomberg, is leading the effort to get FIGI accredited by ISO.

In January 2019, ISO Technical Committee (TC) 68's subcommittee 8 (SC8) overwhelmingly voted down a ballot item attempting to "fast track" the FIGI's accreditation. TC 68 does not have authority over SC8, and the subcommittees' voting parties are the national standards bodies (NSBs) of about three-dozen countries. In many cases, the countries' respective national numbering agencies control the vote. The Association of National Numbering Agencies (ANNA) is the registration authority for the International Securities Identification Number (ISIN), which has been an ISO standard since 1990.

In other words, the decision to vote down the FIGI came from participants in a standards organization that issues an identifier arguably directly in competition with the FIGI.

"Sixty-five to 75% of SC8 consists of ANNA member countries," says Peter Warms, Bloomberg head of LEI and FIGI ID services. "So it's not a level playing field."

Dan Kuhnel, ANNA chairman and head of primary market relations and international fixed-income products at Euroclear, says the decision-making process is not that simple, because each ISO member country has a forum for discussing ISO standard proposals, and that is the democratic process employed when deciding on those proposals.

"It's not the ANNA members or numbering agencies that are deciding such matters in the various countries voting at the ISO level," he says. "I'm aware of cases where the numbering agency is one of the participants in the industry discussion at a national level. But, I'm also aware of many cases where

they're not a party to those discussions, because either that country doesn't have a standards group that is looking at financial standards, or they just haven't been involved in the national standards body discussions and decisions."

TC 68 chair Jim Northey is relatively new to his position, taking on the role right about the same time FIGI voting closed. However, he's a long-time advocate for industry standards and is unsurprised by the feud and fallout over the FIGI.

"The reality is that standards are just part of the competitive landscape of business," Northey says. "People try to exploit them for commercial benefit; people use them to try to restrict access. Standards will always be a battleground."

## Regulatory Demand

Identifiers aren't anything new—Bloomberg released its open symbology (BSYM) in 2009 and the ISIN has been around since 1981—but they're gaining prominence, and ISO accreditation is increasingly desirable, primarily due to regulators.

"Increasingly, globally, more and more regulatory bodies are looking for ISO standardization," says Northey, who points to strict requirements under Mifid II that reports need to use ISO standards, as opposed to less rigid rules under the original Mifid back in 2007. Northey says the Standardization Administration of the People's Republic of China (SAC) has informed exchanges that they need to use ISO standards, which are "what all countries have agreed is the primary standard everyone can agree to use," and "ISO has the authority of the countries," because the standards get vetted and accepted globally.

Spokespeople for the European Securities Markets Association (Esma) acknowledge that "the use of ISO standards in the regulatory reporting requirements developed by Esma has been a frequent choice in recent years," citing ISO's robust development process, high-quality standards, consistent implementation and the fact that in many areas, ISO standards are the only ones available and widely adopted.

"Regulators are not market practitioners," says Warms. "As such, they look to

**"I'm aware of cases where the numbering agency is one of the participants in the industry discussion at a national level. But, I'm also aware of many cases where they're not a party to those discussions, because either that country doesn't have a standards group that is looking at financial standards, or they just haven't been involved in the national standards body discussions and decisions."**

**Dan Kuhnel, ANNA**

ISO for solutions when coming up with new regulations. For example, we feel FIGI would have been a better solution with regards to Mifid II, but because it is not an ISO standard, it was not even considered."

Bloomberg has been trying to make FIGI happen as an ISO standard for three years.

"It takes a long time to create an ISO standard. Everyone knows that," Northey confirms. "So we're always looking for ways to reduce the time it takes to create a standard."

One get-accredited-quick method is a Fast Track proposal. "The Fast Track process is designed to streamline the incorporation of existing standards into ISO," Northey says. Namely, when an ISO liaison has an existing standard that is adopted and in use, they can skip over the working group process of accreditation and go straight to the ballot. OMG is an ISO liaison and submitted the FIGI via the Fast Track, resulting in the January vote.

However, preceding every election is a campaign.

## Identity Politics

OMG submitted FIGI to ISO in October 2018, opening a three-month ballot, during which countries could vote yes, no, or abstain. ISO requires technical justification for negative votes.

In November, Cusip Global Services, the US National Numbering Agency responsible for assigning US-based

ISINs, brought on Mike Atkin, strategic advisor for the EDM Council, which is also a member of OMG, as a consultant. He says FIGI was positioned inappropriately as a technical standard, through the Fast Track process, and no one at the time was communicating with the industry about the implications of FIGI becoming an ISO standard.

"My role was to talk to the US representatives at [US national standards body] Accredited Standards Committee X9 and others about the issue and what it meant and why it was important," Atkin says.

Also in November, ANNA distributed a 17-page document to its members and affiliates reportedly urging a negative vote on FIGI, complete with 28 reasons why it should not be ISO-accredited.

Both ISO and ANNA have confirmed the existence of the document, and while ISO representatives expressed a preference that it not be released, they ultimately left the decision whether to share the paper up to ANNA. The body has opted not to release the document.

"ANNA prepared and circulated a paper looking at the proposal that was sent as part of the FIGI ballot, and correcting some of the confusing elements, because the document was very technical, so adding clarity to certain elements and also identifying where certain risks arise with the proposal of having a second identification standard," says Kuhnel, who adds the information was requested by ANNA's membership. "They had looked to the ANNA board to give them some clarity in terms of what does this additional FIGI ballot mean for the industry and what are the associated risks that may arise from having two identifiers overlapping the same functionality."

ANNA managing director Emma Kalliomaki says the association's membership was confused about the Fast Track process, as well as the requirement to submit technical comments with negative votes.

"Members turn to ANNA when there is an issue that is affecting the industry, to have an understanding as to what the broader membership are thinking," Kalliomaki says. "As a mechanism to consolidate that feedback, and to assist



**Dan Kuhnel**  
ANNA



**Emma Kalliomaki**  
ANNA

the members to be able to provide a balanced discussion for consideration within their standards bodies, ANNA assisted by providing a memo to the members. But it was for the members only, it was not an externally shared document, and it was specific to their needs.”

In March 2019, Richard Beatch, a semantics and metadata architect for Bloomberg, who sits on the OMG board of directors, presented a FIGI update to OMG’s Finance Domain Task Force. He reported that “the letter was distributed in violation of both ISO rules and the rules of various national bodies,” and “the reasons [to vote against FIGI] were either false or irrelevant or non-technical.”

Kuhnel says ISO had no issue with ANNA’s document, except “there was one thing where we made a reference to how ANNA is the registration authority for ISIN. That apparently was a piece of text that should not have been included because it confused that this was ANNA writing in its ISO registration authority capacity, rather than ANNA writing to its members as an informative paper.”

Beatch’s presentation also claims Atkin acted out of bounds in his advocacy efforts, specifically citing a December email he sent to X9 board members.

“The email was sent from [Atkin’s] EDM Council email address with no disclosure that he had been hired to lobby against FIGI by interested parties. The email distribution list was provided to [Atkin] in violation of X9 policies,” the presentation reads.

Atkin calls the email from his EDM account a “clumsy” one-time error because EDM Council is neutral, but firmly denies that he violated any X9 or ISO policies.

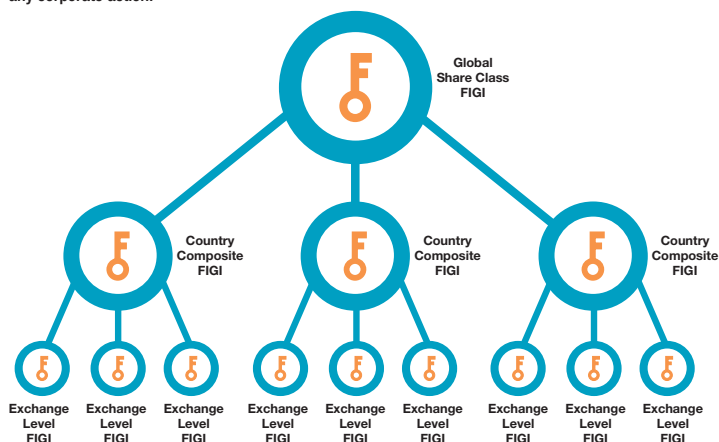
“[The SC8 vote] was up against the holidays, with a vote scheduled right after the new year, with people on X9 who for the most part were there for payment processing or security standards. Almost none of them knew about instrument identification. I got on the phone and started talking to people and realized they were voting on something they didn’t really care about or understand, and they were doing so because they were there for a different reason,” Atkin says. “My task was simply education.”



**Mike Atkin**  
EDM Council

### FIGI Allocation Hierarchy

Each FIGI is proactively allocated upon instrument creation, where possible, and never reused. The identifier remains with the instrument in perpetuity and does not change as a result of any corporate action.



Source: Bloomberg

He says OMG and Bloomberg hired legal counsel to investigate whether there were any violations, but they found none.

“I’d be careful throwing stones, OMG. We should be in this for only one reason, which is to support our industry in achieving automation and confidence in its data,” Atkin says. “I am shocked.”

His theory is that the accusations are an attempt to divert the conversation from the real issues, which are about the implications of FIGI becoming an ISO standard, and questioning why OMG and Bloomberg are determined to make that happen.

### FIGI’s Cross-Examination

Tangled among the politics is a legitimate debate over the FIGI’s merits.

Kuhnel says the SC8 vote was “overwhelmingly negative” because “the FIGI did not warrant progressing to be endorsed to be an ISO standard. The ISIN has been in existence for 35 years, remains fit for purpose and because the FIGI and the ISIN pretty much do the same thing.”

Both identifiers are 12-character alphanumeric codes intended for uniform identification of financial instruments. An ISIN uniquely identifies most types of financial instruments, including equities, debt, and derivatives and is mostly used outside of the US—whereas the US and Canada primarily use Cusip

numbers. The FIGI covers all financial instruments across all asset classes.

Kuhnel says having “a second identifier that looks exactly the same as an ISIN in existence, in parallel, would simply cause more confusion, more costs, and additional operational risks,” because the identifiers are in use for more than asset management; market participants also use them for settlement. “From a clearing system perspective, the core identifier of instruments within the Euroclear system is ISIN, so if the settlement instructions are generating ISINs, and you put in the wrong number because you’re confused which one is which, that’s going to lead to fails and additional costs. So, I’m assuming the industry saw exactly that as being a risk of having two standards doing more or less the same thing.”

However, OMG and Bloomberg argue that the two identifiers are not so similar. In 2015, Beatch filed a report with OMG’s FIGI Task Force intended to clarify how FIGI relates to other standards.

“ISIN is focused on serving as a reference for a fungible instrument at the initial issuance level, which serves a proper and needed function in and of itself. FIGI, in contrast, while capable of serving in that capacity, is focused on providing a consistent and unique data point that serves to identify financial instruments and the different contexts they exist in throughout their lifecycle,



so as to enable robust and comprehensive data management and, from that, compliance,” the report reads.

Bloomberg’s Warms says FIGI’s composition provides something that does not exist among other identifiers: “a metadata approach composed with a hierarchy that makes it superior to other existing identifier schemes.” The FIGI’s other key tenets, he says, are that it is persistent, meaning it does not change, as opposed to “other identifiers, like the ISIN, that are more composite-based,” and “most of all, the fact that the FIGI is open and free,” meaning “it doesn’t come with any legal language that curtails the marketplace from using it broadly.”

He points to Cusip as an example of an identifier that is not open.

“You have to pay to be able to get a Cusip assigned. You have to pay licensing fees to use it. That is very restrictive,” Warms says. “So when you go to send a report or anything along those lines, think of end-of-day back-office operations, communicating with different firms and settlements and things of that sort, the recipient has to have a Cusip license; otherwise they’re in violation of the Cusip agreement.”

Of course, there is a competitive advantage to becoming the identifier of choice, especially for a data vendor like Bloomberg, because an identifier can be linked to various types of data, making it more attractive to clients.

“Getting your identifier planted as a standard kind of gives people an avenue into the breadth and scope of data that you have, and it’s easier to integrate it into their systems, so it’s easier to sell it,” Atkin says. “It’s been a vendor strategy as long as I’ve been looking at the information industry.”

## Back and Forth

Despite arguably valid concerns that issuing an ISO standard would make data giant Bloomberg even more imposing, Kuhnle says, “It’s not about finances or revenue; it’s not about power or influence. It’s about keeping the capital markets working efficiently and keeping risks to a minimum.”

In other words, ANNA’s objection isn’t to the FIGI itself; it’s about putting both identifiers under the ISO umbrella,

which Kalliomaki says would mean there is “no longer a uniform and consistent way,” of deploying the identifiers. “You’ve got two different approaches to doing the same thing, and that really is a contradiction to standardization. A number of financial instrument identifiers exist today that aren’t under the ISO umbrella; however, [FIGI becoming ISO accredited would] change that dynamic by putting two identifiers that serve the same purpose under the same framework,” Kalliomaki argues.

Warms contends that “redundancy is not a reason to prevent a new standard from existing or being introduced,” and cites programming languages, entertainment systems, and Android vs. iPhone as examples of redundant products offerings that serve to strengthen competition within a market.

Northey agrees that redundancy isn’t a reason to block FIGI from ISO. The standard exists, FIGI identifies more instruments than ISIN, and a single listed stock in the current market already has up to a dozen identifiers attached to it.

“I understand that it would be nice if there were only one identifier but there’s a myriad of them, and so that’s not an argument [against the FIGI],” Northey says.

In an era when there is concern about declining competition in capital markets, there may be an argument that even if the two standards are similar, there is merit in allowing both to be eligible to become global standards and letting consumers decide whether there should be only one.

“Competition is a good thing,” Warms says, noting that ISO’s policies specifically spell out that standards should foster competition. “The financial markets are moving toward transparency and openness, and if the current anticompetitive factions continue to exist, then progress will be stifled.”

However, are the two standards in direct competition? Kalliomaki says framing the discussion as “ISIN versus FIGI” is incorrect.

“As market practitioners and experts who deal with data and standardization, it’s the bigger picture, looking at the operational disruption, potential frag-

mentation and the costs associated with that, as well as the direct economic costs that correspond with implementation and the change of infrastructure required for adapting to have another instruments identifier within the standards world. This is not personal—it is really about the market and the industry as a whole, and us looking at standardization from the angle from which it’s intended and just moving forward on that basis,” Kalliomaki says.

Taking it a step further, Atkin says that allowing FIGI to become an ISO standard would be fundamentally in opposition to the larger goal of standardizing reference data within financial services. He looks back to the early 1960s when automation hit the industry and banks teamed up with the American Bankers Association to improve operating efficiencies by developing a standard method of identifying securities, which led to the creation of the Cusip.

“That process involved all of the right players from the financial institutions who were getting together to solve a challenge that we collectively faced,” Atkin says. “That begat the entire standards process.”

He says the industry is now past the problem of multiple identifiers, but adding new global identifiers would unravel that hard work—instead, standards participants should be celebrating their victories.

“We’ve got identification resolution managed. We’re smart enough now to be extending this to over-the-counter derivatives. This is a big, important step for the industry to solve its identification problem,” Atkin says. “So, to go back and recreate the problem that we escaped from is the wrong thing to do.”

Atkin also says the TC 68 discussion about the FIGI focused on the wrong question. The industry shouldn’t be debating whether the FIGI is a competent standard; they should be asking whether it is necessary. As he puts it, what problem is the FIGI trying to solve?

“The problem is that the financial marketplace lacks a dependable, open identifier,” Warms replies. “We created the FIGI in 2010 because our customers were exhausted by the current regimes with regards to the restrictive language,



**Peter Warms**  
Bloomberg

the cost to use those identifiers and the fact that those identifiers were not perfectly created.”

Amid the ongoing debate as to whether adopting the FIGI as a global standard would represent a step forward or backward for the industry, Northey raises one important point in favor of the FIGI: Having it as an ISO standard might lead to more inclusive participation in the standards process.

### Stacked Deck

While the politics surrounding the FIGI are captivating, they also illustrate a larger problem: a lack of diversity within the groups responsible for making crucial decisions about financial industry standards.

Northey is keenly aware of this problem and is actively working to solve it, but it will be a tough obstacle to overcome because the people who are the most affected by reference data standards will naturally gravitate toward bodies that make decisions about those standards.

“We always look for a way to get the broadest audience possible, trying to bring in asset managers, people who use these standards, not just people who produce these standards. That’s an ongoing process,” Northey says, but notes that it is difficult to get standards consumers involved in the proceedings, which often involve a significant time investment and “boring” meetings. “We struggle with it. We work hard to pull in participants from all aspects.”

It’s a challenging goal, made even more daunting by decreasing employment numbers in electronic trading and relentless efforts to cut costs. Northey says many firms no longer see the value in participating in standards decisions, but even if they do, they weigh it against demands for operational cost reduction.

“It takes time for their employees to get involved in these processes. On the asset manager side, everything is about cutting costs. Are you going to let somebody participate for a couple of hours a week in standards meetings? That two hours of standards meetings are about 5% of an employee’s time, and so it’s a tougher sell in our current climate,” he says.

Of course, the rub is that if consumers don’t participate, that leaves standards decisions to the producers.

“The consumer has to take responsibility, too. If they’re not involved, the outcome may favor the producer side. There’s a responsibility on the consumer side to look out for their interests,” Northey says.

Atkin is also working to increase and diversify the market’s involvement in the standards process. Since Cusip started, he says, participants have “faded out” of standards discussions, and now the industry is standing at the next big precipice, where a common financial language about reference data is a crucial step toward knowledge graphs and straight-through processing.

“When the banks, which are the participants, fall off of the discussion and it then becomes a conversation among only a few, some of which might have their interests at heart—that’s a problem,” Atkin says. “We want the banks, the participants, the fund managers, the custodians, the securities operations professionals back into the conversation, because this is about building a standards infrastructure for our industry.”

In a market where firms take a tactical view, standards evangelists must continuously fight against the inertia of cost containment, prioritization, and time.

“It’s one of the crosses that you bear when you try to deal with an industry-wide thing that requires collaboration, versus a company thing that requires attention and focus,” Atkin says. “When you position it correctly, to the people that matter, about the value of trust and confidence in data and in the underlying infrastructure that we’re building to ensure its acceptance compared to the cost and the time and the focus, there is no comparison. But overcoming inertia is really hard.”

Although inertia is part of the pace of business, current participants in the standards process could also be more explicit about their goals and improve efforts to recruit and engage. “We don’t do a very good job of that,” he says.

### Gettin’ FIGI With It

As the people passionate about standards continue their quest to spark those

of the broader industry, OMG and Bloomberg continue their mission to have the FIGI become an ISO standard. Following the defeated vote, Northey indicates OMG remains committed to getting the standard accredited, news that is surprising to Kuhnel.

“If it were introduced again, the NSBs that have already voted on it would probably be quite confused as to why they’re having to entertain and consider this again, when they’ve already taken a decision, but let’s see what happens,” he says.

What is happening is that OMG and Bloomberg have dusted themselves off and are still swinging. The FIGI is now before ISO/IEC JTC 1, a joint technical committee that specializes in standardization in the field of information technology. Warms says one of the reasons Bloomberg decided to work with OMG on the FIGI is because OMG has put forth 11 standards in the past 10 to 15 years that are now ISO-accredited.

“We feel that the FIGI spec, as put together in conjunction with OMG, is very much a technical standard, and JTC 1 seems like the appropriate place to re-engage with ISO with an audience that is going to take it on its merit and avoid any political hurdles that exist in other processes,” he says.

When asked why FIGI wasn’t put before JTC 1 in the first place, Warms says it seems obvious in retrospect, but their initial thinking was that because the FIGI is an identifier that represents the financial industry, it should go before the technical committee in charge of financial industry standards. “But in reality, it is very much a tecchie type of standard, one that would not be appreciated by TC 68. The FIGI is going to be looked at with a better set of eyes among JTC 1,” he says.

As of press time, the FIGI was registered with JTC 1 but still waiting for the committee to initiate a ballot. “We’re watching that, seeing how it does progress but there isn’t a specific timeline at this point,” Warms says. “We are eager for it to proceed.”

Maybe Bloomberg didn’t get outplayed, after all—perhaps the data giant needed to find a friendlier playing field. **WT**



**Jim Northey**  
TC 68

# waterstechnology

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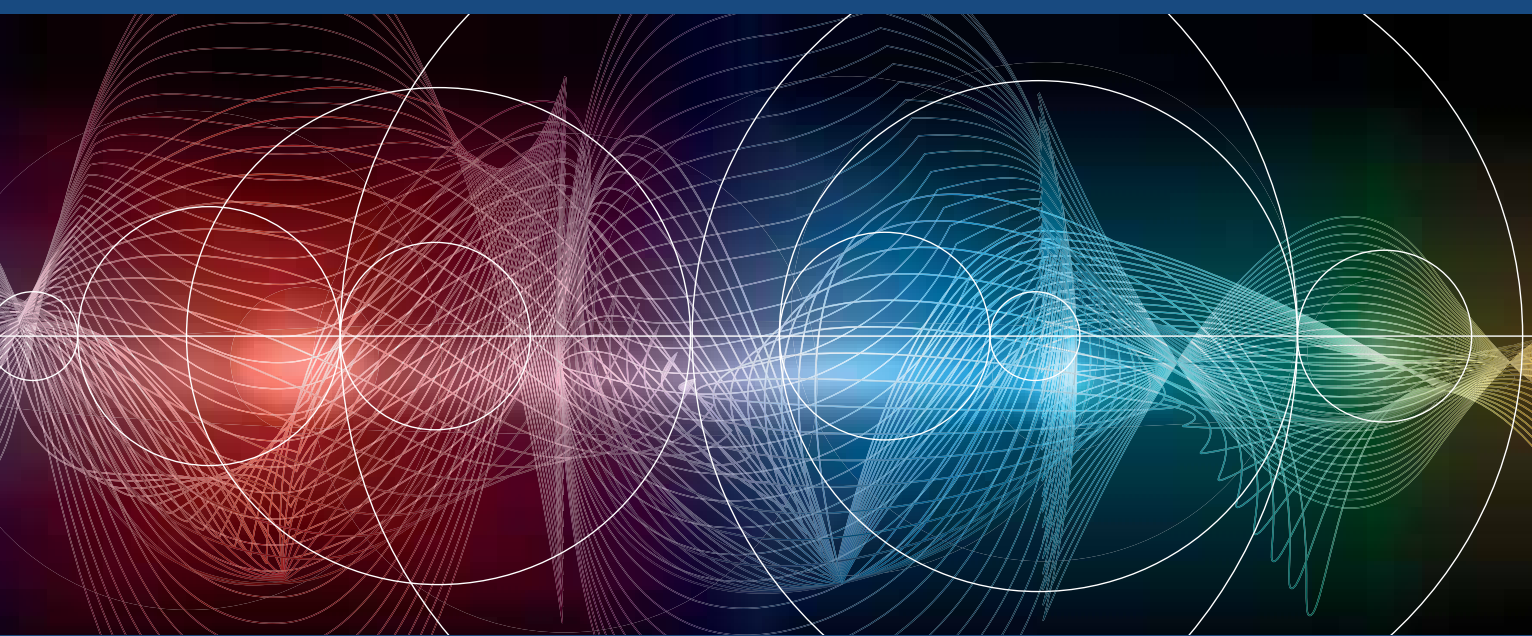
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# >> Numerix Rules the Roost

This year's Sell-Side Technology Awards saw Numerix equal the record for the most wins in a single awards by emerging on top in three categories. Not to be outdone, IHS Markit collected two more categories again this year, making it the most successful third-party technology firm in the history of *WatersTechnology's* awards programs dating back to 2007.

**N**ew York-based risk specialist Numerix was the big winner at this year's Sell-Side Technology Awards held at the Corinthia in London on the afternoon of April 12. Not only did it win two individual categories—best sell-side credit risk product and best OTC trading initiative—but it also won the final category of this year's awards, the best overall technology provider to the sell side for 2019.

IHS Markit, a perennial winner in these and the Buy-Side Technology Awards, continued to fill its trophy cabinet again this year with wins in best sell-side data management product and best use of the Agile methodology categories, while new faces in this year's winners' circle include Caplin Systems (best sell-side mobile initiative), Baton Systems (best sell-side mobile initiative), Kaizen Reporting (best

reporting platform or service for the sell side), and 3Forge (best sell-side web-based development environment).

British Army captain and adventurer Louis Rudd, who has traversed Antarctica three times, and late last year, became the second man in history to complete the 1,000-mile route across the continent solo and unaided, was on hand to present the trophies.

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

**Victor Anderson**  
Editor-in-Chief

## Winners' Circle

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## Sell-Side Technology Awards 2019

*WatersTechnology* honored the winners  
at a ceremony on April 12 in London.









## Best Data Provider to the Sell Side

# FactSet

FactSet takes the title of best data provider to the sell side at this year's Sell-Side Technology Awards from previous winner SIX, due largely to its efforts in helping clients maximize efficiency. One example of how FactSet is helping clients with new enhancements in this area is by using machine learning to develop an algorithm to identify companies vulnerable to shareholder activism. "Our sell-side clients can now more proactively advise the companies they work with about potential threats and defensive strategies," says Kristina Karnovsky, head of research at FactSet.

FactSet is focusing on enhancements that "connect the dots" between content sets and surfacing insights to its users. To achieve this, it will continue to expand its open and flexible technology.

The firm has evolved over the past 40 years, from starting as a paper report—Company FactSet—that was delivered around New York City by bicycle messengers. Today, it delivers content and analytics through web-based workstations, application programming interfaces, mobile solutions and data feeds, among others. It is keen to partner with its clients and help them with modular, flexible solutions as they move from siloed terminals and portals to multi-vendor ecosystems. "With the launch of the Open:FactSet Marketplace, our clients and prospects can discover pre-linked third-party data alongside FactSet's own data, and generate ideas using tools and cloud-based research and production environments," Karnovsky explains.

She adds that sell-side clients continue to demand high-quality and clean data, as poor data leads to lost business, missed opportunities, and wasted productivity. "As our clients invest in automating workflows and reducing the number of human hours it takes to produce work, the quality and reliability of the data that powers algorithms and processes is more critical than ever," Karnovsky says.

FactSet launched Open:FactSet Marketplace in April 2018, an online platform that provides fundamental and alternative data, and a cloud-based environment to test data. It currently features more than 40 data feeds. The company is working with data providers to review and integrate data before making it available, so that users can link the feeds to their models, systems and proprietary datasets.

In November last year, it added detailed bank regulatory financial data to its platform, providing users with access to extensive information about US public and private banks, incorporating financial data from US regulators. This allows users to analyze and compare performance on metrics, including profitability, capital adequacy, loan/deposit composition, and asset quality, among others.

Moving forward, in addition to expanding its technology, FactSet will evaluate and add new data providers to its platform, allowing clients to develop customized solutions.

—WSW



**FactSet wins this year's best data provider to the sell side category**

“

FactSet is focusing on enhancements that “connect the dots” between content sets and surfacing insights to its users. To achieve this, it will continue to expand its open and flexible technology.



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**Sell-Side Technology**  
Awards Winner 2019

Best Data Provider to the  
Sell-Side  
FactSet





## Best Distributed-Ledger Project

# Baton Systems

Baton Systems wins this year's best distributed-ledger technology (DLT) project, thanks to its Baton Systems Platform. The company has two distributed ledger-based platforms: one that clears foreign-exchange (FX) transactions and another that processes collateral.

Baton's FX clearing platform is built on a shared, permissioned ledger that sits on top of existing banking infrastructure. Since its launch in April last year, the FX platform has settled over \$10 billion in trades per day and is aiming to end the year handling between \$70 billion and \$120 billion per day. Baton partnered with NEX Optimisation and a global bank on its post-trade solution for spot FX, a project aimed at easing real-time settlement. Arjun Jayaram, Baton Systems' founder and CEO, says the platform's success comes from its unique proposition to the industry in that there is no need to replace legacy systems to access the service. "We've gone through the hype cycle and have seen that the technology has real potential," he says. "We can use distributed ledger to solve issues and there's no need to rip and replace existing technologies. We want to prove that our products work and I think we've done that. So now we're looking to expand our user base."

Jayaram adds that using distributed-ledger technology provides more efficient ways of sharing information needed for clearing and settlement, as each party already has its own golden copy of the data. This allows banks and their counterparties to automate reconciliations or exceptions checking, a far cry from the previous method of manually checking each data point.

According to Jayaram, the platform speeds up clearing and settlement to three minutes from 48 hours, and counts Citi, CME Group and the Bank of England among its clients. He says the FX platform currently settles six currencies, although Baton will be testing at least six more during the second quarter of this year and possibly expanding the number of currencies it handles to around 10.

Baton's next step is to work on a system for the International Swaps and Derivatives Association's (Isda's) Common Domain Model (CDM). CDM is intended to be a single, standard way of representing derivatives trade events digitally. Baton participated in, and won, a hackathon sponsored by Isda to host the CDM on its platform. "We're bullish about Isda's Common Domain Model as it changes the market in a big way," Jayaram says.

According to Jayaram, DLT has come so far that even though it is still evolving, the industry is starting to solve more problems using it. He says there is still a long way to go but those companies and projects with viable solutions are the ones that will grow the technology further.

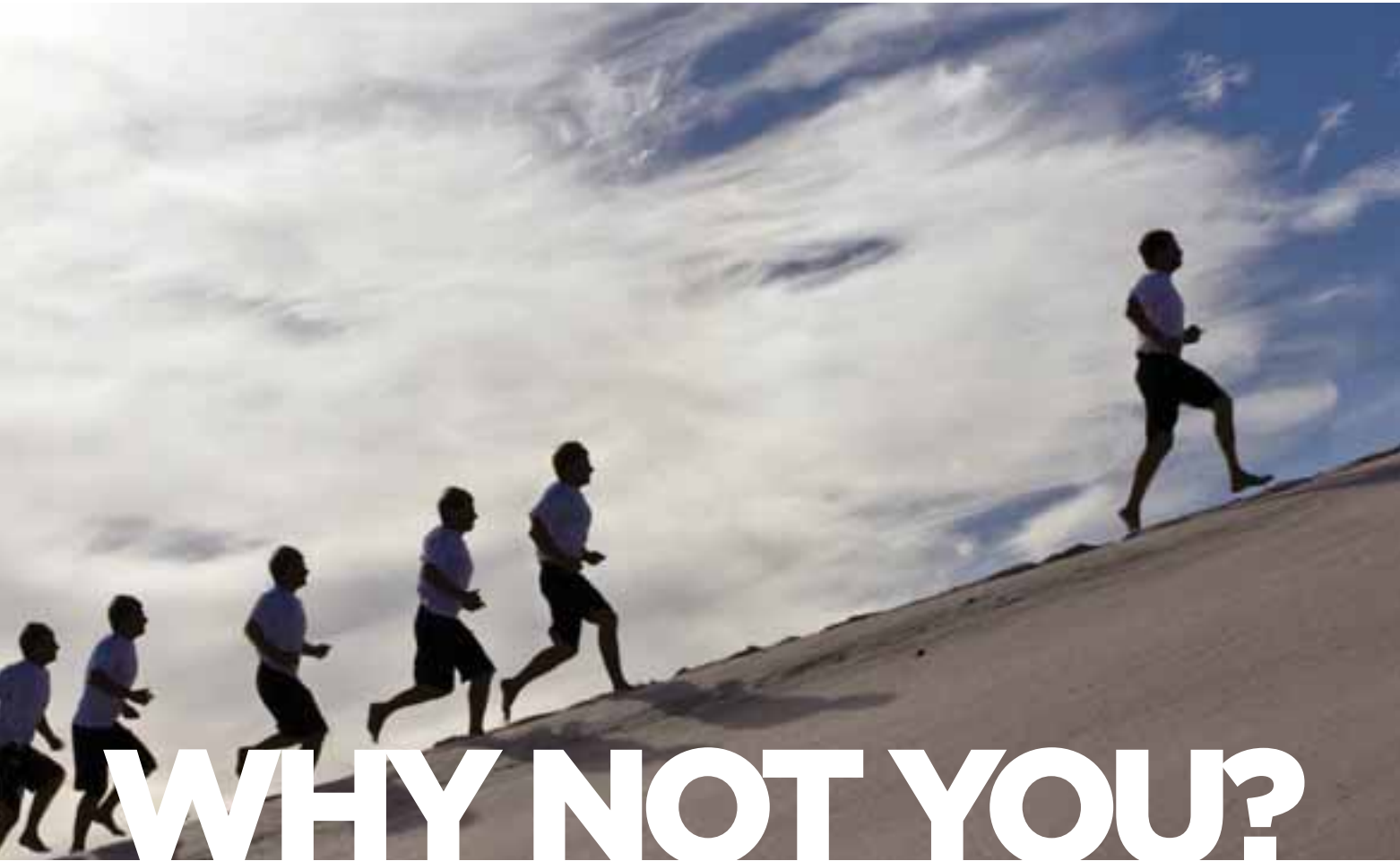
—ED



**Ed Ridgway, Louis Rudd and  
Bruce Wolf**

**The platform speeds up clearing and settlement to three minutes from 48 hours, and counts Citi, CME Group and the Bank of England among its clients.**

Major banks are reducing their FX and collateral settlements processes from 48 hours to under 3 minutes, reducing risk, liberating stranded capital and lowering their cost through Baton Systems.



# WHY NOT YOU?

Most clearing and settlements processes today use dated technologies that make them among the slowest, most capital intensive and costly within a bank. What's worse, they offer poor visibility into transaction status and increase bank risk.

Baton Systems solves these problems through its easy to deploy overlay to a banks' existing systems, synchronizing and orchestrating payments across heterogeneous intra-bank and inter-bank systems.

Our award-winning solution uses distributed ledger technology to significantly increase the speed and visibility of complex FX and collateral settlement workflows, while preserving their integrity.

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## Best Implementation at a Sell-Side Firm

# TriOptima

The psychology of markets is inherently contradictory. Markets are, after all, comprised primarily of buyers and sellers—there cannot be an exchange, a venue, or even a trade without both. Yet when it comes to managing risk, the biggest threat to both buyers and sellers isn't geopolitical or socioeconomic events, regulation or even cost, but the counterparties themselves.

Accurately measuring and containing the risks posed by each side of a trade to the other, known as counterparty risk or XVAs, has become the preeminent challenge in modern risk management. Much of the damage done during the global financial crisis of 2008, for instance, was exacerbated by the inability of firms to quantify their exposures to each other, leading to catastrophic results and the failure of a number of the industry's most famous names.

Along with mathematical modeling, modern technology has brought XVA products to previously unforeseen levels of sophistication. TriOptima's triCalculate business, which wins the category for the best implementation at a sell-side firm in this year's Sell-Side Technology Awards, is one of the leading firms in this drive, as evidenced by its recent successes. One of these, in particular, was an implementation at a major eastern European bank, which asked to remain anonymous for compliance reasons.

Part of TriOptima's success in this category was down to the methods of implementation inherent to triCalculate's design. In the past, risk management software—and in particular, computationally intensive software such as a counterparty risk calculator—was cumbersome and challenging to implement. Where triCalculate shone for the bank was its ability to deploy quickly, and with minimal impact to existing infrastructure. Its web-based graphical user interface allowed the bank to load its data and send it directly via an application programming interface to triCalculate for processing through its services. There was no hardware needed to be wheeled in and installed at the bank's server rooms. That, in an era of cloud and managed services, may not sound particularly revolutionary, but considering triCalculate's deployment across the bank's front, middle and back offices with no lock-in beyond quarterly billing, it's an impressive feat. All too often, traditional vendors have sought to lock in clients through elaborate installs that take as much work to remove as they do to implement. With its forward-thinking approach to technology, as evidenced by this implementation, triCalculate has managed an elegant fusion of a service model with modern, efficient technology.

TriCalculate's win in this category follows that of SmartStream Technologies, which was the victor in the 2018 program.

—JR



**Louis Rudd, Patrik Heimolainen  
and Navpreet Cheema**

“  
Where triCalculate shone for the bank was its ability to deploy quickly, and with minimal impact to existing infrastructure.





# Winner, Best Implementation at a Sell-Side Firm

SELL-SIDE TECHNOLOGY AWARDS 2019

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## Best Outsourcing Provider to the Sell Side

# Broadridge Financial Solutions

While the outsourcing needs of banks and brokers are changing, the winner of this category remains the same. For the fourth straight year, Broadridge Financial Solutions has been named the best outsourcing provider to the sell side in the annual SST Awards.

There is a common theme among several categories in this year's awards—firms need to improve efficiency while cutting costs. As a result—and especially since the turmoil of 2008, the ripples of which continue to be felt—banks are increasingly relying on third-party solutions providers to help them cut costs and unencumber themselves so that they can focus on their differentiators. Operations, and creating straight-through processes, are clear areas where outsourcing can help. As banks become increasingly global, traversing the regulatory maze can be complicated and costly. To help customers manage this change, Broadridge has invested in disruptive technologies, such as machine learning, robotic-process automation, and distributed ledgers, which now underpin various aspects of its reconciliations capabilities. “Broadridge has an enterprise-class reconciliations managed service solution that wraps our in-depth operations expertise around our enterprise-class reconciliation engine,” says Michael Alexander, president of Broadridge Wealth and Capital Market Solutions. “Reconciliations have long been one of the primary functions to be outsourced industry-wide, but the biggest reason firms come to Broadridge is for our unique capability of handling higher-complexity tasks that go beyond identification and dissemination of exceptions and delve into active investigation and resolution that requires a combination of operations experience and insight, and technology solution expertise in order to meaningfully impact reconciliations.”

In 2016, the company began developing use-cases around machine-learning techniques, starting with trade allocations that consumed unstructured allocations using another form of AI: natural-language processing (NLP). More than 100 associates across the organization have been formally trained in the use of AI services, and that number is growing rapidly, according to Alexander. With the foundation laid, the company plans to spend the next 12 to 18 months developing three components of its AI approach. First, for processes that cannot be fully automated through RPA, it will look to apply NLP, computer vision, optical character recognition and deep learning to build applications that can be automated end-to-end. “We are also developing an AI vision dashboard that enables monitoring of all digital labor/AI activities,” Alexander says.

The second component will look at utilizing machine learning to leverage the company's vast data volumes to develop production-ready applications, while the third piece entails collaborating with clients to create innovative and targeted solutions to help alleviate the sell side's pain points.

—WSW



**Louis Rudd and  
Matthew Pountain**

“  
Broadridge has invested in disruptive technologies, such as machine learning, robotic-process automation, and distributed ledgers, which now underpin various aspects of its reconciliations capabilities.

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**Michael Alexander**  
Capital Markets





## Best Sell-Side Analytics Product

# Imagine Software

Forget all banks being tech companies. Every sell-side firm, from the most significant corporate and investment bank through to the smallest agency broker—or at least, every firm worth its salt—is, in reality, a data company. The cliché is that data is the new oil, but that's not true—it's the lifeblood of any sell-side firm (not to mention the buy side).

However, data alone is worth nothing unless a firm can adequately process and analyze it in a meaningful way. For any activity involving data, whether it's for customer relations or trade reporting, everyone needs analytics. Moreover, it's not just enough to be able to process the vast amounts of information that firms take in each day—they also need to be able to do it at speed, and crucially, at scale.

Enter Imagine Software, which wins this year's Sell-Side Technology Award in the analytics category for its Real-Time Risk and Compliance (RRC) product. The key to RRC's success isn't that it can handle large volumes of data—any engine that holds a reasonable position in this market can do that. Instead, it's how it chooses to present relevant information. RRC identifies accounts, for instance, that are close to breaching their profit and loss thresholds, reaching the limits of stress-tests or are deemed worthy of alerting by approaching historical value-at-risk levels, rather than merely presenting the numbers of potentially thousands of accounts.

What goes on in the background, too, is as impressive as what the end-user sees: RRC covers all asset classes, but doesn't suffer from gaining breadth at the expense of depth. Its risk engine, the company says, includes models for virtually the entire universe of tradable securities, including terms for millions of securities and historical data for back-testing. Also, it takes the idiosyncrasies of each product type into account so that it won't handle composite instruments such as exchange-traded funds in the same way as an equity or a derivative.

One of the more compelling aspects of RRC, however, is in the user-scripting platform, which allows clients to implement their analytical views of information according to their needs or policies on how to manage client risk. The custom work can be as simple as a particular view of an individual dataset through to a Monte Carlo simulation utilizing time-series data for dozens of securities.

This year is the first that Imagine Software has won in this category, taking the gong from the 2018 winner, TriOptima.

—JR



Lance Smith

“Data and analytics have a symbiotic relationship: Clean data is essential for meaningful calculations, and robust analytics are crucial for interpreting data, especially in today's accelerated environment.” **Lance Smith, CEO and founder, Imagine Software**

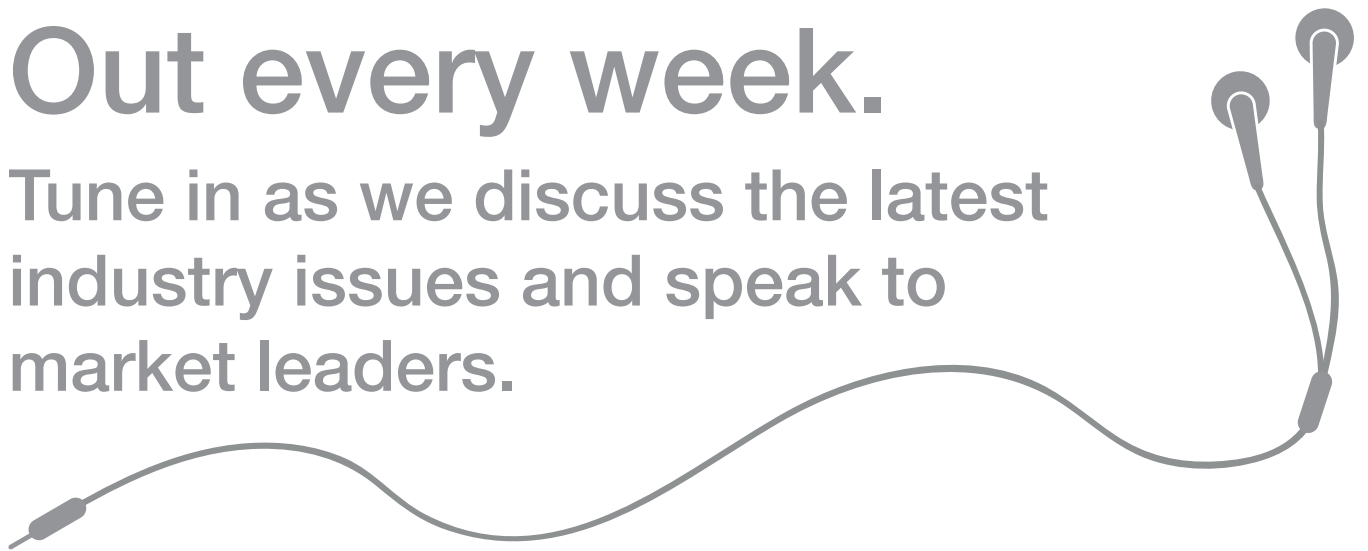
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## Best Sell-Side Compliance Product

### SIX

The best compliance products not only offer high-quality performance, but are constantly updated to meet new regulations and market requirements. This certainly holds true for SIX, winner of this year's best sell-side compliance product category for its Sanctions Securities Monitoring Service.

Oliver Bodmer, senior product manager at SIX, says there are some 30 million financial instruments and 200 million companies in the world, of which some 70,000 are publicly listed. "When we talk to our clients, they have huge sanctions teams in place," says Bodmer. "They have about 30 people who are doing this manually, and they always do it on a case-by-case basis. We don't do it that way—we look at the global universe, and for this you need to have adequate technology in place to do so," he says.

The technology behind this massive undertaking is innovative and highly sophisticated. Bodmer talks about matching people to companies using Levenshtein algorithms that have been optimized to process large volumes of information automatically. The matching process is automated, with data sources mapped on an in-house-built system. SIX has to react quickly when it comes to identifying relevant financial instruments, whenever new sanctions are introduced and more companies are added to the list.

While technologies like machine learning are important, Bodmer says SIX also needs to employ people with foreign-language skills like Russian, Chinese and Arabic. Each team tracks the regulators they are assigned to and eventually the results are merged. In a week, SIX monitors close to 25,000 movements, which might entail a new instrument or change in ownership. "Once you are a sanctioned individual and you own or control companies, you try to get rid of your majority investments into these companies by ceding your ownership to relatives," Bodmer explains.

SIX began monitoring sanctions back in 2014 when Russia invaded Ukraine. At the time, sanctions had been issued by the US, the EU, Switzerland, Australia and Canada against certain named entities. In 2016, the firm shifted its focus away from a targeted approach centered on Russia and started to follow different regulators. Today it tracks sanctioned files from nine different regulators.

SIX has close to 50 clients, located mainly in the US and Europe. It is currently also carrying out negotiations in Japan with plans to expand its services further. "We are looking at adding the Netherlands to our service, because now with the whole Brexit discussion we can see that many companies that have been based in the UK are moving their headquarters to the Netherlands," he says. "So they have an interest in tracking specific additional sanctions once they move."

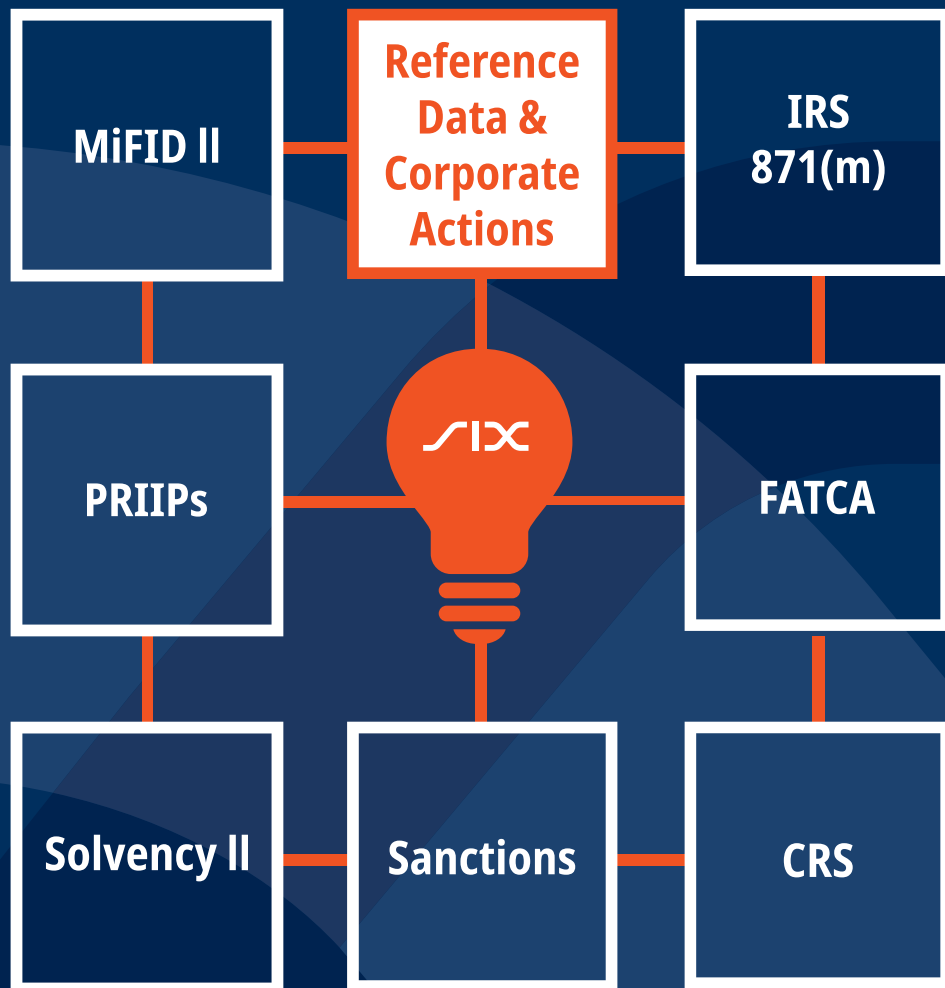
—HA



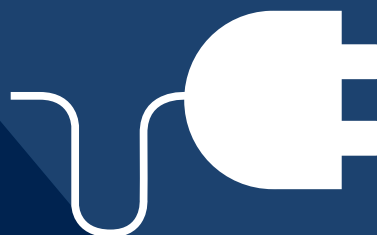
**Haider Mannan, Tamsin Hobley,  
Louis Rudd and Frédéric Messein**

SIX has to react quickly when it comes to identifying relevant financial instruments whenever new sanctions are introduced and more companies are added to the list.





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## Best Sell-Side Data Management Product

# IHS Markit

An effective data management system is crucial to the livelihood of all sell-side firms. It sits at the heart of every business function, and impacts all corners of the business. Today, data transformation projects are one of the top priorities across all major institutional banks. IHS Markit has positioned itself as the dominant player in this space for the best part of a decade by consistently building out the functionality of its Enterprise Data Management (EDM) platform. It therefore comes as no surprise that it has once again emerged as the winner of the best sell-side data management product category at this year's Sell-Side Technology Awards, its fourth consecutive win in this perennially competitive category.

Markit EDM acquires, validates and distributes data to and from all corners of the business—including trade, operations, risk, finance, and customer data. It operates on a single version of the truth, enabling full control and visibility of data lineage, and allows for detailed monitoring and auditing to help simplify regulatory reporting requirements. According to IHS Markit, the firm is working toward building out an end-to-end data ecosystem, focusing on four components: data management, data warehousing, data delivery, and data governance. It is also developing a proprietary data dictionary to provide internal data definitions and visualization for end-users and third-party dictionaries in order to support new application programming interfaces (APIs) and other data-related technologies.

Over the last year, IHS Markit has rolled out new data visualization tools to enable clients to more easily monitor and optimize their data consumption. Viewable through customizable dashboards and interactive visuals, sell-side firms can more easily audit usage and manage the costs of outsourcing data to third-party providers. "It's about specializing in operational data in a way that business users can quickly get to the root of the problem and resolve it," explains Andrew Eisen, senior vice president and global head of enterprise data management at IHS Markit. "It's where you can see the history and the relationships between the data and get to the root of the issue quickly," he says.

The vendor is focusing on building out solutions for sell-side use-cases such as independent price verification and product control. For each implementation, applications and workflows can be specifically customized to the needs of sell-side clients. EDM can be deployed through IHS Markit's managed service, available on the Amazon Web Services cloud (see page 73).

Over the next year or so, IHS Markit intends to enhance the platform's user interface and provide users with a more interactive experience. Another core focus for the firm over the coming months is to improve and accelerate its implementation process and deployment capabilities.

—JG



**Devendra Bhudia, Louis Rudd  
and Roger Donovan**

IHS Markit has positioned itself as the dominant player in this space for the best part of a decade by consistently building out the functionality of its EDM platform.

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## Best Sell-Side Front-Office Platform

# Bloomberg

At the first two Sell-Side Technology Awards, it was Bloomberg that got the nod in this category. Then Fidessa took the next three editions and Pragma Securities won it last year. This year, Bloomberg is back on top, thanks to its integrated data, communications, trading, risk and analytics platform, comprising its Trade Order Management Solutions (TOMS) and Multi-Asset Risk System (MARS).

Bloomberg is currently undergoing a period of significant change. In April, *WatersTechnology* reported that the data and technology giant intends to exit two key lines of business in the coming months: its Sell-Side Execution and Order Management Solutions (SSEOMS) unit and its know-your-customer business, which includes Entity Exchange and Entity Intelligence. SSEOMS is the firm's equities-focused sell-side trading platform, although in TOMS it has a robust multi-asset sell-side trading platform. More than 450 firms around the globe use Bloomberg's suite of sell-side solutions, so consolidation makes sense.

Mark Flatman, global head of sell-side and electronic trading solutions at Bloomberg, says post-crisis regulations such as Fundamental Review of the Trading Book, the revised Markets in Financial Instruments Directive and various new rules handed down by the Financial Industry Regulatory Authority require firms to improve risk governance and oversight on front-office desks. As a result, banks have had to rethink their technology stacks and incorporate integrated workflows across the firm. "It has become obvious that in an increasingly competitive environment, where banks still have significant challenges with balance sheets and capital requirements, your technology stack can be a differentiator," Flatman says. "By integrating our order management system, TOMS, with our multi-asset risk solution, MARS, we have been able to support our clients in a constantly evolving market. Clients can reduce the number of systems and connections they need, while accessing a fast, real-time, intuitive risk [management] and market-making workflow solution at their fingertips."

The platform offers real-time risk calculations and also helps match buyers and sellers automatically in such a way that the sell side's balance sheet does not need to be unduly impacted. Jose Ribas, global head of risk and pricing solutions at Bloomberg, says firms are also increasingly looking to consolidate their systems across desks to lower their total cost of ownership. "Front-office trading desks can use our consolidated system for pre-trade idea-generation, pricing and structuring to trade capture, and to monitor intra-day and end-of-day risk, all within the same system," he says.

So, for example, Bloomberg's pricing, scenario analysis, Greeks, margin, and value-at-risk engines are integrated workflows that deliver calculation consistency across all solutions and provide application programming interfaces that clients can use to query results or feed their back-office needs.

—WSW



This year, Bloomberg is back on top, thanks to its integrated data, communications, trading, risk and analytics platform featuring its Trade Order Management Solutions (TOMS) and Multi-Asset Risk System (MARS).

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**Sell-Side Technology**  
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Best Sell-Side Front-Office Platform  
Bloomberg

# Bloomberg



## Best Sell-Side Market Surveillance Product

# Nasdaq

The market surveillance technology field is a crowded one, with at least 15 major contenders vying for a piece of the lucrative pie, according to recent research from Chartis. Yet one firm has consistently emerged at the top of this field throughout the history of the Sell-Side Technology Awards, winning the category every year since 2014—Nasdaq, with its Smarts Trade Surveillance platform.

Used by over 150 firms, including buy-side and sell-side trading outfits, regulators and marketplaces, Smarts has established itself as the preeminent surveillance platform within the capital markets. Its range covers traditional asset classes such as equities, currencies, futures, options, and commodities, but this year it will expand further into over-the-counter derivatives, with exotics coverage planned for the second half of 2019. Virtual currencies—currently part of its foreign exchange module—will get their own standalone module in the near future, too.

But where Smarts really shines isn't in how many different instruments it covers or the number of markets it connects to—more than 180 at last count—but rather in its nuanced use of emerging technologies.

The coming year will see Nasdaq branch out from some of the more tentative steps in artificial intelligence and data analysis it has taken in recent years, most notably through the use of behavioral science to detect market abuse, and machine learning to more effectively categorize alerts into a more proactive form of market surveillance. This isn't just marketing talk—the modules in development are designed to move Smarts from being a pure-play surveillance technology through to a more general, compliance-driven platform.

“With some of our prototypes, we have been stepping even further outside of our comfort zone in pure trade surveillance, looking at the whole space monolithically and trying to help disrupt it, and really drive it forward with new ways of working,” says Valerie Bannert-Thurner, global head of risk and surveillance solutions at Nasdaq.

The strategy for Smarts to accomplish this is multifaceted and includes developments around how it handles case-building functionality into suspicious activity reports, through to its use of cognitive technology to better link together disparate data. “What we see is that the different compliance and financial crimes silos are converging,” Bannert-Thurner says. “We want to be ahead of that game. From a detection perspective, but then also from an investigations perspective, we want to be the platform that our customers use to bring those data points together.”

—JR



**Rida Jawad, Louis Rudd  
and Jeremy Leivers**

Used by over 150 firms, including buy-side and sell-side trading outfits, regulators and marketplaces, Smarts has established itself as the preeminent surveillance platform within the capital markets.

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## Best Sell-Side Middle-Office Platform

# UnaVista, London Stock Exchange Group

Middle-office functions have been dealt significant challenges over the last few years, particularly with the implementation of the revised Markets in Financial Instruments Directive (Mifid II) in January 2018. Global sell-side firms are having to consistently adjust to regulatory changes across multiple jurisdictions—a mammoth task with a considerable price tag. London Stock Exchange Group's (LSEG's) UnaVista platform has positioned itself as a one-stop shop for automating regulatory reporting obligations and easing this compliance burden. Recently, it has taken significant strides in providing value-added reporting metrics, peer-to-peer analytics and improved user customization. As a result of those efforts, UnaVista wins the category for the best sell-side middle-office platform at the 2019 Sell-Side Technology Awards.

UnaVista not only simplifies compliance processes, but enables firms to analyze their reporting data and create customizable dashboards that include real-time updates on trends. Using anonymized data, the platform offers peer-to-peer analytics, helping sell-side firms to compare their performance, prioritize resolutions, and remain one step ahead of their competitors. “We sit on a lot of data being a regulatory reporting platform and there is value and insight in that data, both from a regulatory reporting and compliance perspective, but also from a business perspective,” explains Tom Wiecezorek, managing director, global product management, at UnaVista.

The platform is built with user-friendly capabilities and is applicable to various workflows. Users can benefit from “import and export in any format” functionality, configurable user permissions and adaptable rules engine, and matching and validation rules. It includes features such as a Microsoft Excel-like user interface, customization, built-in audit trail, compliance workflows combined with LSEG's security, and maintenance services.

Wiecezorek says the regulatory conversation has been dominated by Mifid II reporting over the last 12 to 18 months, with UnaVista helping clients through that process. The firm has also recently launched functionality to support RTS 23, where trading venues are required to report reference data relevant to tradable instruments that are admitted to be traded. The platform also provides support for Finfrag, the Swiss equivalent of Mifid II. Over the next year, UnaVista is gearing up to become a registered trade repository for the Securities Financing Transactions Regulation (SFTR), set to go live in the second quarter of 2020. “Testing for SFTR will take place this summer and as the regulators are starting to provide a finalized version of the regulations and the technical standards, we are building out the entire system and working with partners to make sure that we have an ecosystem that is ready for the go-live date,” adds Wiecezorek.

—JG



**Natasha van Abbé, Louis Rudd  
and Katie Lewis**

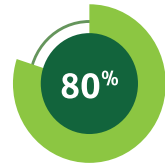
UnaVista not only simplifies compliance processes, but enables firms to analyze their reporting data and create customizable dashboards that include real-time updates on trends.

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## Best Sell-Side Newcomer (Vendor or Product)

# RIMES Technologies

New York-based RIMES Technologies is a regular name in the annual Buy-Side Technology Awards, having dominated the best data provider category for more than a decade. But it's a fresh face in these awards, thanks to its RIMES RegFocus BMR Control (BMRC) offering, initially rolled out to help asset managers comply with the EU's Benchmarks Regulation (BMR), introduced in January 2018. According to the European Securities and Markets Authority, responsible for enforcing the regulation, BMR is designed to ensure the "accuracy and integrity of benchmarks." And while it might not set pulses racing, it is nonetheless important for both sides of the industry, especially firms based in Europe or those servicing European clients.

BMRC is a cloud-based inventory management system designed to help firms understand the various indices and benchmarks they use, generating alerts when they are at risk of non-compliance. Crucially, it helps them understand whether they are benchmark administrators, contributors or users, and if so, which benchmarks are involved. "The uptake has been unsurprisingly equal on both sides [of the industry]," says Alessandro Ferrari, RIMES' chief marketing officer. "Although our initial expectation and marketing focus was on the buy side, with RegFocus BMR we now have as many customers on the sell side."

Given that BMR is an EU-focused regulation, one might assume that firms based outside the Eurozone are not touched by its tenets, and therefore have little interest in its regulatory impact. Not so, according to Ferrari: "BMR could, in theory, apply to all asset managers, owners or servicers, depending on where they do business," he says. "If a non-Eurozone firm operates within the EU through a branch or subsidiary, its EU activity will be subject to BMR. Equally, they will be subject to the regulation if they administer benchmarks used by regulated entities within the EU."

Regulatory compliance is a complex area for firms to navigate, especially when it comes to establishing what exactly they are required to comply with and what that might mean practically. According to Ferrari, the sell side faces arguably more acute challenges than the buy side in terms of identifying its use of benchmarks under BMR. "Whereas asset managers probably have a clear idea of whether they are measuring the performance of a fund by using a published index, it may be more difficult for banks to identify all activities across a wider range of business units that involve issuance of financial instruments that reference a benchmark or the use of benchmarks to determine the amounts payable in financial instruments or other financial contracts they are a party to," he says.

By winning this category, RIMES joins OpenDoor Securities (2018), IHS Markit (2017), AcadiaSoft (2016) and Symphony (2015) in the winners' circle.

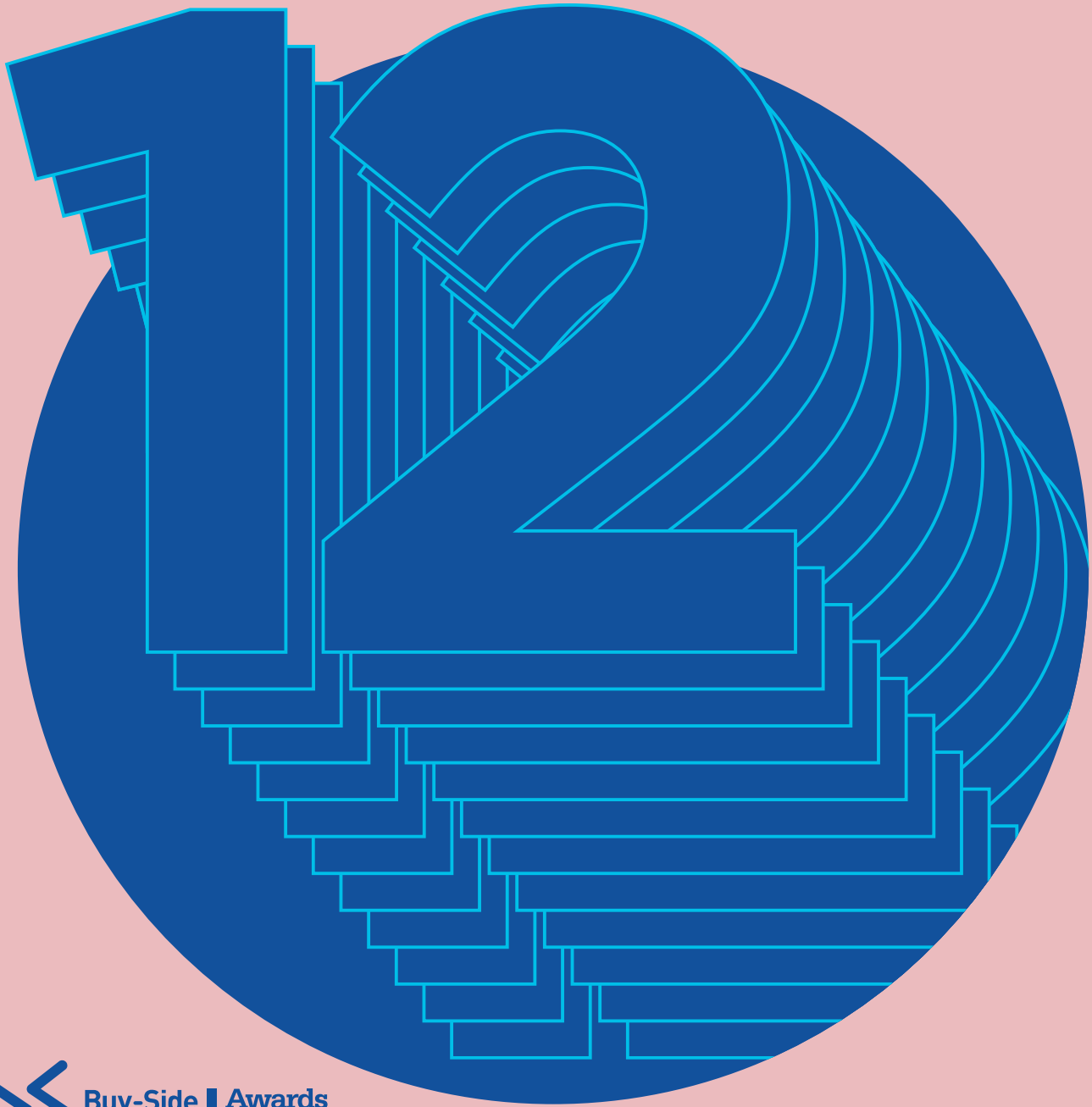
—VBA



Neil Kelly, Gianluca Mazzone,  
Louis Rudd and Jeroen Schippers

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BMRC is a cloud-based inventory management system designed to help firms understand the various indices and benchmarks they use, generating alerts when they are at risk of non-compliance.

RIMES has been voted  
**Best Data Provider to the Buy-side**  
for the 12<sup>th</sup> year in a row



 **Buy-Side Technology** | Awards 2018  
waterstechnology

Best data provider to  
the buy-side  
**Winner 2007 – 2018**  
RIMES Technologies

12 YEARS  
OF SUCCESS

Find out why at [rimes.com/winner](http://rimes.com/winner)

 **RIMES**  
rimes.com





## Best Sell-Side Reconciliation Platform

# Duco

Duco is no stranger to the winners' circle in *WatersTechnology's* various awards. By winning the reconciliation category in this year's Sell-Side Technology Awards, the London-based data engineering specialist has pulled off a "double-double": back-to-back wins in the Sell-Side Technology Awards and Buy-Side Technology Awards, underlining its cross-industry reach and versatility.

When it comes to reconciliations, one of the key obstacles facing capital markets firms' automation efforts is weaning themselves off Microsoft Excel. According to Christian Nentwich, CEO of Duco, the firm's platform is not only easier to operate than Excel, but it is also more auditable. "That is why we have seen the switch," he says. "We have good stats—our clients tell us it is 85% quicker to reconcile on Duco than to try to reconcile on Excel, and that is great from a time-savings perspective, but additionally, the risk rating around these controls is just as important, as well as decreasing the risk rating in the order reports."

Nentwich explains that most of the industry thinks reconciliations are all about handling cash and trades, adding that Duco sees it as a data integrity and quality issue that can be solved on the same platform.

Among Duco's clients are 14 of the world's top 30 banks, one of which is Societe Generale, which entered a partnership with Duco last year. "They have really adopted our transformational model of empowering the end-user," Nentwich says. "Within the first few months, they set up hundreds of reconciliations, which was very nice to see. We still have a lot of work to do with them to cover the entire enterprise, which is going to take a while, but it has been a very encouraging start."

Duco's platform is cloud-based, so there is no installation or hardware, meaning that clients can be live in 24 hours. When it comes to cloud technology, Nentwich says he has seen a marked shift in attitudes in the US and the UK, but change has been more modest in Europe. "In some European countries, it is still a complete no-go," he says, attributing Europe's inertia to cultural attitudes toward data privacy, where there are long-held concerns about sensitive information falling into the wrong hands. "One step we are taking is we are moving to container technologies," he says. "We are moving to Docker and Kubernetes, and what these technologies do is make us cloud-independent. That means we will be able to offer many more hosting options to people, including on their internal or hybrid cloud. So this is a big topic for us this year."

—HA



“When it comes to reconciliations, one of the key obstacles facing capital markets firms' automation efforts is weaning themselves off Microsoft Excel. Duco's platform is not only easier to operate than Excel, but it is also more auditable.”

# DUCO

# GAME CHANGER

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## **BEST SELL-SIDE RECONCILIATION PLATFORM**

Waters Technology  
2019 Awards



## **BEST BUY-SIDE RECONCILIATION PLATFORM**

Waters Technology  
2017 & 2018 Awards

Duco is changing the game as to how financial firms approach their most challenging data quality issues offering the only modern, enterprise-grade alternative to costly and inefficient legacy reconciliation systems. Our self-service technology allows operations professionals to build and manage reconciliation processes from scratch - without any sort of infrastructure project. Clients are live within 24 hours with tangible business results in the first week and ROI within the first 30 days.

**Modernizing your business operations?  
Learn how Duco can help at [du.co](https://duco.com)**



## Best Swap Execution Facility (SEF)

# Tradeweb Markets

For the average person on the street, the first time they would likely have heard of Tradeweb was during its blockbuster April IPO. That listing, the second-largest of the year to date, raised \$1.1 billion for the New York-headquartered firm, valuing it at around \$6 billion.

Followers of the Sell-Side Technology Awards, however, will be intimately familiar with the fixed-income specialist, particularly its swap execution facility (SEF), TW SEF. The derivatives trading platform has, after all, won the best SEF gong at these awards every year that this category has been a part of the program.

TW SEF, which facilitates trading in both rates and credit swaps on a dealer-to-client basis, has handled more than \$54 trillion worth of trades in the former—\$18.5 trillion of which flowed through the SEF's pipes in 2018 alone. Indeed, TW SEF is the largest such venue for the trading of vanilla rate swaps, with a 38% market share in the highly competitive field, according to data from Clarus FT. Average daily volumes in 2018 hit \$90 billion for rates and \$5.7 billion for credit.

Outside of rates, the SEF is also one of the leaders for trading in credit default swap indices, with a combined market share for CDX and iTraxx of 14% in 2018. The firm has expanded the platform's reach with connections into the Intercontinental Exchange's clearinghouse and LCH for US indices.

While SEFs generally handle instruments that are made available to trade, per US regulations, TW SEF has also gone one step beyond that by offering products that are not explicitly mandated to trade electronically. Around \$40 billion in swaptions were executed on TW SEF in 2018, for instance, following their launch in October 2017.

It's developments like this that continue to set TW SEF apart from other market players, particularly outside of pure trading where the SEF sees enhanced efficiencies in netting, thanks to direct connectivity with Eurex Clearing and LCH ClearConnect. While SEFs may have had a slow start after their introduction and may face an uncertain future—outgoing US Commodity Futures Trading Commission chair J Christopher Giancarlo, for instance, has long been a vocal proponent of reforming rules that govern SEF operation, among other areas, which his successor might take on—Tradeweb's success has demonstrated at least one benefit: Workflows designed from the start with electronic trading in mind, as one Tradeweb insider says, show that the frustrations and complications arising from regulation can be offset by efficiencies gained from properly designed workflows.

—JR



**Tradeweb wins the best swap execution facility category**

“

TW SEF, which facilitates trading in both rates and credit swaps on a dealer-to-client basis, has handled more than \$54 trillion worth of trades in the former—\$18.5 trillion of which flowed through the SEF's pipes in 2018 alone.





# BEST SEF

# FIVE YEARS RUNNING

Tradeweb is delighted to have our Swap Execution Facility, **TW SEF**, awarded Best SEF for the fifth year in a row!

Our success comes from working collaboratively with our clients and is reflected in our growing market share and through the innovations we continue to bring to the fixed income and derivatives marketplace.

We're proud to see our offering grow into a leading SEF and look forward to the road ahead.

[tradeweb.com/TWSEF](https://tradeweb.com/TWSEF)



**Sell-Side Technology**  
Awards Winner 2019

Best Swap Execution  
Facility (SEF)  
Tradeweb Markets





## Best Sell-Side Back-Office Platform

# SmartStream Technologies

Sell-side firms are increasingly required to conduct more reconciliations in order to satisfy existing and incoming regulations. This is while they are also dealing with more complex data types. SmartStream Technologies is the second winner of the best sell-side back-office platform category since it was introduced last year, with Murex being the inaugural winner.

SmartStream is making headway in helping sell-side firms become more efficient and develop better risk controls, while reducing overheads with its reconciliation platform, TLM Reconciliations Premium. “Certainly, most of the challenges that people face now are down to the complexity of the market,” explains Jonathan Perrett, director of managed services at SmartStream. “Long gone are the days where you have a transaction-based reconciliation platform where you’d do one-to-one matching. The world has moved on and the way people conduct business has moved on as well,” he says.

Perrett explains that the complexity of the market has changed, so much so that SmartStream is now looking at reconciling digital payments, in addition to multiple currencies, utilizing one-to-many and many-to-many models. The mode of the information coming into its systems is changing too. “It’s not just one flat file that comes in, or a Swift file,” Perrett says. “We have to be in a position to process all of that data in all of those different formats.”

The vendor has launched the latest version—the third major release—of TLM Reconciliations Premium, and the upgrades include a more flexible self-service user experience, comprehensive trend analysis for match-rate optimization and exception reduction, as well as model choices for each reconciliation. Its matching engine and exception management capabilities help ensure that any failed transactions are escalated, repaired and returned to the process flow. Other features include financial proofing and data analytics capabilities.

In terms of new technologies, SmartStream has employed a team of data scientists based in its Innovation Lab in Vienna, which it set up in 2018, working on artificial intelligence (AI) opportunities across all its systems with its clients. “We’ve cast our net wide in order to maximize the offering that AI gives us and the opportunities that can rise from that, but we have to be very careful that any AI we implement doesn’t impact the controls that either we have in place or our clients have in place,” Perrett says. “AI can be a very powerful tool, and if it’s handled correctly, it will advance the market immensely, but if we don’t have those controls around it, it’s not going to.”

—WSW



**Nathan Gee, Louis Rudd  
and Jonathan Perrett**

SmartStream is making headway in helping sell-side firms become more efficient and develop better risk controls, while reducing overheads with its reconciliation platform, TLM Reconciliations Premium.

## Winners' Circle: SmartStream Technologies

# SmartStream's Cross-Industry Appeal

SmartStream Technologies follows up its success in last year's Buy-Side Technology Awards by winning the best sell-side back-office platform in this year's Sell-Side Technology Awards. Victor Anderson chats to Vincent Kilcoyne, executive vice president of product management at SmartStream, about the firm's ongoing success across both sides of the industry, the key services that comprise SmartStream's back-office suite, and the technologies that have emerged from the firm's Innovation Lab in Vienna.

**Q** SmartStream has repeated its success in the best back-office platform category in last year's Buy-Side Technology Awards by winning the corresponding category in this year's Sell-Side Technology Awards. To what do you attribute this cross-industry success?

**Vincent Kilcoyne, executive vice president, product management, SmartStream Technologies:** The cross-industry success is, I think, down to the ease-of-application of SmartStream's technology to a diverse set of problems. On the sell side, the challenge is extreme volume, stemming from increased automation from APIs and open banking. In addition, financial institutions are having to deal with traditional and non-traditional data types. Firms face peer behavioral issues and disruptive behaviors, and they must find margin in volume, too. Where the buy side is concerned, there is a massive technology challenge. Organizations require more control and fewer errors, as well as needing to achieve greater consistency and transparency.

The SmartStream solution suite delivers control, accuracy, consistency and transparency. It tackles the technology and volume problems faced by both sides of the industry.

SmartStream has several decades of market experience and our products are running at 70 of the world's top financial institutions. Years of working closely with our global client base has provided SmartStream with a great deal of operational and technological understanding, allowing us to support clients equally effectively, whether they are on the sell side or the buy side.

**Q** What are the technologies/services that comprise SmartStream's back-office suite, and what is currently most in demand from a sell-side perspective?

**Kilcoyne:** SmartStream has grown from being a reconciliations provider, extending coverage across the back office to provide a range of solutions and services, which assist financial institutions to achieve optimal operational outcomes and to lower total cost of technology ownership. Uptake in the cloud and managed services are currently areas of particularly strong emphasis for SmartStream.

SmartStream works closely with customers, as well as with the financial industry more broadly, to understand the sector's needs. At the top of the sell side's wish list is the ability to run on an open, lower-cost platform, with a rich user experience.

**Q** The SmartStream Innovation Lab in Vienna was unveiled about a year ago. What technologies have emerged from the Lab over the last year, and to what extent have they been folded into existing SmartStream offerings?

**Kilcoyne:** The Innovation Lab is made up of a highly skilled, dynamic team of mathematicians, applied-data scientists and computer scientists. Over the last year, the Lab has been collaborating with a number of financial institutions, working with our banking partners to understand how technologies such as artificial intelligence (AI) and blockchain apply to them. AI is being folded into almost all of SmartStream's solutions. We're currently building AI modules for cash management and reconciliations purposes, as well as working on the use of blockchain in relation to our corporate actions and collateral management products. Announcements should, hopefully, follow later this year. On that note, we are also looking forward to welcoming visitors at Sibos this year, where we will be unveiling our latest developments in this area.



Vincent Kilcoyne

**Q** What new technologies or services is SmartStream prepping for release that *WatersTechnology's* readers should know about?

**Kilcoyne:** An important focus for us at present, and one that is likely to be of interest to *WatersTechnology's* readers, is the delivery of a new user experience across all of SmartStream's solutions. The redesigned UI, which deploys HTML 5 screens, has a fresh look—data is presented clearly so that our solutions are straightforward to work with and misconceptions do not arise. By standardizing the front-end of its solutions, SmartStream aims to lower the total cost of ownership for clients, too.

As I mentioned, uptake through the cloud is an area of particular emphasis for SmartStream, and the fact that our solutions can be tapped into via the cloud is something I'd really like to draw readers' attention to. The "plug and play" aspect means that SmartStream technology can now be accessed with greater ease and speed, creating a cost-effective route to adoption. It also makes our products an attractive choice for smaller organizations and enables them to take advantage of solutions that have been tried and tested by some of the world's largest financial institutions. [wt](http://waterstechnology.com)



## Best Sell-Side OTC Trading Initiative

# Numerix

While Numerix's win in the best sell-side credit risk product category (see page 69) in this year's awards was expected, given its hat-trick of wins from 2016 to 2018, the New York-based risk specialist's win in the OTC trading initiative category is something of a turn up for the books. By winning this award, Numerix unseats FIS, winner of the category in 2017 and 2018. Numerix's consistent success in these awards—in addition to multiple wins in the Buy-Side Technology Awards, the Waters Rankings and the American Financial Technology Awards—is largely down to a single product: Numerix Oneview, comprising a growing number of modules, one of which is Oneview for Trading, responsible for delivering the win in this category.

Jim Jockle, chief marketing officer and senior vice president of global marketing and corporate at Numerix, explains that while the firm is best known for its XVA measures, it has moved into new areas of the sell side where it is supporting a variety of use-cases, even though the heart of the platform remains unchanged. "Because our clients were utilizing our analytics in many different ways, there were many different entry points and use-cases for us to enter into the market," Jockle explains. "The first area was XVA, but as we moved into the trading space, we're still utilizing that same core underlying architecture. So we have clients using the trading module, we have clients using the XVA module, and we've also introduced Oneview for Margin and Oneview for Asset Management. The key is the interoperability between the modules."

According to Satyam Kancharla, chief strategy officer and senior vice president of Numerix's Client Solutions Group, the structured products and OTC markets are currently undergoing significant change with respect to the automation of historically manually intensive functions, much in the same way that the equities and foreign exchange (FX) markets have for the best part of the past two decades. This change is in turn driving demand for Oneview for Trading. "What we're seeing is a huge increase in sales-to-trading automation in the structured products and OTC space," Kancharla says. "We've seen that for equities and FX in the past, but now we're seeing that happening in structured notes and derivatives, and that involves request-for-quote automation on both the price taker and price maker sides."

Kancharla explains that this increase in automation requires Numerix to produce significantly more analytics for users, although the upside is that it also yields substantially more data about what is going on in the market. "All this automation allows you to gather additional data and then put machine learning and additional artificial-intelligence techniques on top of it, which is very exciting," he says.

—VBA



**Per Tennobo, Louis Rudd  
and Rahul Karkun**

“While the firm is best known for its XVA measures, it has moved into new areas of the sell side where it is supporting a variety of use-cases, even though the heart of the platform remains unchanged.”

## Best Sell-Side Credit Risk Product

# Numerix

Numerix, the New York-based risk management specialist, follows up last year's success in this category by winning it again, thanks to its flagship risk offering, Oneview, initially unveiled back in March 2016. The word "domination" best describes the firm's track record in this category—unquestionably one of the most keenly contested of all 29 individual categories on offer, given the maturity of the credit risk market and the numbers of entries this category attracts every year in these awards—with four wins on the bounce. Add to those its multiple successes in the Buy-Side Technology Awards, the Waters Rankings and the American Financial Technology Awards—not to mention its win in this year's best OTC trading initiative category (*see page 68*)—and a picture quickly emerges of a technology firm with deep domain knowledge, a focus on addressing its buy-side and sell-side clients' needs, and a fastidious market that rewards outstanding service and functionality.

According to Numerix, what differentiates it from other vendors vying for a lucrative piece of the credit risk pie, are its "mathematical, methodological and technical innovations" designed specifically to underpin front-office functions, most notably its hedging analytics, its dependency graphs for dynamic pricing, its adjoint algorithmic differentiation methodologies, its use of GPUs to support Monte Carlo simulations, and its support around the generation of XVA sensitivities.

Satyam Kancharla, chief strategy officer and senior vice president of Numerix's Client Solutions Group, explains that Oneview incorporates the firm's libraries, its models and its analytics, and was designed specifically to be used across multiple asset classes. "The asset-class coverage and the breadth and depth of Oneview are strong differentiators for us," Kancharla says. "It's arguably the broadest and the deepest in the industry in terms of what we cover, but also in terms of the depth of analytics so that users are actually producing analytics that can be used in decision support, particularly in a trading context."

When it comes to Oneview's underlying technology, Kancharla explains that modularity, flexibility (in terms of configurations), and Numerix's microservices strategy resonate with its sell-side clients in what is an unforgiving market. "As we know, any bank technology ecosystem is complex and so it's really important to be able to co-exist with other elements within banks' ecosystems," Kancharla explains, adding that at times, Oneview is required to sit alongside proprietary platforms developed by banks over the years, emphasizing its flexibility. "The pace of change in analytics and our ability to deliver an upgrade [with minimal disruption and decreasing timeframes] are also strong differentiators," he says.

—VBA



**Louis Rudd, Benedetta Bartoli  
and Obaid Dehlavi**

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Oneview incorporates the firm's libraries, its models and its analytics, and was designed specifically to be used across multiple asset classes.





## Best Sell-Side Market Risk Product

# Murex

Murex wins the category for the best sell-side market risk product in this year's SST Awards, thanks to its MX.3 platform, taking the crown from last year's winner, RiskVal Financial Solutions. MX.3 focuses on preparations for the upcoming Fundamental Review of the Trading Book (FRTB) regulation, which will require trading firms and banks to reassess their risk holdings. The platform helps firms perform risk calculations on an intraday basis and went live last year, even though FRTB's implementation date is not until 2022. Bruno Castor, head of market risk at Murex, says the company has worked closely with clients to determine the best solutions to meet FRTB's requirements. "We've invested heavily for a few years now in order to help our clients comply with the regulation, monitor and manage their risks accordingly, and we are just in the middle of it," Castor says. "FRTB is a journey we are traveling with our clients."

Even though the platform has only been in the market for a short time, Castor says Murex has already added important updates, particularly the newest texts around FRTB released in January this year that inform how calculations are made. He notes that, despite the long lead time for FRTB, MX.3 will still be able to handle any new implementations of FRTB for each jurisdiction, because of built-in, flexible configurations within the platform. He says there are core components in the calculations related to risk, and those are baked into the platform, but because market risk constantly evolves, MX.3 needs to respond quickly to changes in risk calculations. This flexibility is important in the event that FRTB requirements change.

Murex is not waiting long to add more functionality to the platform. It is already working on updating some configurations around statistics.

FRTB has long been on the drawing board and implementations of the technology to comply with its tenets have been complex, so Murex has had to wade through many of the challenges associated with large projects with its clients. New processes like complex calculations occurring in the middle of the day as opposed to the end of the day, more granular risk buckets, and larger sets of analysis to parse through are among the challenges facing the industry. According to Castor, another challenge that Murex and MX.3 are helping to address is digital transformation. "If we look at the bigger picture, be it for regulatory projects, digital transformation or IT infrastructure modernization, banks are working on transformation and convergence IT programs, or have plans for those, where FRTB is one of the drivers. We developed our platform so that our clients are better prepared for all those challenges," he says.

—ED



**Louis Rudd and  
Alison Burns**

**The platform helps firms perform risk calculations on an intraday basis and went live last year even though FRTB's implementation date is not until 2022.**

## Best Alliance or Partnership

# QuantHouse and ARQA Technologies

The winner of the best alliance or partnership category in this year's Sell-Side Technology awards goes to QuantHouse and ARQA Technologies, on the back of the two firms marrying their trading platforms and order management system (OMS). The partnership, initially announced in June 2018, is available as a fully managed service in Europe, providing clients with access to more than 150 equity and derivatives markets. Roman Anokhin, director at ARQA, says the solution allows clients to use a complex product without needing to invest time and money in its implementation and set up of the connectivity. "The combination of rich functionality and [the] benefits of managed services gives clients access to better technology in a scalable way, and at a fraction of the cost of traditional architectures," he says.

Through the partnership, QuantHouse feeds ARQA's QUIK OMS with normalized, global market data, while at the same time, QUIK OMS is hosted at QuantHouse's datacenter in London. This allows clients to use QUIK OMS as a service and simplifies connectivity to exchanges and execution brokers that are members of QuantHouse's application programming interface (API) ecosystem. As the solution is fully managed, QuantHouse and ARQA maintain the platform, leaving clients to focus on value-generating activities. While both companies have a background and expertise in the implementation of complex projects involving market data and trading software, Anokhin says launching an integrated datacenter required mutual effort.

Stephane Leroy, business co-founder and chief revenue officer at QuantHouse, says the partnership with ARQA has allowed QuantHouse to develop its technology to better cater to the needs of sell-side institutions, due to their shared expertise. "This market niche also has great opportunities for further growth," Leroy says. "It meets the complex needs of clients, allowing them to save their own resources, while connecting to a ready-made ecosystem. We see it as a real win-win between our companies and a very valuable offering for our clients, who can take advantage of economies of scale, a simplified onboarding and implementation process, faster project completion, and access to over 150 market data feeds," he adds. Moving forward, Anokhin says ARQA is constantly updating QUIK OMS to satisfy clients' functionality requirements, internal business analyses, and regulatory changes. Meanwhile, Leroy says QuantHouse is continuing to onboard new providers to its API ecosystem, which means that clients will have access to not only equities and derivatives market data and execution capabilities, but also to a pool of foreign-exchange and fixed-income trading venues.

—WSW



**Louis Rudd, Roman Anokhin and  
Román Martínez de Aragón Grande**

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The partnership, initially announced in June 2018, is available as a fully managed service in Europe, providing clients with access to more than 150 equity and derivatives markets.



## Best Artificial Intelligence Technology

# Digital Reasoning

Few technologies this century have captured the imagination of so many technologists within the capital markets as artificial intelligence (AI). Thanks to a fertile combination of data, storage, and computing power, AI has emerged from its long winter and spread into nearly all areas of the capital markets, across the front, middle and back offices.

While many vendors can claim AI capability—some of them dubiously—few have the bona fides of firms like Digital Reasoning. The Franklin, Tenn.-headquartered firm had its start in 2000, quickly winning defense contracts with the US Army, and in 2010, funding from the Central Intelligence Agency.

It wasn't until around 2012, however, that Digital Reasoning entered into finance with a bang, signing up names such as Point72 and UBS. AI has, for the most part, found much of its early success within surveillance functions, owing to the vast volume of data that needs to be processed and analyzed, and in this regard, Digital Reasoning is no different—it wins this year's Sell-Side Technology Award primarily for its Conduct Surveillance platform.

At the heart of Conduct Surveillance are two means by which it accomplishes its task—language-process automation and human behavioral insights. It allows the primary task of data ingestion and analysis to be combined with an individual focus on specific employees, ensuring that personal details that are often so important to monitoring and policing potential fraud don't disappear in noisy information flows. The types of conduct monitored by self-managed AI modules also stretch across a range of behaviors, from typical anti-money laundering and bribery alerts through to outside business activities and offers of employment.

The proof is also in the numbers—an independent estimate by Forrester reckons that false positive alerts are at least halved in examined firms, resulting in what the company claims is a four-times increase in analyst efficiency at one client, where a workload of alerts that would typically take a month to process was managed in a week. Also, according to Digital Reasoning, a recent benchmarking test in which Conduct Surveillance handled 90,000 emails found 14 emails that could potentially generate suspicious activity reports and precede a case. Other vendors in the same test found four.

The acuity of the product is perhaps best demonstrated by the names of those that have invested in Digital Reasoning, including (but not limited to) BNP Paribas, Macquarie, Barclays, UBS, Credit Suisse, Goldman Sachs and Nasdaq, another pioneer in AI-based surveillance and winner of the best market surveillance category on page 56, which has long worked with the firm. Digital Reasoning has now won this award three times in a row, every year since it has been on offer.

—JR



**Louis Rudd and  
John Holland**

“

A recent benchmarking test in which Conduct Surveillance handled 90,000 emails found 14 emails that could potentially generate suspicious activity reports and precede a case. Other vendors in the same test found four.

## Best Cloud Provider to the Sell Side

# Amazon Web Services

Of all the transformative technologies currently available to capital markets firms, irrespective of whether they hail from the sell side, the buy side, or somewhere in between, cloud holds arguably the greatest promise. It is therefore unsurprising that the world's largest technology firms—Amazon, Microsoft, Google, IBM and Oracle—dominate what has become an intensely competitive and lucrative market, especially when it comes to the financial services industry. Amazon Web Services (AWS) wins this year's cloud provider category, thanks to its ubiquitous AWS Cloud platform, a suite of cloud-based services that include compute, storage, database, analytics, networking, mobile, developer and management, internet of things, security and enterprise applications. The platform currently spans 61 availability zones across 20 geographic regions, although AWS plans to extend that by adding 12 additional zones and four regions: Bahrain, Cape Town, Hong Kong and Milan.

Capital markets firms typically look to AWS for high-performance grid computing, data analytics, digital transformation, security and compliance, disaster recovery, artificial intelligence and machine learning support. Recent client wins include Barclays, HSBC, National Australia Bank and Sumitomo Mitsui Trust Bank (SMTB). In Europe, HSBC's UK Open Banking platform is live in production on AWS, as is Santander's digital bank, Openbank, while at the 2018 AWS New York Summit, the Depository Trust & Clearing Corp. detailed its use of AWS to run more than 20 workloads in a regulated environment, including its Trade Information Warehouse project. Additionally, Bloomberg's Market Data Feed (B-Pipe) service and Refinitiv's Elektron platform are available on AWS, while Broadridge Financial Solutions, winner of the best outsourcing provider category (see page 46) is collaborating with AWS to accelerate its digital innovation and efficiency.

A key theme for AWS and its financial services strategy is providing its customers with agility, according to Scott Mullins, head of worldwide financial services business development at AWS. "If you look at fintech startups, they are able to push new product offerings and services to production in a much faster way than incumbent firms—anywhere from a handful of days to a week," he says. "In the past, that might have taken an established firm a quarter or two [quarters], or even a year, to bring something innovative to market. So agility is something we talk to customers about a lot—the ability to use technology and new tools to bring agility to the business, whether you're a fintech startup or one of the largest banks, broker-dealers, or market centers in the world. It's about letting developers build those ideas and get them in front of customers as quickly as possible."

By winning this award, AWS has ended BT's domination of this category in recent years, which had won it for the past four years straight.

—VBA

“

The platform currently spans 61 availability zones across 20 geographic regions, although AWS plans to extend that by adding 12 additional zones and four regions: Bahrain, Cape Town, Hong Kong and Milan.





## Best Infrastructure Provider to the Sell-Side

# IPC Systems

This year's winner of the best infrastructure provider to the sell side category is Jersey City-based IPC Systems, thanks to its flagship trading communications platform, Unigy, initially introduced in 2011. Since then, IPC has consistently grown the functionality and coverage of the platform. One of its stand-out features is allowing traders to communicate with multiple counterparties simultaneously. "We have up to 34 simultaneous active calls that can be presented to a trader at any one point in time," explains Bruce Bolcer, director of product management at IPC.

A key challenge with designing such platforms for traders is the speed of communication with counterparties. "The turret itself allows you to be at the dedicated line that trading companies connect to for their counterparties," Bolcer says. "Our turret system provides them with a user interface to access those lines quickly. So, rather than making a phone call to a counterparty, I can press a button on my turret and I am instantly connected to them. I can transact business with them and be done. So the set-up time and the communication to execute the trade can be done very quickly."

A key technology that IPC has introduced in recent years is the transition to its IQ/Max Touch turret, allowing traders to customize their applications so that they appear similar to how they would on a tablet. "Everything prior to that was around fixing buttons to certain places," Bolcer explains. "Now, with a touchscreen-based device, users can customize the screens they are working with on their devices and pick from a set of roughly five different telephony applications and how they view them on their touch-base endpoints," he says.

Another area where IPC is making a significant investment is in the tools required to operate managed systems. These are add-on services it delivers on top of its standard maintenance arrangements. One of the firm's more interesting developments is the alliance it established with GreenKey Technologies in February 2018, an initiative that won the best partnership or alliance category at the 2018 American Financial Technology Awards. "Our partnership with GreenKey addresses compliance-related applications and the desire to convert all the audio that occurs on our end-points into data," Bolcer explains. "We use back-end data analytics like they use in their digital trading systems on their PCs to do analytics, surveillance and other compliance applications as if it was any other type of data, like an instant-messaging screen or an electronic trading system."

—HA



**Louis Rudd, Pierre Dupuch  
and Paul Langston**

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One of Unigy's stand-out features is allowing traders to communicate with multiple counterparties simultaneously.

## Best Reporting Platform or Service for the Sell Side

# Kaizen Reporting

Regulatory compliance and reporting accuracy are high on sell-side firms' agendas. Investment banks are having to compile and submit large numbers of reports to meet the requirements of multiple global regulations, including the revised Markets in Financial Instruments Directive (Mifid II), which took effect in January 2018. As regulators become increasingly more demanding when it comes to the quality of reporting and control frameworks, Kaizen Reporting has sought to ease the compliance burden on sell-side firms through the development of ReportShield, its suite of regulatory reporting technologies and services. The London-based provider has garnered significant attention through its Accuracy Testing module, part of ReportShield, winning the best reporting platform or service category at this year's Sell-Side Technology Awards.

The Accuracy Testing tool enables clients to automatically assess the quality of their reports, test their reports' accuracy and identify compliance errors or shortcomings at the source. It provides full visibility of test coverage, alerts, traceability of flagged issues, and delivers granular metrics on reporting quality across the organization. It enables firms to generate a consistent view of reporting activities from all parts of the business and allows them to drill down and analyze detected errors to help prevent regulatory repercussions or costly remediation. It also supports a wide range of global regulations, including Mifid II, the European Market Infrastructure Regulation, and Dodd-Frank in the US. "ReportShield covers multiple jurisdictions and can conduct what we call universal testing," says Dario Crispini, founder and CEO of Kaizen Reporting. "We test all activity in all ways possible; the idea is that the senior executive team can take comfort from the results as a way of seeing what their problems are and that they don't have any other problems lurking in the cupboard."

Crispini explains that the introduction of Mifid II has heightened the complexity of regulatory reporting, whereby firms can submit valid reports but still fall short of their obligations to their respective regulators. Kaizen Reporting has therefore developed the tool using a mathematical model to support the necessary scope for testing reporting accuracy. Additionally, ReportShield offers clients end-to-end reconciliations, reference data testing, a control framework, and training to help with the regulatory implementations.

Over the next 12 months and beyond, Kaizen Reporting aims to continue building out its suite of regulatory reporting technologies and services. It is looking to further ease the burden on the sell side by providing enhanced transparency and assisting clients with their daily requirements such as queries or access to real-time information.

—JG



**Louis Rudd and  
Simon Macpherson**

**Kaizen Reporting has sought to ease the compliance burden on sell-side firms through the development of ReportShield, its suite of regulatory reporting technologies and services.**



## Best Automated Trading Platform

# FlexTrade Systems

Once again, FlexTrade wins the best automated trading platform at the SST Awards, for the third year in succession. FlexTRADER, the firm's integrated, multi-asset execution management system (EMS) and order management system (OMS), allows users to execute orders either by way of algorithms or manually. Clients can trade through multiple execution venues as well as set asset-trading strategies, customized according to their preferences. It allows them to create proprietary algorithms if they wish, although the EMS also provides access to broker-developed algorithms. FlexTRADER includes pre-trade, real-time, post-trade and predictive analytics and optimized portfolio trade scheduling, while the EMS provides control over multiple portfolios comprising several sub accounts. On the OMS side, FlexTRADER offers risk and position monitoring, audit capabilities, and streamlined compliance reporting, market-making, and principal trading functionality.

Even with all the functionality already embedded within FlexTRADER, FlexTrade is still keen to improve its flagship offering. Jamie Benincasa, senior vice president at FlexTrade, says that one key enhancement to the platform in the past few years is an "algo wheel" that allows users to further customize trading algorithms. "There has not been a pitch we've done in the past year that didn't include the algo wheel—every client wants to see it," Benincasa says.

The algo wheel allows clients to customize routes per stock, according to Benincasa. Along with the algo wheel, FlexTrade has also built out its analysis, allowing users to see how algorithms are performing and to adjust them accordingly. Within the algo dashboard, traders can refine routing decisions in real time, a crucial function, particularly for passive traders as they can choose to place trades in dark pools if there is a potential shortfall on an algorithmic route, according to Benincasa.

Benincasa adds that FlexTRADER's multi-asset class support has become even more important to users in the past few years as firms continue to consolidate desks and require traders to do more. "Desks are getting smaller and having a multi-asset class platform really helps clients deal with that," he says. "Banks are cutting desks, but are asking their traders to do more."

According to Benincasa, three years ago, FlexTrade typically signed clients to trade just a single asset class, but since then, clients have signed for two to three additional asset classes. He adds that the financial services industry has long been talking about adopting multi-asset class strategies, but that move has only recently taken hold as institutions seek to reduce costs.

Looking to the future, Benincasa says FlexTrade aims to add more functions sought by delta one traders, although he does not specify the functionality or when it might be released.

—ED



**Lak Loi, Louis Rudd  
and Vahid Shirani**

FlexTRADER includes pre-trade, real-time, post-trade and predictive analytics and optimized portfolio trade scheduling, while the EMS provides control over multiple portfolios comprising several sub accounts.

## Best Sell-Side Mobile Initiative

# Caplin Systems

In last year's Sell-Side Technology Awards, this category was won by Copenhagen-based Saxo Bank for its mobile trading platform. This year, however, it is London-based Caplin Systems in the winners' circle, thanks to the implementation of its mobile multi-asset investment platform at Siam Commercial Bank Securities (SCBS). According to John Ashworth, CEO of Caplin, there were a number of challenges associated with the project. "The bank already had quite a sophisticated retail app doing simple things like current account management and straightforward payments," he says. "It had its own very strict brand identity. The first challenge was to make sure that this new sophisticated application was consistent with that and maintained the same sort of standards and positive impressions in the market."

Ashworth says there are significant benefits to be gained from people physically being on-site during rollouts. At any given point during the SCBS project, Caplin had between five and 10 staff members on the ground in Bangkok. But he also concedes that some classic mistakes were made. Conference calls weren't always easy to organize, he says, and the cultural differences were similarly challenging. "As we have gone through this process, twin factors of distance and culture reminded us of the importance of rigor around checking on requirements and design approval with senior management," he says.

On the technology front, the bank relied on legacy systems to handle its traditional bonds and funds businesses. To Ashworth, establishing inter-application connectivity and linking them to a mobile application that provides a professional level of experience to a retail-type user is an exciting software challenge. Caplin plans to add equities and derivatives support in the coming months.

Half of Caplin's business is around working with customers in the foreign-exchange markets. It currently has projects in disparate locations, including Scandinavia, South Africa, Singapore and the US. He says that in the capital markets, in addition to the sophisticated retail sector, there are still concerns about using mobile versions of trading applications. According to Ashworth, mobile was traditionally used in the capital markets primarily for administrative processes. So, for example, mobile applications would reduce the number of sales people confirming order notifications, settlement dates, or amending orders with clients. "Most of the early mobile use-cases were in marketing and administrative savings," he says. "Now, we are at a point where those barriers are definitely coming down and we are seeing a lot more widespread adoption."

—HA



**Caplin Systems wins this year's  
best mobile initiative category**

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This year, it is London-based Caplin Systems in the winners' circle, thanks to the implementation of its mobile multi-asset investment platform at Siam Commercial Bank Securities.





## Best Sell-Side Trading Communication System

# Cloud9 Technologies

After losing out on this award last year, Cloud9 Technologies wins this year's best sell-side trading communication system category. Cloud9 was last in the winners' circle in 2017, but it was IPC that won this category last year.

Cloud9's C9 Trader system uses the cloud to deliver voice communications and voice trading through a single platform. This past year, the firm introduced an application programming interface to put out metadata and enhanced its telephony system. It also added a point-to-point intercom system deployed via the cloud.

Brian Hunt, chief administrative officer of Cloud9, says the company is positioning itself to be a data provider for analytics firms with its access to high-quality voice recordings. "This is an exciting year for Cloud9: The first time we won, we introduced these concepts of streamlining workflows and leveraging the cloud, and now people are starting to see them in practice, and that's exciting," Hunt says. "Two areas where Cloud9 provides value is the generation of metadata and high-quality audio. Our ability to capture and provide this level of accurate voice data to analytics producers greatly increases the accuracy and value of their end-product."

Hunt adds that Cloud9 offers a transcription service for its commodities clients, but also offers its voice data to third-party providers, as analytics is not its core business. Analytics firms can take Cloud9's voice data and other metadata to parse for insights. Hunt says Cloud9, like most voice communications firms, relies on a community of users to bring more value to the service, and since its launch has been steadily growing this community.

This year, Cloud9 plans to expand its features and increase its customer base. One possible new option for C9 Trader is the addition of a hoot feature and intercom for the ability to broadcast audio. Cloud9 is also looking into integrating its workflow with other telephony or trading systems so that clients do not have to work with multiple desktops. Hunt notes that integrating with other systems like Cisco or Polycom takes time.

While Cloud9 is busy expanding its features and customer base, Hunt points out that voice trading will always have a place in the industry, although the way it's delivered and used is likely to change. "I think voice trading may be shrinking, but that number will bottom out because you can't have machines trading with machines. Voice communication remains critical as people go to the phones when trades are large or complex as well as when markets are volatile. Additionally, even though voice may not always be how trades are executed, very often voice is part of the trade work-up," he says.

—ED

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Cloud9's C9 Trader system uses the cloud to deliver voice communications and voice trading through a single platform. This past year, the firm introduced an API to put out metadata and enhanced its telephony system. It also added a point-to-point intercom system deployed via the cloud.

## Best Sell-Side Trading Network

# Refinitiv

Connectivity networks function as the veins of the capital markets. They are a crucial component to the industry, especially as marketplaces become increasingly complex with the growing diversification of asset classes, trading venues and institutional participants across global jurisdictions. Refinitiv has long been a leading contender in helping firms to tackle the problems around connectivity and bridging the gap between the sell side and the buy side, particularly through the development of its Autex Trade Route (ATR), a FIX-based order-routing network. Refinitiv wins this year's award for the best sell-side trading network at the Sell-Side Technology Awards, reflecting its recent efforts to improve latency and enhance its connectivity capabilities.

ATR supports equities, futures, options, foreign-exchange and fixed-income orders, and offers millisecond-level connectivity to sell-side firms, boasting one of the largest communities of traders across the capital markets. It provides clients with enhanced visibility and admin controls, including the ability to manage connectivity, in addition to real-time service alerts and order flow metrics. Autex is part of a wider suite of trading technologies provided by Refinitiv for sell-side firms, including its REDI execution management system, a variety of post-trade tools and a community network.

Michael Chin, managing director and co-head of trading at Refinitiv, explains that the firm is consistently developing the platform to build out its intelligence capabilities, including a rules-based layer of functionality for automating order routing for lower-level trades. Over the last 12 months, Refinitiv has built in additional risk controls, reduced latency and added internalization capabilities to enable clients to self-match trades. For the year ahead, it is looking to continue updating and building out the technology suite; it aims to deliver more advanced analytics and risk metrics that leverage its market data resources. This will enable sell-side clients to gain real-time performance analytics to underpin their trading decisions. "Our focus is to deliver more value to our clients that are part of this trading ecosystem, and we want to provide better analytics about the performance of their trades in relation to the market and to their counterparties," Chin explains. "Today, our clients not only want analytics on top of the trades they are doing, but the trades that they are thinking about doing."

Refinitiv is currently working with external partners to develop these new capabilities. The first delivery of the latest post-trade analytics offering is scheduled for the third quarter of this year and the firm is expected to roll out a full front-to-back offering by mid-2020.

—JG

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**ATR supports equities, futures, options, FX and fixed-income orders, and offers millisecond-level connectivity to sell-side firms, boasting one of the largest communities of traders across the capital markets.**



## Best Sell-Side Web-Based Development Environment

### 3Forge

3Forge wins this year's best sell-side web-based development environment category in the SST Awards, taking over the title from last year's winner, Pershing. The New York-based firm's win is down to its AMI dashboard builder, a platform designed to maintain data and graphics in a single location so that users have all the information they need for trading or analytics purposes. AMI combines data to support real-time analytics for greater visibility and control by consolidating firms' front-end information. Clients typically use the platform to build out analytics dashboards or to keep track of various kinds of data. One reference use-case entails a global bank using AMI to support its equities trading functions and to detect anomalies through automated alerts. It needed a single location where its users could identify anomalies, and any slowdown in execution or order fills.

The AMI dashboard builder allows users to arrange tables, charts and forms in order to create workflows and customized desktop environments. It uses drag-and-drop functionality, allowing clients to build their own workflows with minimal fuss, even for more complex forms, while its in-browser desktop supports various layouts, including nested windows, dialogs and tabs. It also offers hierarchical configurations for style elements so that users can establish a standard look if needed.

Users can add tailored components, allowing forms to closely mimic their own corporate style. AMI has a SQL engine, while the scripting language is accessible from the browser for code auto-completion, highlighting and visual feedback so that charts, forms, and data can easily be debugged. Dashboards can be published to either internal or public clouds for easy access.

According to 3Forge, the visualizations on the AMI platform have tables that can handle over 100 million cells of real-time data and charts, with more 25 million points, so that users can access highly granular information. The visualization components are context-aware so that when users scroll or zoom into a graphic, only data within that part is rendered. It also enables fast auto-completion for text searches. AMI's data modeler can connect to third-party databases, web services and application programming interfaces, and graphs clearly show how the data flows from various data sources.

3Forge says the AMI technology is compatible with a variety of browsers, and data on the platform can be downloaded and exported to multiple formats including Microsoft Excel. As users might want to work in different windows at the same time, AMI also offers multi-window interaction.

—ED



**AMI provides custom drag-and-drop form-building functionality so that users can add tailored components, allowing forms to closely mimic their own corporate style.**

## Best Smart Order Routing Product/Tool

# Ion Markets

Last year, Pragma Securities won the category for the best smart order router (SOR) product in the Sell-Side Technology Awards. This year, it is Fidessa—acquired by Dublin-based Ion Markets in April last year in a deal valued at £1.5 billion (\$1.95 billion)—in the winners' circle. "We believe that smart order routing is fundamentally changing," explains Chris Monnery, global head of low-touch order management business development at Ion Markets. "This is because smart order routing previously has always been thought of as the liquidity-capture phase. That is the piece that faces the market and handles that child slice, and manages that across fragmented liquidity. So, if you did a word association game with most people in the industry, and you said 'smart order router,' that is what they would think of. Our belief is that there is a requirement for smart order routing upstream of that child order—at the algo-parent level."

One of the key determinants of performance is latency. From the point when an investment decision is made to when orders are routed to the market, latency needs to be minimized. In this respect, Ion boasts a large network of datacenters. In Europe, for example, it has points of presence in each of the major market centers where exchanges are located. "Latency does matter, but it is also about providing optionality for the clients as well," says Jon Davidson, product specialist in electronic execution at Ion, which has around 60 clients across Europe, the US and Asia using its SOR service.

In terms of liquidity capture, Ion's inherited SOR tool targets dark, lit and alternative markets. It was built on a global framework, but also has an understanding of market structures in different regions to meet local compliance requirements. The introduction of the revised Markets in Financial Instruments Directive (Mifid II) in January last year, for example, further fragmented the European market landscape. In response, Ion has developed connections to a number of systematic internalizers to support clients that want to trade with them. "Mifid II certainly hasn't simplified things—it is making it more complex," Davidson says. "One of the great benefits of coming to a vendor like us is that we can afford the economies of scale required to maintain connectivity to these venues, and also to keep up with the innovation on the exchange side as well, because all of the exchanges are releasing new features such as periodic auctions, which means that the cost of ownership and building this kind of thing yourself is not getting smaller."

—HA

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In terms of liquidity capture, Ion's inherited SOR tool targets dark, lit and alternative markets. It was built on a global framework, but also has an understanding of market structures in different regions to meet local compliance requirements.





## Best Use of the Agile Methodology

# IHS Markit

In an industry obsessed with speed and efficiency, the delivery of technologies and services has become increasingly important for sell-side firms, leading them to demand more from their providers. For this reason, there has been wide-scale adoption of the Agile methodology and its principles across the capital markets, allowing developers to ramp up their release cadence and drip-feed functionality in ever more frequent cycles. IHS Markit has been perfecting its software production line using Agile for over three years, and has established a track record for delivering quality iterations at an accelerated rate. The firm's efforts to embrace innovative ways of adding value faster and reducing delivery times helped earn it the win in the best use of the Agile methodology category in this year's Sell-Side Technology Awards.

IHS Markit's project teams engage in fortnightly sprints, which involve traditional rituals including regular stand-ups, demos, reviews, backlog refinements and retrospective sessions. Abhay Pradhan, head of development for financial risk analytics at IHS Markit, explains that regular scrums have reaped tangible benefits where suggestions made during retrospectives resulted in 73 improvements to its technology releases over the last year. The firm can issue releases every two to six weeks by way of its integrated Atlassian toolkit, incorporating Jira, Bamboo, Bitbucket and Confluence. However, much of the process is tailored to individual clients, based on their internal capabilities and their initial technology budgets. "We are agile but our clients might not be agile yet," Pradhan explains. "So there is a cost to them taking our software, installing it and running tests on it. But we are working with them to make this as painless as possible."

IHS Markit has reprogrammed the approach to agile working by using an integrated workflow whereby project teams have a holistic overview and detailed visibility of the various stages of the development lifecycle. Through story mapping, every change is tracked and recorded, including the individuals responsible for reviewing code, testing, developing, deploying and signing-off on decisions. The workflow also incorporates automated regressions and performance testing, where new code is continuously integrated and deployed into a testing environment. The team constantly prioritizes workloads and backlogs to enhance efficiency, focusing on the "top stories" or points of development that hold the greatest value to the overall project. In some circumstances, a time-boxed "spike" is created, where time and development estimations will be revisited at a later date when more information is known about the story. The team's advanced approach to Agile techniques has enabled it to apply resources to new projects such as its user interface capabilities, which are set to be released later in the year.

—JG



**Mikael Valot, Louis Rudd,  
Rob Foy and Jean Zottner**

IHS Markit has been perfecting its software production line using Agile for over three years, and has established a track record for delivering quality iterations at an accelerated rate.

## Sell-Side Product of the Year, 2019

# Amazon Web Services

By winning the penultimate category of the 2019 SST Awards, Amazon Web Services (AWS) joins past recipients UnaVista (2018), Nasdaq (2017), R3 (2016), Quartet FS (2015), and GoldenSource (2014). The Seattle-headquartered firm's win comes courtesy of its flagship AWS Cloud offering, which also won the best cloud provider category in these awards (see page 73).

Given the rate of change in the cloud industry in recent years, it comes as no surprise that a provider like AWS continually drip-feeds iterations and new services onto the platform, the scale of which is impressive: In 2017, it released 1,430 "significant" new features and services, while that number rose to 1,957 last year.

According to Scott Mullins, head of worldwide financial services business development at AWS, one of the key enablers AWS Cloud provides its clients is agility, which is crucial for capital markets firms that invariably need to respond rapidly to market structure and regulatory changes. "Agility comes into play in order to meet deadlines for particular regulatory regimes like the Fundamental Review of the Trading Book (FRTB) or complying with Consolidated Audit Trail (CAT) requirements in the US," Mullins explains. "All of these regulatory changes equate to new types of calculations and reporting, and any time you do that in financial services, it necessitates a new technology project. Cloud provides the agility to be able to respond in a timely fashion to those reporting requirements, and also the ability to scale computing capacity—being able to access to the right amount of computing capacity through scalability to perform calculations like FRTB, or collecting the information you need for CAT reporting."

In terms of new services soon to be added to the platform likely to resonate with capital markets firms, there is one in particular—AWS Lake Formation—that Mullins believes will be transformational by helping firms simplify the process of building and maintaining data lakes. "Today, firms want to level up from big data analytics to machine learning—you can't go a day without hearing about the application of machine learning in financial services," Mullins says. "This isn't a particularly new idea, especially on the buy side. But it does take a lot of expertise to do machine learning effectively—you need data scientists on staff and not everyone has the ability to hire a crack team of data scientists. The other thing that isn't spoken about a lot is well-organized data. AWS Lake Formation is a service that makes building data lakes a little bit easier. Coupled with Amazon SageMaker, a service designed to make machine learning that much easier, AWS is democratizing machine learning from the standpoint of not having to have a squad of data scientists on hand."

—VBA

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Given the rate of change in the cloud industry in recent years, it comes as no surprise that a provider like AWS continually drip-feeds iterations and new services onto the platform, the scale of which is impressive: In 2017, it released 1,430 "significant" new features and services, while that number rose to 1,957 last year.



## Best Sell-Side Technology Provider, 2019

# Numerix

Numerix, by virtue of its wins in the best sell-side over-the-counter trading initiative (see page 68) and best sell-side credit risk product categories (see page 69), bags the most prestigious category of this year's Sell Side Technology Awards, taking the New York-based risk specialist's tally to three awards for 2019. The fact that no firm has won more than three categories in any of *WatersTechnology's* awards since 2007 underlines Numerix's achievement this year, joining SIX (2018), IHS Markit (2017), SmartStream (2016), Bloomberg (2015) and Markit (2014) as recipients of this award.

Clearly, Numerix is in a good place right now and has been for some time, given its domination of the credit risk category in not only these awards, but across the Buy-Side Technology Awards, the Waters Rankings and the American Financial Technology Awards. And while it's impossible to attribute success in this market to a single factor, Oneview, the firm's flagship pricing, risk, analysis and trade management platform, has played a pivotal role in the firm's fortunes since it was unveiled in March 2016. "When we started down the path toward achieving the vision for Numerix Oneview, we had a very clear understanding of how the underlying architecture could be built to apply to a wide range of use-cases within front-office trading and risk management," explains Steve O'Hanlon, Numerix's CEO. "It's been this vision, plus the richness of Oneview's feature set and usability within the software, that has brought us to this moment. We always knew how to get here, but it's been a carefully sequenced journey."

It goes without saying that the provision of risk technology and ancillary services to capital markets firms is a mature and highly competitive market, arguably the most keenly contested of all functional areas across the industry. So what is Numerix's secret to its enduring success and what specifically is it about Oneview that resonates with its clients? "Our secret sauce continues to be our analytics library and quantitative prowess," O'Hanlon explains. "It's the depth of these areas that bring real strength and substance to our solutions. We are very proud of our core analytics library, as well as the groundbreaking quantitative research and development that takes place here year in and year out."

As for new functionality and services, what is top of Numerix's to-do list for the immediate future? "The continued proliferation of our solutions and services in the front office for the purpose of addressing business challenges is our focus," O'Hanlon says. "It's not about introducing new products/functionality, but about using the flexibility of the Oneview platform to solve new challenges for clients as they arise."

—VBA



**Numerix picked up the highest-profile category of this year's SST Awards**

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While it's impossible to attribute success in this market to a single factor, Oneview, the firm's flagship pricing, risk, analysis and trade management platform, has played a pivotal role in the firm's fortunes since it was unveiled in March 2016.



# Sell-Side Technology Awards Winner 2019

Best Sell-Side Technology  
Provider, 2019

Numerix



**Sell-Side Technology**  
Awards Winner 2019

Best Sell-Side Credit  
Risk Product  
Numerix



**Sell-Side Technology**  
Awards Winner 2019

Best Sell-Side OTC Trading  
Initiative  
Numerix

# Legacy We're NOT



Learn why at [www.numerix.com/changing-the-risk-game](http://www.numerix.com/changing-the-risk-game) ►



# The Tipping Point



As nations and markets become increasingly interconnected, geopolitical risk has become top of mind for portfolio managers. Anthony Malakian looks at how investors are incorporating these datasets and why they're becoming increasingly useful.

About five years ago, Princeton University professor James “Jim” Shinn was in the lunchroom of the School of Engineering & Applied Science quad with his former student, Andrew Choi, a promising young software engineer who was set to graduate in a few weeks. They were talking about an idea Shinn was working on, based on a concept he’d had while working as an intelligence officer—one he regarded as filling a critical weakness not only in government circles but other sectors as well, including finance.

By this time, Shinn had amassed an impressive resume. He started a software company called Dialogic in the mid-1980s that specialized in digital signal processing, and he was a professor at Princeton in the mid-1990s, teaching EGR492: Radical Innovation in Global Markets. Soon after the terrorist attacks of September 11, 2001, the Central Intelligence Agency reached out to Shinn, and he joined as its national intelligence officer for East Asia, but with purview over all the other intelligence agencies for Asia. During the mid-2000s, he was also a member of the Department of Defense, serving as assistant secretary.

By 2009, Shinn left Washington and found himself back on Princeton’s bucolic New Jersey campus, where he continued to muse over what he had seen while working in government intelligence. Shinn says he had three observations, none of which were a big secret or mystery individually, but when combined created enormous, meaty challenges, all the same.

First, the US government, and almost every other government around the world, had real blind spots when it came to anticipating collective-action events, such as protests, labor strikes, insurrections—anything where large numbers of people are involved, like the Arab Spring that began to flare up in late 2010.

Second, government intelligence analysts were increasingly relying on open-source information for fundamental analysis. Traditionally, these specialists would look at intercepts, comb through satellite images, and ingest as much information as possible from local, regional and national newspapers and television. Moreover, the

early days of social media were beginning, in the form of online chat rooms. These chat rooms represented the first open-source outlets of uncensored information for security analysts.

Shinn’s third observation was that the availability of this unstructured data was growing exponentially—and still is.

“Back in the 9/11 days, these things didn’t exist, except in a couple of chat rooms,” Shinn today recalls. “When I left Washington in 2009, the quantity of social media had just exploded. From an analyst standpoint, it was an embarrassment of riches—they had a huge amount of information to follow, but they didn’t have any way to do it physically; they couldn’t read or watch all of this stuff.”

Shinn—who also involved with several other software startups, including cybersecurity firm Haystack Labs, derivatives trading platform Longitude, mobile engagement platform MoDo Labs and analytics firm Kensho—related all of this over lunch to his former student. Shinn knew he had a marketable idea but wasn’t sure how to build the platform. So they

sat there and talked through the concept. Choi had wanted to go off and become a venture capitalist, according to Shinn, but the professor convinced his former student to build the platform over the summer—if it didn't become a real company, he could always go off and pursue his original plan.

So, in the engineering quad at Princeton, the company Predata was born.

## Flare-Ups

Once the preserve of political think tanks and K Street analysts, geopolitical risk is now big business inside finance, with portfolio managers increasingly looking to incorporate current affairs into their investment processes. Whether it's Donald Trump being elected president of the US—and the subsequent shifts away from the Obama administration's policies—or Brexit, money managers are finding it crucial to stay ahead of events in an increasingly volatile marketplace. Predata is one such startup looking to fill in this gap, as are the likes of RavenPack, Causality Link, Dataminr and Heckyl, among others.

The world and the financial markets are becoming increasingly interconnected—again, this is nothing new. However, what has changed in the last few years is the fact that the amount of data the world creates is exploding year on year. Additionally, available computational power is proliferating, as is the availability of storage, particularly as firms turn to public cloud providers to (relatively) cheaply store terabytes—if not petabytes or zettabytes—of mineable information. Finally, the field of artificial intelligence (AI)—and, specifically, machine learning, deep learning, and natural-language-processing techniques—is becoming increasingly sophisticated and accessible to a broader audience.

Mark Farrington is a portfolio manager at Macro Currency Group (MCG), the in-house currency-investment specialist of Principal Global Investors. He started his career in Asia, serving stints of 10 years in Japan, Singapore for two years, and seven years in Australia.

In Asia, he says, geopolitical risk is second nature to everyone; it's always a trade-off between industrial policy and politics determining intra-country rela-

“When I left Washington in 2009, the quantity of social media had just exploded. From an analyst standpoint, it was an embarrassment of riches—they had a huge amount of information to follow, but they didn't have any way to do it physically; they couldn't read or watch all of this stuff.”  
James “Jim” Shinn, Princeton University

tionships, and that ends up being a more significant driver for cross-border capital flow than the typical business cycles that you see in Western economies.

“Having cut my teeth in a region like that, where [geopolitical relationships were] so important, I was already a believer in this as an alternative source of alpha in terms of macro positioning,” Farrington says. “We've reached this point where even so-called Western developed economies are so integrated and interdependent on one another that they had to start adopting forms of industrial policy and paying more respect to geopolitical concerns, just like emerging market countries. So that's been the biggest change over the last 10 years.”

MCG uses a geopolitical risk strategy that incorporates a regime framework that focuses on where a portfolio is on the “big, long-term cycle for geopolitical persistence pressure risk,” he says, meaning that the ripple effects of these ongoing macro events will unfold over the course of a longer time horizon. Then, based on that measurement, it drills into individual countries, analyzing things like regional power-structures. Breaking news is, of course, monitored for terror risk. It uses different providers for each layer of the process.

Once it has a cyclical view of a topic, and it's zeroed in on a specific set of countries, a region or a particular choke-point on the geopolitical spectrum, it then incorporates Predata's early-warning framework to pick up on signals from the web to show that activity or interest in a particular subject is picking up.

“Very often, where there's smoke, there's fire, so we dig down deeper and watch that area or group more closely,”

Farrington says.

So, for example, in Iran, there have been significant policy shifts by the Trump administration from policies enacted by President Obama, which include the withdrawal of the US from the 2015 nuclear agreement last May and re-imposing sanctions in November.

“For a country like Iran it's very useful because there's not very good mainstream coverage,” he says. “There's not a lot of high-frequency economic releases or cross-border data flows that you can track. You really need to rely on something like [internet traffic] because the activity is constant and you can measure surges and dips in that constant flow of activity.”

*(For more on how users incorporate Predata's signals, see box on page 88.)*

## The Fake News Conundrum

As the Notre Dame Cathedral in Paris burned on April 15, 2019, posts on social media outlets said that the blaze started due to everything from terrorism to astrology, and a new tool developed by YouTube to combat fake news accidentally linked the centuries-old church's spire collapsing to the 9/11 terror attacks. On April 15, 2013, near the finish line of the Boston Marathon, two homemade explosive devices detonated, killing three and injuring dozens more. In the search that followed for the perpetrators, a wave of erroneous information made the rounds on social media, and some of that information seeped into mainstream media newscasts, including the false identification of an innocent man as the attacker.

While the term “fake news” has become a shield wielded by politicians and businesspeople to defend themselves against stories they don't like, there's no question that, in the last decade, fake news has become a tumor on society, metastasizing at an alarming rate. It is made even more pernicious by the fact that it doesn't require malicious intent to spread false reports—in a rush to be first, news outlets routinely publish stories that are incorrect or misleading.

RavenPack launched in 2003, pre-Twitter. It collected information from millions of sites in an attempt to digest everything available on the inter-



James “Jim” Shinn  
Princeton University

net. Then Twitter came along, and it attempted to process that firehose of real-time feedback. What came out the other end, though, was an excessive number of false positives. Someone would pound out a tweet that referenced the word “shake,” and it would process as a reference to an earthquake. People with three followers had the same voice as someone with millions, if their tweet went viral. Soon, people realized they could use it to spread outright lies—and this was before the invention of bots being used to spread misinformation intentionally.

“It got really noisy, really fast,” says RavenPack CEO Armando Gonzalez. “When you have customers on the other end that are building systematic trading strategies and relying on your data to make decisions automatically, then if you end up feeding them this type of information without a good set of filters, you end up introducing garbage. So we backed off from productizing what would essentially be an entire social-media source, and, rather, curated the list of sources that we plug into our system.”

It ditched the ingest-all method. To better provide portfolio managers with actionable insights, RavenPack then

built a quant team to do the human validation and verification of the outputs derived from its engines so that it could better understand how their customers would incorporate this extensive set of information.

“We’re living in a world of misinformation, [and] propaganda has never been as sophisticated as it is today,” Gonzalez says. “We have to focus on sources that we can attribute, that we can trace back and that we can account for. We have to validate their existence that they’re real people or a real publication. Without that, I think that especially for finance, we face situations where fake news and other types of information will affect or distort our models. Sure, there will be cases where there is fake news, or it’s rumor or misinformation that drives the market, but in the majority of cases, it will not. We’re quite sensitive to that.”

AI—and, as noted before, natural language processing and machine learning—is crucial for systems where there’s a massive amount of unstructured data to sift through to develop coherent output. RavenPack’s platform uses AI to sift through thousands of different publications in a matter of milliseconds.

If an event—such as a natural disaster, a terrorist attack, a protest or explosion—occurs, its algorithms pick that up, pin the location, and then tag the different areas that might be affected, such as a commodity, a country, a regime or a group. It produces about 50 fields that link with analytics and feedback on each event and gets distributed to customers via an API immediately after the fact. It primarily pulls information from news organizations like Dow Jones, Benzinga, MT Newswires, and the Associated Press, as well as local, regional and national newspapers/websites, blogs, and regulatory feeds.

Gonzalez says RavenPack does not scrape and score the entire web, as was first envisioned, because it’s subject to fake news and noise. While the information distributes at a high velocity, RavenPack’s users do not usually tend to be high-frequency traders. He says they cater more to quantitative, intra-day/week/month investment horizons.

The vendor’s algorithms also have “memories” of up to 365 days. The algo reads the news and asks itself if it has seen anything like this particular event or outcome in the past year. If it can



**Armando Gonzalez**  
RavenPack

## Chatter

The internet has, in many ways, become the public square for conversation. Some of this is good, intelligent and useful; most of it is not. Looking back at Predata, the company went with the theory that, for market-moving events, there’s always chatter that precedes the event, whether it’s people posting videos, watching videos, tweeting, reading a Wikipedia page, editing a Wikipedia page, searching a subject on a newspaper’s website, and so on. If you get enough people doing it similarly, that metadata can be captured to indicate something big is to come.

Predata’s first proof-of-concept was predicting labor strikes in South Africa. It found that there was a connective characteristic of activities on English and Afrikaans media sites that would precede mine strikes. “It turns out that we were pretty good at that,” Shinn says.

A research analyst at a hedge fund with over \$10 billion under management, who did not have permission to talk on the record about the company’s strategy, says that they found Predata on the Bloomberg Terminal and started trading using them three years ago.

The analyst says that they do not use price data—“I totally ignore what the market is doing”—to trade commodities. The analyst says that the mainstream media covers the supply side well, so there’s not much room to find an edge. But on the demand side for, say, crude oil, if people are talking about road trips and going on long drives, Predata’s signal can indicate that the summer will be a busy one for travel and demand for crude oil might be higher. Combine that with relations between OPEC nations, and you can develop a more diversified thesis.

The analyst was also recently looking to make a summer play

on wheat. So, they started looking at people’s diet preferences—this goes to show the power of the engine beyond just geopolitical events—and found that people were searching a lot about Paleo and Atkins diets, which eliminate wheat and substitute soy. However, then you also have to incorporate the trade war ripple effects with China.

“It’s for the long run—it’s not going to happen tomorrow,” the analyst says. “When people start to talk about it, and there’s chatter about it, and people start to read about it on Wikipedia, these are all signals that are being captured by Predata.”

Hazem Dawani, CEO of Predata, who was formerly the chief product officer for Vela Trading Technologies and the CEO and founder of OptionsCity Software, says Predata looks at mainly five sources of data. These are YouTube videos, which give an idea of interest around past events; Wikipedia pages for a sense of engagement around research; Twitter, which helps understand what people are interested in; individual websites to measure traffic levels on these websites; and Internet Service Provider data, which illustrates the actual flow of traffic. It doesn’t care about the content of the video or story, per se, but instead, it looks at how many people viewed and shared it, and how that has changed over the last few days, weeks or months.

The platform, which has an Amazon backend, is language-agnostic and can analyze websites in English, Arabic, Swahili, Persian and other languages. It has over 200,000 individual sources that it tracks daily, organized by topics, countries, and issues. It uses machine learning—mostly sparse regression techniques and algorithms—to identify patterns in the data and detect anomalies, changes in behavior, where people are interested or concerned.



**Hazem Dawani**  
Predata

So, for example, in February 2018, there was a massive labor strike at the Escondido mine in Chile, the largest copper mine in the world. In the two days after the strike began, the price of copper jumped 5%. Predata’s signals correctly predicted the industrial action seven days before it occurred.

“We identified a pattern from previous strikes of websites and pages that tend to spike about seven to 14 days ahead of a strike,” Dawani says.

As always, noise is a problem. Predata doesn’t tend to look at recently posted YouTube videos; instead, it wants to see which older videos are getting a new breath of life. Twitter can help signals to go haywire for silly reasons. During the last soccer World Cup, an analyst at a central bank tweeted something about one of the games. The tweet went viral, and Predata’s signal escalated. Typically the analyst only tweets about central bank policy and that’s what Predata is measuring—the engagement in that—but after the signal spike, a customer called to task Predata to look into the signal. It did, and after it removed the tweet from the platform, the signal went back to normal.

The more signals you have, the more chance one could go haywire, so the key is to find the right balance. Even with all the artificial intelligence techniques the company uses, there’s still a fair amount of human hand-holding involved.

“Especially when dealing with a black swan event, we’re not able to predict exactly what will happen, but we can quantify the level of interest around a group of websites related to this topic,” Dawani says. “Sometimes a hedge fund manager will have a hunch or a theory in their mind that they’re trying to build their portfolio around or manage their risk; we help them quantify these ideas and get confirmation or falsify these convictions that they have.”



make a connection, it is tagged and sent to the customer. So, while customers can trade in a high-frequency manner off the first “ping” of a news event, most, Gonzalez says, will choose to use the vendor’s weighting system to determine how confident they should be that this is something that legitimately happened. So they can be quick on the draw, or be more conservative.

Yin Luo, managing director, and quantitative analyst at Wolfe Research, has been using RavenPack for over a decade, first at Macquarie Capital, then at Deutsche Bank, and now at Wolfe. Most recently, he has incorporated it to quantify things like the US-China trade war and Brexit.

“Without RavenPack data, it would be quite difficult to quantify such event risk,” Luo says. “The macro risk factors are important for us to further understand each asset class and each stock’s exposure to such macro risk factors. For investment managers who don’t want their portfolios to be exposed to such risks, we design hedging strategies to neutralize their exposures. For investment managers who do have a strong conviction/view on the outcome of these macro events, we design a tradable basket so that they can express their views efficiently.”

## Of Trade Wars & Soybeans

Delving a little deeper into the trade war between China and the US, Benjamin Quinlan, CEO of Quinlan & Associates, says hedge funds bring in this information to predict if there will be agreement, or whether the US will roll out hefty tariffs on Chinese products, and vice versa. So, if there’s a firm that invests in Chinese agriculture—say, soybeans—that investor can use this information to make a bet via a long or short position. With the unpredictability of the Trump administration, portfolio managers are looking for all the help they can get.

The trade war on May 2, 2018, when President Trump tweeted that “trade wars are good and easy to win. Example, when we are down \$100 billion with a certain country, and they get cute, don’t trade anymore—we win big. It’s easy!” The tweet followed the announcement that he would impose a 25% tariff on steel and a 10% tariff on aluminum imports from China.

After China slapped a 25% retaliatory tariff on US soybeans, the state of Illinois—the largest producer of soybeans in the US—saw its exports dwindle, according to a report by *The Journal Star* in Illinois: “Soybean exports from Illinois fell by half last year, a loss of \$1 billion, according to US Census trade data. Prices plunged and unsold soybeans piled up, with stockpiles of the crop up 30% in Illinois as of March compared with a year before due to the combination of the tariffs and a record year for production in the state.”

The state received \$600 million from a \$12 billion national aid package offered by the US Department of Agriculture to help Illinois farmers to break even, according to the paper.

Even if a hedge fund is not investing in soybeans or anything related directly to the trade war, if it thinks that the current round of trade talks will collapse, it could—as part of a hedging strategy—short the S&P 500 or short Chinese indices. Regardless of its investments, it might generally think that the market is going to take a knock as a result of the tensions between the two global powers, thus allowing it to make a profit on a sinking market, Quinlan says.

“It allows you to make those calls around shorting or longing particular things, especially during events because the swings in the market can be very sizeable when these announcements or agreements are made or not made,” he says. “The trade war sounds like it’s a boring narrative, but it’s exactly why geopolitical risk is coming back in vogue—people understand the ability for this kind of stuff to move markets.”

Causality Link is another company that has entered the geopolitical risk arena, as well as other sectors. Launched three years ago, the data provider uses natural-language processing and data science to dig through earnings call transcripts and other sources of public information from all over the web to find causal links.

The platform looks at key performance indicators (KPIs) to see what has changed, and it then attaches value to that. It also looks at events, and it tries to classify them as being something as broad as a geopolitical event down to a clas-

sification of a trade war and then down to the countries and sectors affected, says Causality Link’s founder and CTO, Eric Jensen. The aim is to move past sentiment to find what the real effects are from a particular geopolitical event.

“Our opinion is that this data is going to have the most long-lasting value on a longer-term frequency so that when you’re allocating on a weekly or monthly basis, you can look at these reports and see the trends that occur that aren’t necessarily just happening in the morning. That’s just a race to react, and we don’t think that the more fundamentally oriented firms are looking to that type of velocity,” Jensen says.



**Eric Jensen**  
Causality Link

## Continuation

Brexit promises to continue to be a reoccurring bad dream for at least the next few months. The volatility of the Trump administration will continue for more than a year and a half, and no matter the outcome of the November 2020 elections, politics in the US will never be the same. Europe and South America are becoming increasingly isolationist and Vladimir Putin will continue to meddle in other countries’ affairs. In short, geopolitical risk data will continue to be an important component of portfolio construction.

And there’s always room for improvement. In addition to the vendors in the space, foreign policy scholars, political scientists and academics are building interesting new theoretical frameworks. The key is to be able to distill that information in an easily consumable way.

“It matters tremendously who says something rather than how many times it’s been said,” says MCG’s Farrington. These days in the world of financial market news, everything is pinged around with bots. So, frequency of utterance doesn’t mean as much as it did 20 or 30 years ago when we had 10 or 15 major newspaper and news networks that dominated the news, so the frequency of the use by those top 10 or 20 leaders was a significant shift in sentiment on a topic. Now, there’s tremendous amount of potential bias in that type of analysis.”

These are choppy seas to navigate, indeed. [WT](#)



# Banks and Bourses Increasingly Combine Cloud, AI for Data Projects

The combination of the two technologies is bearing fruit for firms struggling with legacy architectures, but education and talent remain tough obstacles to overcome. By [Josephine Gallagher](#)



**S**ilos, spreadsheets and silence are the enemies of modern data specialists. Many are hoping the advent of professional-grade emerging technologies will provide the key to organizing the vast amount of data within trading firms—perhaps once and for all.

These three aspects of data management—fiefdoms and closed verticals within technology estates, poor governance and disparate storage, and the inability of systems to talk to one another—are some of the most problematic areas for any business of scale within trading. Institutional firms struggle to bear the weight of their legacy infrastructures, not to mention the difficulty of

pulling data from complex, fragmented systems, in many different formats.

Planning and implementing transformative projects to resolve these problems is a massive undertaking by any measure, one that takes multiple years to achieve. In many cases, firms are incrementally introducing automation and robotics to reduce some of the overhead costs of old systems, but others are using more sophisticated technologies such as artificial intelligence (AI) and the cloud to accelerate their data and technology transformation programs.

HSBC, for example, is implementing a large-scale project that entails using machine-learning technology to measure the quality of its data across five different dimensions—accuracy, completeness, uniqueness, validity, and consistency—and uses granular details to link correlated data together. It is no small task, as the firm is pulling information from multiple systems across several business lines and jurisdictions. The data will be viewable on data quality dashboards, where the user can view critical data elements and identify

the real value of the information that the system aggregates. Chuck Teixeira, chief administrative officer and head of transformation at HSBC's global banking and markets business, explains that its data management teams are leveraging AI to index and tag data from trillions of transactions and external sources to build a reusable golden source of data.

"Part of the challenge other banks and we have is that we have lots of data pools, but the problem is, if you don't tag that data and index it, how do you find it again? So that is part of what we have built, a reusable data asset. And this has been a significant undertaking over the last year," he adds.

In the second phase of its transformation project, HSBC will start to migrate the data to a cloud-based data lake in June to be able to utilize it for a variety of use-cases. One of its principal objectives is to leverage new technology to accelerate operational processes and create new capabilities—such as building a client intelligence utility on the cloud. The platform will use the cleansed data, captured from trade lifecycles and external sources, to better understand the needs and requirements of its clients. It will ultimately act as a single part of a more comprehensive client services project, Phoenix, in which HSBC intends to collaborate with AI partners. The objective of this project is to develop more advanced algorithms and capabilities that will analyze and evaluate vast amounts of data from various sources, to predict client needs and improve user experiences.



**"Part of the challenge other banks and we have is that we have lots of data pools, but the problem is, if you don't tag that data and index it, how do you find it again? So that is part of what we have built, a reusable data asset. And this has been a significant undertaking over the last year."**  
**Chuck Teixeira, HSBC**

"We will partner with firms to create an ecosystem and leverage the skills and experience from other technology firms to help build out our infrastructure," says Teixeira.

### Life-Long Learning

One of the major obstacles in any such undertaking, along with technical work, is the educational aspect of it—particularly when systemically important institutions such as stock exchanges plan a shift to the cloud.

Indeed, many are having to spend several months explaining to regulators how their data will be secured and managed in a virtual environment.

Two years ago, for instance, Euronext embarked on a project to revamp its data infrastructure to capture all of its data from its Optic trading engine and other applications.

"When we decided to go to the cloud, obviously a key element in the decision was around security. Compliance with regulation requires that we have the capacity to hold back or secure the data. We had to confirm

that we will always have access to the data—and only Euronext," says Nicolas Rivard, chief innovation officer at Euronext.

The exchange is porting the data to its cloud-based data lake on Amazon Web Services to store it in a structured manner. To date, it has migrated all its historical data, going back to 2007. At a later stage in the project, Euronext will use algorithms and AI to leverage the data for multiple use cases, such as market surveillance, compliance monitoring, advanced analytics, intraday alerts and to inform better technology offerings for its clients.

### Skills Gap

Although cloud technology has been around for many years, trading firms, for the most part, have yet to decipher or become comfortable with the level of risk involved in moving valuable data or operations to an off-premises infrastructure. Another significant barrier for financial firms is attracting the right talent or expertise to execute such projects. As part of this skills gap, institutional firms must educate both existing teams and recruits on how to operate virtual environments or utilize emerging technologies.

"It's a completely different approach to IT development, infrastructure and operations, which means that we had to train the IT team. We have to think differently about IT architecture, security, resource allocation. ... Everything is code. This provides agility if you adapt and transform the way you used to build and run IT," explains Rivard. [WT](#)

## Deutsche Bank Takes to the Cloud

Deutsche Bank has onshored its collateral management and margin services to CloudMargin's public cloud offering.

The investment bank is offloading its critical functions to the public cloud. The bank is integrating CloudMargin's cloud-based offering for collateral and margin management requirements, in keeping with the phased-in initial margin rules on non-cleared derivatives.

Deutsche Bank and its clients will access the same web-based platform using individual login portals. The platform will provide a transparent single version of record for all parties involved in the collateral management process,

including obligations and required actions for cleared and uncleared over-the-counter transactions. It is designed to minimize operational risk and eliminate discrepancies.

Joseph Macdonald, global head of collateral optimization trading at Deutsche Bank, says one of the objectives of using cloud-based technology is to enable automated upgrades and software updates, which in turn allow for improved user experience on collateral management.

"The alternative to the cloud is on-premises solutions and these typically, by the time they are integrated into our platform, are already regarded as obsolete and needing to be updated," he adds. "But with cloud, we are always on the latest version and every time something changes we get the benefit of that and so does every single one of our clients logging into the platform."

Until recently, investment banks had remained reluctant to offload core functions or services to the cloud due to security threats and having to rely on third-party infrastructures. Macdonald says cloud technology is the future and that investment banks are quickly realizing that the benefits now outweigh the risks. He says that with any highly regulated institution, security is the top concern, but that cloud providers have ramped up their own defense systems in line with financial market requirements.

"CloudMargin has been approved by our Security Architecture Council, who are specialists and they certified it for use. This certifies that it is at least as secure as anything we would run on our own servers," explains Macdonald.

# Blockchain Investments Survive the Crypto Winter



Investments into blockchain have continued to grow despite the crypto winter and the downfall of ICOs. VC investors are banking on their belief that blockchain will ultimately offer transformation across many industries, [Emilia David](#) reports.

**B**itcoin may have fallen from grace in the eyes of investors, but blockchain's bull run shows little sign of slowing down.

After peaking at nearly \$20,000 per coin in December 2017, the price of the cryptocurrency dove off a cliff, reaching lows of around \$3,500 by the end of 2018. A series of enforcement actions by regulators over initial coin offerings (ICOs) also continued to damage the reputation of crypto generally. However, while the conversation had generally shifted to crypto, blockchain technology continued to receive large levels of investment.

"There's a misconception that the cryptocurrency price drop is indicative of blockchain adoption but these are two very separate issues, and blockchain is immensely useful for many business cases, regardless of what happens in the cryptocurrency market,"

says Eli Stern, partner, and principal at consultancy EY.

Estimated investments into blockchain vary, and few make the distinction between blockchain as a technology and digital assets. However, the general trend is that investments since 2014 have only gone up.

According to KPMG's *Pulse of Fintech 2018* report, global investments into blockchain reached \$4.5 billion in 2018 from \$700 million in 2014. The report noted a sharp increase in investments into blockchain from 2016 to 2017. Research firm CB Insights also found that investment activity from a pool of 23 venture capital (VC) firms it tracks ballooned to \$465 million by the fourth quarter of 2018, led by a few major investment rounds.

## ICO-No

While the precise delineation of investments is hard to come by, it's also clear that VC firms have become increasingly selective in digital currency investments, preferring to focus on distributed-ledger technology firms rather than ICOs.

Pierre Lavaux, a venture partner at SGH Capital, says blockchain intrigued him because it's a nascent product, but he took a more cautious approach when ICOs started becoming popular.

"The reason we started looking into blockchain is that we're an early stage venture firm. But we saw a lot of ICOs coming out and that seemed to be the new funding mechanism for a lot of these firms. We saw that many of the teams seemed inexperienced and their

milestones were ambitious,” Lavaux says. “Basically, it looked to be an excuse for people to get a large amount of money.”

Lavaux says firms that have more than a passing interest in digital assets and technology see great potential in blockchain and digital assets because they believe it can change many inefficient business processes.

However, a common refrain from many investors is that the noise of the hype machine and the rise of the ICO cast a cloud over public perception of the blockchain.

KPMG said in its report that 2018 “saw more private investment by count within the blockchain and cryptocurrency space than ever before,” adding that sober-minded institutional investors recognized that business processes could be made more efficient with the technology in play.

Regional investments in distributed-ledger technology are also growing. IDC said in its semi-annual blockchain spending report that European blockchain investments would grow to \$815 million in 2019. Beyond the West, firms based in Asia-Pacific are also steadily betting on blockchain, particularly as projects like the Australian Securities Exchange’s (ASX’s) transformation of its clearinghouse to blockchain technology moves forward. By far though, it is North America, particularly the US, that outspends other regions.

There is also a growing interest in putting money toward infrastructure around crypto assets such as trading platforms, custody, and clearing operations, some of which are being developed using blockchain. Many investors say crypto trading infrastructure will play a much bigger role in the future.

EY’s Stern says investments tend to be cyclical depending on what has generated the most hype, so when people start talking about the importance of infrastructure around crypto trading, investors start putting money there. However, in the long run, investors want to go with something they feel provides the best long-term value.

In the past 12 months alone, money has been pouring into established blockchain

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**“The reason we started looking into blockchain is that we’re an early stage venture firm. But we saw a lot of ICOs coming out and that seemed to be the new funding mechanism for a lot of these firms. We saw that many of the teams seemed inexperienced and their milestones were ambitious”**

**Pierre Lavaux, SGH Capital**

firms. Recent fundraising announcements include Symbiont, which received a \$20 million investment lift from Nasdaq Ventures and other investors in January. Curv, a cryptography firm for blockchain and distributed ledger databases, raised \$6.5 million in late February and crypto industry research firm Chainalysis received \$30 million in its last funding round.

Despite being in similar fields, however, the distinction between cryptocurrencies and blockchain is important to understand. The two offer different value for investors and often have vastly different business models.

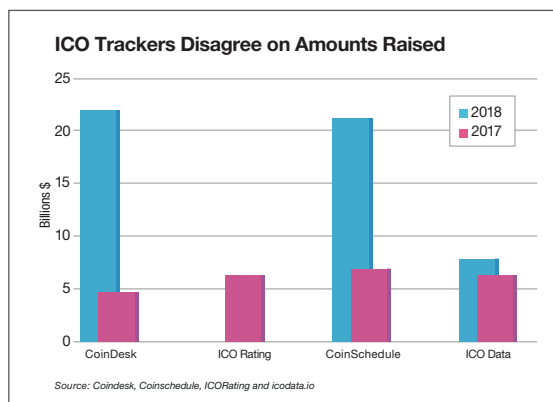
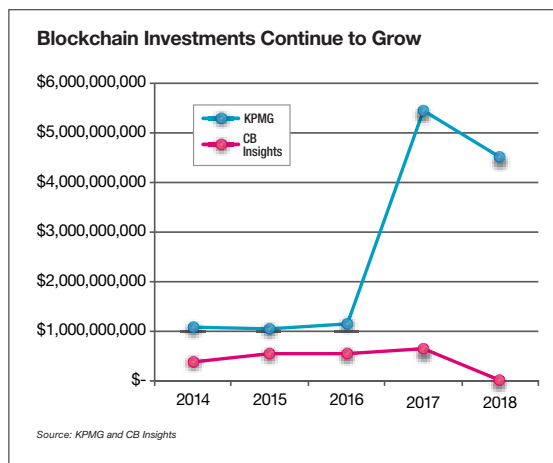
“The crypto winter caused a false perception that blockchain is not a good investment, but people are still bullish. It has tremendous value in its use. Bitcoin is a small derivative of blockchain that people sometimes conflate,” says Stern.

### Crypto Winter

The so-called crypto winter—the cryptocurrency industry’s moniker for its ongoing bear market—saw prices of bitcoin fall over 75% from \$19,873 to 2018 lows of around \$3,000. While some of this, the popular wisdom contends, was due to the introduction of futures by CME Group and Cboe Global Markets in December 2017, price stabilization can only account for so much of the fall.

The public perception around blockchain and cryptocurrencies took another hit around the time ICOs started becoming popular.

ICOs became a preferred method of fundraising for many start-up firms that were either working on technology, sometimes blockchain, pushing a token or a new cryptocurrency. ICOs proved to be a successful way of making quick money. After all, ICOs did not necessarily require the extensive prospectuses and other documentation that traditional initial public offerings must have, and the ease of starting one inevitably attracted bad elements. ICOs raised an estimated collective \$22 billion in 2018 alone, according to news outlet CoinDesk, which tracks ICO figures. With such eye-watering sums at stake, the sector quickly came under the scrutiny of regulators like the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC).





The SEC cracked down on ICOs by declaring them as securities offerings, and in November 2018 fined two companies—CarrierEQ, also known as Airfox, and Paragon Coin \$250,000 for failing to comply with requirements to register securities. This action, and others like it, turned off a lot of institutional investors.

Ben Spiegelman, head of strategy at Symbiont, says he started seeing a shift in how blockchain firms raised funds at the time.

“Investment dollars shifted a bit with ICOs down. The money went to more specific companies, and people who are more interested in the technology are still hopeful we can get that breakthrough technology with a single source of truth,” says Spiegelman. “So if an investor believes in the technology and its benefits, you’re going to see investment dollars there.”

The ICO debacle, investors and blockchain executives say, made investors more diligent about researching companies they want to invest in but did not dampen their excitement over blockchain’s potential.

Spiegelman says the past few years has changed much in the investment spectrum for blockchain technology companies despite the drop in bitcoin prices and the general perception of the technology.

“In terms of the investment spectrum, a lot has happened in the past two to three years. Early investments in 2015 and 2016 were really focused on enterprise blockchain, but we saw a back-and-forth in interest between blockchain and crypto, particularly when bitcoin hit \$1,000,” Spiegelman says. “And yeah, some investments into cryptocurrencies may have done well, but when you go down into the weeds, there’s more money invested into technology. So we just kept our heads down and continued to work on our technology.”

### Hype Cycle

Ultimately, one of the best things to happen to blockchain, and investments into the technology, is the waning of its hype cycle.

“The hype is more of a distraction. It does get you some marketing, like

having a conversation with you or going to conferences, and that sort of thing,” says Bill McGraw, CEO of VC firm Northstar Technology Ventures. “There’s more of a proof of the technology now, and instead of just talking about the market, we can talk more about the nuances in the technology and look further into where we can best invest.”

McGraw notes he saw firms hunker down and perfect their products, which of course gave investors confidence that they will see a strong return once the platforms are commercialized.

Spiegelman and others who work in enterprise blockchain say the slowdown in the hype cycle may even have benefited the industry because it kept speculators at bay and expectations at a manageable level. The hype around blockchain as a technology has now largely settled, compared to the frenzy of just four or five years ago, when its most ardent evangelists were claiming the technology would reform everything from capital markets to cancer treatment.

With the waning of the cycle, much of that hot air has left the room. Spiegelman, and even SGH’s Lavaux, point out that companies began to trim down use-cases to projects that have a better chance at commercial production.

Of course, the more transformative projects based on blockchain have not fully materialized yet, but many investors and industry observers still have faith. Some simpler blockchain solutions, particularly those involving databases, have moved ahead. One key project, the renovated Trade Information Warehouse from the Depository Trust and Clearing Corp. (DTCC) is set to go ahead in late 2019 and is expected to serve as a litmus test for the deployment of the technology in a demanding use-case. The ASX’s clearinghouse, the next evolution of which is scheduled to run on blockchain technology, had to be pushed back to 2021.

Still, other blockchain projects moved closer to production. Financial firms have begun building applications and smart contracts on the blockchain. Symbiont, for example, is already

offering its smart-contract platform for banks to experiment with the technology. Digital Asset also made its smart contract language DAML open-source, because it saw increased interest. R3’s Corda blockchain has seen growth in applications. Other industries and sectors, like supply chain management, have built systems to track goods using the technology while payment providers continue to explore its utility.

McGraw says blockchain technology’s potential did not dim, even if the hype cycle has essentially died down.

“I think the compelling part of this never really went away. Again, if we go back to how people got into this, there was the craze around the investment around the ICOs and crypto, and that I think skewed the market. But underlying it, there was—and still is—real confidence that this is going to change the way that business interacts,” he says.

McGraw says his firm is primarily interested in investing in projects and technologies that it feels will bring smart securities to capital markets, and provide an enterprise solution to the movement of money and management of supply chains.

Both McGraw and SGH Capital’s Lavaux point out that people who invest in blockchain understand there is an adoption curve to consider when a new technology is evolving.

“There is a sense of ‘build it, and they will come’ in the blockchain industry because things get adopted incrementally. However, we see those projects around issuance, identity security or things that require trust are getting more focus, and we’re very much interested in,” McGraw says. “But it is also good to point out that companies that are established outside of blockchain that then add some sort of blockchain component become trusted compared to purely blockchain firms.”

Scott Freeman, co-founder, and partner at VC firm JST Capital, says he envisions a time where blockchain technology is ubiquitous, so much so that people don’t even realize the technology is being used to facilitate their transactions. He notes there is



**Pierre Lavaux**  
SGH Capital



**Ben Spiegelman**  
Symbiont

a big opportunity in investing in blockchain technology and more actual dollars are involved in producing a solution.

### Educating Investment

Venture capitalists like Northstar, SGH Capital, and JST Capital make their bets on blockchain because of its potential uses not just in the financial services industry but also for projects in health-care, logistics, insurance, and others.

Investments into blockchain technology also grew because the companies looking for funding are further along on their journey and need larger amounts. The technology may be early stage still, but the companies developing it are less start-up in outlook, and a little more mature.

Tim Coates, Synechron's assistant director and head of blockchain for North America, says the investors coming into blockchain understand a lot more about the technology and believe they can get a solid return on their money.

"Many investments into blockchain have been overinflated, but they're overinflated because so many people have made so much money in the space.

“

"You see ICOs die out, but VC firms entering now have strong engineering backgrounds and can pinpoint the areas where they see the best financial return in such a nascent space that is rich in opportunities. I think everyone thinks there is something transformative about blockchain and getting in now means you can get returns."

**Tim Coates, Synechron**

In the ICO era, people were investing with their hearts, but now people are investing more with their heads," he says. "You see ICOs die out, but VC firms entering now have strong engineering backgrounds and can pinpoint the areas where they see the best financial return in such a nascent space that is rich in opportunities. I think everyone thinks there is something transformative about blockchain and getting in now means you can get returns."

With maturity also comes the ability to rationalize which areas to focus on and bring to production. Companies are already working on fewer proofs-of-concept and use-cases, and more on advanced-stage projects.

The sector's maturation has also attracted other kinds of investors into distributed-ledger technology. Over the past few years, corporate-backed venture arms have also begun to put money in with the early-stage VCs. Symbiont's Spiegelman says his firm has begun looking for more strategic partners, like Nasdaq, who can inject capital, but also allow for co-development of products or services, while introducing them to a wider customer base. He says it was a conscious decision to look for companies that offer the ability to experiment with real financial services problems.

Investors like Northstar's McGraw say they are in blockchain for the long run, even if the line between blockchain technology and cryptocurrencies blurs even further. Blockchain, after all, began life as the underlying technology for bitcoin, and companies are now looking at ways to use blockchain as a means to issue securities and support crypto asset trading.

Synechron's Coates says it's possible that investments in blockchain will move away from individual chains.

"I think the strongest community is in the public blockchain. There are still missing pieces to the jigsaw to be able to do issuance of securities on a public blockchain in a regulated manner, and there are many limitations on the underlying Ethereum protocol and other protocols as well," he says. "Lots of firms are looking to provide all sorts of different services in the space where with time we can be doing strictly legal transfers over the public blockchain." **WT**

## Tallying the Blockchain Leaders

As the hype around blockchain dies down, many firms working with the technology have gone through their portfolios and trimmed them down. Cutting down on simple use-cases ideally allows firms to focus on projects that may actually make it to production. These are some of the highest-profile blockchain projects in the capital markets to date.

### DTCC's Trade Information Warehouse

The Depository Trust and Clearing Corp. (DTCC) is currently testing the Trade Information Warehouse (TIW), which will handle lifecycle events in the credit derivatives market. It was developed in partnership with IBM, Axoni, and R3. TIW is expected to go live in the fourth quarter of 2019.

### CLS LedgerConnect

CLS partnered with IBM for a proof-of-concept to provide a secure, permissioned platform so institutional clients can access, share and deploy data and services. It will be built on IBM's private blockchain using Hyperledger Fabric.

### ASX

The ASX, along with Digital Asset, is in the process of setting up the replacement for its clearing system. Called Chess, or the Clearing House Electronic Subregister System, it lives on the blockchain and is expected to cut settlement time. ASX has had to push back its launch to 2021 after clients asked for a delay.

### Northern Trust Private Equity Blockchain

Northern Trust got its blockchain for private equities off the ground in 2017. The blockchain aims to provide a space to share data and documents to private equities, lawyers and auditors. The bank announced it also plans to expand the private equity blockchain.

### R3 Corda Blockchain

R3, a consortium of several banks and firms, released an enterprise version of its Corda blockchain network. Corda Enterprise already hosts live applications for the insurance, healthcare, and shipping industries. Financial firms like Finastra, Tradewind Markets and TradelX have also announced applications going live on Corda Enterprise.

### Paxos Precious Metals Blockchain

Paxos announced in May 2018 that it is going live with its blockchain for gold bullion in that same year. The precious metals blockchain is meant to ease the post-trade process for trading gold and other precious metals. Paxos originally partnered with Euroclear but released the platform on its own after Euroclear pulled out of the project. INTL FCSStone is one of the first users of the service.

### Symbiont Assembly

Symbiont is moving to production of its smart contract platform Assembly. With a \$20 million capital infusion, the company says Assembly is a distributed platform that lets users create smart contracts so they can issue, manage and trade financial instruments but still keep a golden source of record.

# Tackling China's Onshore Bond Market

As China begins to open up, foreign investors are finding the onshore market more accessible. However, serious challenges and questions remain. **Wei-Shen Wong** reports from Shanghai and Beijing.



**G**lobal institutional investors are continuously on the lookout for more ways to expand the alpha portion of their portfolios, be it through the use of alternative datasets to help direct them to additional signals, or through tapping into new geographies and assets.

With global economic activity predicted to slow down in 2019 according to economists, due to issues such as trade tensions between China and the US weighing on investor sentiment, getting that extra bit of alpha is only proving to be a more arduous task.

The investable universe accessible to global investors has just expanded. Global investors looking to gain access to the onshore Chinese bond market now can do so albeit cautiously, through the Bloomberg Barclays Global Aggregate Index.

On April 1, 2019, the index provider started the inclusion of some of China's onshore bonds, otherwise known as renminbi (RMB)—or yuan-denominated (CNY) bonds.

Bloomberg will phase in some 350 Chinese government and policy bank bonds over the next 20 months, or by November 2020. Still, once fully included in the index, Chinese onshore bonds will account just over 6% of the index.

The inclusion of RMB-denominated bonds represents a move to connect foreign investors with the third-largest bond market in the world, standing at about \$13 trillion according to the People's Bank of China (PBoC)—the country's central bank.

Although this move has been encouraging for global investors looking to connect to China's bond market, it is only one of the steps taken as part of China's plan to open its economy, which have included trading links that allow investors to trade in its equities and bond markets.

However, for China's bond market to mature further, several details still

need to be ironed out. These include improvements to infrastructure, liquidity, and legal frameworks, as well as hedging capabilities, to make it more of a "comfortable" space for foreign institutional investors to navigate.

China is a market that stands to offer some of the better returns globally, for example with its 10-year government bond currently yielding 3.43% as of April 23. Comparatively, the US 10-year government bond yields 2.58% as of the same date.

Despite that, foreign ownership now only makes up just over 2% of the entire Chinese bond market.

The deputy general manager of an onshore asset management firm agrees that the attractive yields are the reason that the attention on China's bond market has been picking up.

"Yields of US bonds are around 2.5% but here in China, bond yields are still

relatively high, and fundamentally, the country's GDP growth cross-sectionally is still high. Also, currency wise, the Chinese yuan is stable. So I think it's more for foreign investors that are interested in getting exposure to China bonds rather than us actually having to sell [those bonds] to them, because the local market is huge," he says.

Despite the hype of accessing China's onshore bond market, Bloomberg ensured that it also catered to investors that were not ready to get involved right away. Nick Gendron, head of fixed income indices at Bloomberg says, "We had to discuss with clients whether they wanted to go ahead and if they want CNY in their customized version of the Global Agg. There are a limited number of clients that wanted to take their approach of phasing in CNY and asked us to do that for them."

## Options

There are currently four channels through which foreign institutions can trade in onshore bonds: qualified foreign institutional investor (QFII), RMB qualified foreign institutional investor (RQFII), China Interbank Bond Market Direct (CIBM) and Bond Connect.

Bond Connect has gained significant interest since it was established in July 2017 by the PBoC and the Hong Kong Monetary Authority (HKMA), as it allowed overseas funds to trade onshore Chinese bonds through offshore infrastructure in Hong Kong. By the end of 2018, 1,186 foreign institutions participated in China's bond market, of which 558 were through Bond Connect. It is quite a jump from the participation of 200 foreign institutions recorded at the end of October 2017.

Unlike the other channels, Bond Connect allows investors to maintain their existing relationships with their global custodians.

However, this is only for cash bonds, and unlike the QFII/RQFII programs and CIBM, Bond Connect provides price discovery through an electronic trading platform. The other channels provide that through either phone or email inquiry to the onshore custodian and agent respectively.

However, there is still room for improvement. A managing director at one of the major international banks operating under a universal banking model in Shanghai says while its clients want to use the Bond Connect channel, there are still a few issues there.

"They only can use Tradeweb. Bloomberg is also connected, but I don't think the platform is quite ready yet. For Tradeweb, the issue there is they have limited price providers. The PBoC has given licenses to only a few banks, and as a result, Bond Connect doesn't have a price provider standard. We're still waiting for Bloomberg, which will allow everyone who wants to be a market maker to do that. That will be the first start to get [the channel] strong," he says. Bond Connect executives were not available for additional comment.

Bloomberg was the second platform to be connected to Bond Connect at the end of 2018, enabling its terminal users to trade directly through its execution management system. It worked with the China Foreign Exchange Trading System (CFETS) to provide qualified investors with access to CIBM, becoming the first to offer access to the two most popular schemes used by foreign investors.

MarketAxess is said to still be in discussions to be approved as a platform connected to Bond Connect.

Tradeweb, which recently raised \$1.1 billion in its initial public offering on Nasdaq, was the first offshore platform to link with the Bond Connect program.

Li Renn Tsai, managing director and head of Asia at Tradeweb, says that prior challenges for foreign participants in the onshore bond market include the onboarding and registration processes, as well as due diligence and selection of onshore settlement agents. Also, challenges around reporting and restrictions on the size and direction of the investment activity have an impact, he adds.

In the past, trading was executed manually, typically in a voice-brokered trading process, and in an unstructured manner. "All of these particularities meant that execution was susceptible to operational risk and very time-consuming and lacking in transparency and auditability," Tsai says.

Some of the enhancements to the infrastructure have happened since then include the tax exemption for overseas institutions. These developments have significantly reduced the barriers to entry that were hindering foreign investment into the Chinese domestic bond market.

"When Bond Connect came on, it had attempted to address some of the issues that I mentioned, with the trading link and the settlement issue. The fully electronic trading link allows offshore investors to access and interact directly with onshore market-makers and the settlement link," he says.

Bond activity on Tradeweb has been steadily growing, with monthly average trading volumes in CNY cash bonds showing an increase of 230% on Tradeweb from July 2017 through to March 2019. Tradeweb reached nearly \$1 billion per day in February 2019.

Further proof of the progress that Bond Connect has made is by the number of registered investors on the platform. As of March 2019, that figure has climbed to 711 from 558 in January. Sources spoken to for this story agree that this will only continue to increase with time.

Tradeweb is working with CFETS to introduce pre-trade indicative prices, as one of the incoming features for Bond Connect. Onshore dealers will be able to publish indicative prices on bonds, which Tsai says would give offshore investors a better view of the liquidity of the different instruments they might be interested in trading.

"This pre-trade information provided by the dealers is a first for Bond Connect. The data may have been previously available in unstructured forms, such as messages, but Tradeweb will put all of this together, so the onshore dealers will now have a channel to stream their indicative prices to offshore investors directly," he says.

One of the features it recently introduced is the block-trading functionality that allows offshore investors to execute on behalf of multiple funds in one block transaction on its platform. "Also, we allow



**Nick Gendron**  
Bloomberg

# 350

Bloomberg will phase in some 350 Chinese government and policy bank bonds over the next 20 months



clients to take advantage of straight-through processing benefits through our integration with order management systems,” he says.

Another challenge trading onshore bonds via Bond Connect presents is that investors are not able to hedge in the local market. “If you think about asset managers investing in the China market, they would need to do foreign exchange (FX) trading and risk hedging, but they don’t have access to the local FX and risk market. They don’t have access to the local market—for example, to bond futures. This is the most important issue asset managers need to consider when using the Bond Connect channel,” the managing director adds.

However, foreign investors can hedge in the onshore market using the CIBM channel instead.

Investors under the QFII and RQFII programs allow foreign institutional investors to invest in China’s onshore equities and bonds markets within a defined quota. These two programs will shortly merge, as proposed by the China Securities and Regulatory Commission (CSRC) as part of a move to ease access for foreign institutions. The CSRC also suggested broadening their investment scope to include derivatives, bond repurchases, and private funds.

Christophe Roupie, head of EMEA and APAC at MarketAxess, says cost synergies and efficiency gains will drive the ultimate model.

“Most global investors are coming under pressure from fees or performance targets, while the debate around active versus passive management has shifted some of the focus onto execution costs. These drivers will influence the future model, but ultimately the most effective technology solution will win. Dealers are also seeking scale, meaning it is likely that Bond Connect will evolve as bank business models changes, alongside buy-side AUM fee compression,” he says.

Vippy Wong, a partner at Hong Kong-based consulting firm Quinlan & Associates, says there will be some consolidation of these channels further

down the road. It will make it simpler for international investors to access different investments onshore in the Chinese market, she says.

“Institutions we speak to ask if they should access the market through QFII or RQFII or bond connect. You’ll likely see some consolidation of these channels in the immediate term. However, in the longer term, we are likely to see full and open access for foreign investors like most international financial markets,” she says.

### The Risk Factor

Trading platforms and channels aside, diving into China’s onshore bond market remains as a cautionary exercise due in part to the level of uncertainty brought about by the lack of global credit ratings agencies there.

It’s one reason why Bloomberg, for example, is only adding Chinese government bonds (CGBs) and policy bank bonds, which are relatively risk-free.

Bond Connect users can trade all types of bond securities on the China inter-bank bond market, including treasury bonds, local government bonds, central bank paper, financial bonds, corporate credit bonds, and commercial paper, as well as asset-backed securities.

Last year, 45 Chinese corporates defaulted on a total of 117 bonds with a principal amount totaling \$16.3 billion, according to a report by ratings agency Fitch Ratings.

So, while foreign institutional investors’ interests are piqued, this remains an area of concern for them, according to a vice president of global markets at another bank based in Shanghai.

Some of the questions that the bank gets asked by clients are on the methodologies of local ratings agencies. They have, in the past, been accused of rating onshore bonds too highly. Some of these concerns have centered, in particular, on corporate names.

“The recent credit default events are also a big concern, and we have some names that defaulted that were rated AAA by local agencies. And even after the bonds issued defaulted, the rating is still kept at AAA. So, offshore investors are very confused. Why is this? What is the mechanism for local credit rating agencies and how do onshore investors

look at their balance sheets—they ask things like that,” the vice president of the bank in Shanghai says.

However, local asset managers tend not to pay too much attention to these ratings. The deputy general manager at the onshore asset management firm explains that this is in part due to the implicit guarantees that the Chinese government has provided on any potential defaults.

“A large majority of onshore bonds get rated AA, which is classified as investment grade and high-yield. It’s probably more like a BBB,” the manager at the onshore asset management firm says.

However, the Chinese government has made some efforts in breaking down those guarantees, by bringing in new asset management regulations. In April 2018, the PBoC issued its *Guidance Opinions Concerning Standardization of Asset Management Operations by Financial Institutions*, detailing how it will tackle the matter. One of the main requirements of the regulation is that financial institutions can no longer commit to guarantees for principal or yields of products, or bail out any struggling products.

That said, having been long-ingrained within the Chinese system, it isn’t something that can change overnight.

“So, it doesn’t really matter who issues the bond, because local bondholders simply don’t care due to the implicit guarantee of the government. That’s why the government is trying to break this image of implicit guarantees. But retail investors are used to having that guarantee for about 20 years already, and now they want to start taking it away? Good luck,” the deputy general manager says.

The distrust foreign institutions have for domestic credit ratings is why PBoC’s approval for S&P Global Ratings’ Beijing-based operations to start rating onshore bonds was praised. However, S&P has yet to make any announcements on the onshore bonds that it will be covering.

MarketAxess’ Roupie says credit-worthiness will continue to be a major concern for global investors. “As it stands, four out of five local issuers are rated AA or more by Chinese domestic rating agencies. The internalization of the Chinese bond market will put addi-



**Li Renn Tsai**  
Tradeweb

tional pressure on domestic issuers to provide accurate financial disclosures, helping to raise industry standards in the process. Global investors have a huge amount to learn about domestic Chinese issuers, and even though it's early days, S&P Global will help to bridge the gap," he says.

However, at the moment, it's only the domestic agencies that can provide ratings, and there is no benchmark to what is high or low, says Quinlan's Wong.

"Once you have the foreign agencies in the market, who obviously adhere to global standards with how they rate bonds, there's a clear understanding of how it's done—including how that compares to the way they rate bonds in other jurisdictions. Greater competition will provide further additional benchmarks as to whether the ratings from the domestic Chinese agencies are too high or too low," she adds.

It is uncertain if onshore corporates would be willing to share their data with S&P, which means S&P might have to source the data publicly or perhaps conduct onsite visits. "I think they might be doing some credit rating for asset-backed securities issued by onshore firms like car loans, for example," the vice president for the bank says.

The other two well-known global rating firms—Moody's Investors Service and Fitch Ratings—which both have wholly owned subsidiaries in China, are still waiting for approvals from regulators to start operations at press time.

As to how S&P coming in will impact onshore investors, she says onshore banks have their internal rating mechanisms in place. "As long as they have credit facilities for these companies, they can buy their bonds issued by these companies. So, they don't really care about what the international rating is for the issuer. It's really only to appease global investors. The local domestic investor wouldn't care at all about this," she says.

One thing is for sure, though; if more international agencies receive approval from regulators to start rating onshore bonds, the competition will lead to better price discovery, which in turn will lead to better transparency in the bond market.

## Scratching the Surface

In a presentation during the RMB Fixed Income and Currency Pan-Asian Conference hosted by the Hong Kong Exchanges and Clearing (HKEx), Zhihuan E, chief economist at Bank of China (Hong Kong), noted that foreign investors are increasing their allocations in onshore bonds. In early 2014, bonds accounted for 13% of RMB assets held by overseas investors, which jumped to 35% by the end of 2018.

Even as more offshore investors are either starting to add or increase their allocation of onshore bonds to their portfolios, it comes as a stark reminder that foreign ownership of onshore bonds is still only 2% of the entire Chinese bond market.

Olivier d'Assier, head of applied research for APAC at risk management technology provider Axioma, says it's good that onshore bonds are now in the same league as the global universe of bonds. "[The China bond market] is going to be the largest in the world someday. The problem in China is, because the bond market is fairly new or recent, it's hard to establish yield curves. There are not enough dots to do that. Not every sector has enough bonds in it to establish a baseline spread for that sector or rating. The curves are not well established yet. There are some holes maybe, there are no five-year bonds, or it's hard to establish risk premiums or spreads," he says.

The bulk of bonds in China are still traded over the counter, but that is changing with programs like Bond Connect encouraging electronic trading instead. However, just looking at government and policy bonds does not make up for the problem that there are too many holes in the curves to establish spreads with credibility. "There are not enough peers in the rating sector with the maturity to deal with it," he says.

Just over half a year ago, Axioma bought onshore bond data and is "crunching those numbers" to establish yield curves. "In China there are a lot of holes and most of the curves that are established are based on cluster curves. These are based on available ratings or sectors but sometimes we can't get as

# 13%

In early 2014, bonds accounted for 13% of RMB assets held by overseas investors, which jumped to 35% by the end of 2018.

granular as we'd like because there's not enough bonds. So we create cluster curves around sectors or ratings and look at a specific issuer, decompose it and then look at how it's trading against its peer. That's the only approach you can use right now because of all the holes along the various yield curves. It's like trying to complete a half-broken Rubik's Cube. If you're missing half the pieces, you'd have to just try imaging and extrapolate it," d'Assier says.

With China taking a seemingly more proactive stance in opening up its markets to the rest of the world, foreign investors will also still have to bear in mind that a significant factor—Chinese regulators—weighs pretty heavily on its markets.

Dealing with regulators is an interesting concept in China. It seems as if any financial contract is subordinate to the regulator's ruling, according to the deputy general manager of a local asset management firm.

"Regulation in China is hugely different from the 'free world,' because here, everything is regulated by the CSRC, explicitly or implicitly. Anytime you want to make a move, the first thing you'd do is talk with the regulators. The CSRC becomes the go-to person rather than an already defined contract," he says.

While it's true that Chinese regulators tend to intervene in the market quite drastically—and often without prior warning—d'Assier says most global investors have started to consider having some exposure to the market. "If you look at the inclusion, it's being done progressively and slowly. Most people who have a global portfolio will have 1% or 2% of exposure to the RMB, and the biggest part of the inflows are yet to come. That will only come when China starts opening up even more," he adds.

The addition of onshore bonds to the Global Agg index is a positive step, says d'Assier but it is still "tiny" compared with other nations, and yet, the potential is enormous.

"There is still a good chunk of the market that still needs to be looked at in the future," adds Bloomberg's Gendron. [WT](#)



**Vippy Wong**  
Quinlan &  
Associates

# Banks Find Tech Firms Have Big Risks Too

The flavor of the week among investment banks is not to be a bank, but a tech company. While the numbers are starting to back that claim up, so are the risks involved, writes James Rundle.



**Y**our bank probably doesn't want to be called a bank. It doesn't want to be called a trading firm, an asset manager or a wealth adviser, either. What banks want, in 2019, is to be called technology companies.

When Goldman Sachs famously announced this a few years back, it was—rightly so—regarded as a bit of a marketing ploy. Yes, the bank, and others like it who have since claimed the moniker, employ a vast amount of people in technology and related functions. But the core business of a bank isn't to create software—it's to manage money, on behalf of clients and shareholders.

And while tech spend is undoubtedly on the rise at major US investment banks, it's by no means the core spend.

Bank of America, Citigroup, Goldman Sachs, JP Morgan, and Morgan Stanley collectively spent just shy of \$25 billion on technology-related line items during 2018, according to regulatory filings made by each bank.

This marks an approximate increase of 8% from 2017's figure of \$22.8 billion, itself up from \$21.8 billion in 2016.

For most, this included general tech spend, as well as data processing costs and communications. The banks with substantial retail operations were, perhaps unsurprisingly, the leaders by a wide margin, with Bank of America, Citigroup and JP Morgan outspending Goldman Sachs and Morgan Stanley by several billion dollars.

All of this sounds great at recruitment fairs on college campuses, where markets firms are engaged in a mortal struggle with Silicon Valley for the next

generation of computer whizzes. It also plays well with the media, which hasn't gone soft on Wall Street since 2008.

However, with a wholehearted embrace of technology, if that's what this truly is, also comes an acceptance of risk. Even a cursory glance through the 10-K forms filed with the Securities and Exchange Commission over the past few months shows just how prominent these risks have become.

“**Goldman used its 10-K filing to warn about one technology in particular—blockchain.**”

Most banks also focused heavily on technology in their risk assessments. These sections are primarily concentrated on the threat of cyber attack, but also permeated through each bank's disclosures are mentions of technology concerns in operations, in discussing the possibility that they may fall behind in electronic trading systems development, or saying that they face competition from new entrants seeking to disrupt elements of their business.

Annual reports have included such statements for years, but one that stood out was Goldman's. The bank, which, as mentioned, has increasingly touted its technology credentials in recent years, and has begun to spread out into retail areas through a highly publicized partnership with Apple for a credit card offering and the launch of its retail savings bank, Marcus, used its 10-K filing to warn about one technology in particular—blockchain.

“Although the prevalence and scope of applications of distributed ledger technology and similar technologies is growing, the technology is also nascent and may be vulnerable to cyber-attacks or have other inherent weaknesses,” the bank wrote. “We may be, or may become, exposed to risks related to distributed ledger technology through our facilitation of clients' activities involving financial products linked to distributed ledger technology, such as blockchain or cryptocurrencies, our investments in companies that seek to develop platforms based on distributed ledger technology, and the use of distributed ledger technology by third-party vendors, clients, counterparties, clearing houses and other financial intermediaries.”

Such a specific warning about a particular technology is odd. Usually, risk-related language appears as vague rhetoric, but not so much here.

It is, perhaps, merely an evolution of the threat landscape, or an indication as to the importance Goldman places on its activities within distributed ledger technology. Maybe it's a veiled warning that certain of its activities within crypto may not play out.

One thing that it should be is a wake-up call, however. Markets are never in the control of one institution, but the risk from them can, generally, be modeled and measured through mathematical means. But once banks start warning about specific technologies, it does suggest that it's about time to treat cyber risk, technology risk, and supplier risk with the same rigor as counterparty credit risk. **WT**

# Open and Shut (Anything But)



It's a heady time for those developing data standards, but Jamie Hyman says standards leaders need to agree about what "open" means, or they risk getting bogged down in semantics.

As I was researching my article about the politics of developing and accrediting identifiers (p.30), I realized that sources were describing various standards as "open" or "not open," but I did not understand what open means, in this context.

So I did what any good journalist does, and asked a standards expert to define it for me. Imagine my surprise to learn that in an industry segment obsessed with precise definitions, there does not exist a definition for the word "open".

It turns out that openness is meaningless. Jim Northey, TC 68 chair at the International Organization for Standardization, told me that open means "there is a sound governance model and an established standards organization.". If that sounds vague, that's because it is, and Jim agrees—in his opinion, defining what open means should be a matter of public debate.

So, I asked some more people.

Peter Warms over at Bloomberg kept it brief: "Open should mean that the standard doesn't come with any legal language attached to it." He cited the Cusip as an example of an identifier that is not open, because consumers pay to create it and then pay licensing fees to use it. The Bloomberg-backed Financial Instrument Global Identifier is broadly considered to be open.

The Association of National Numbering Agencies (Anna) doesn't have a working definition, either. Managing director Emma Kalliomaki told me it's a topic that has been coming up more in the past few years, especially in dis-

cussions around the Unique Product Identifier. As far as she knows, there is not an accepted definition of open and its definition depends on context. As for Anna, she says the association believes there should be timely access to identifiers, as well as the associated reference data necessary to interpret them. And yes, she considers Anna's International Securities Identification Number to be an open identifier.



**As standards leaders advance with their attempts to define data, first, they should define what "open" means.**

There are many layers to consider. Varying degrees of openness exist when it comes to accessing a standard, maintaining the standard, and also identifiers created in compliance with the standards, as well as access to those. Also worthy of consideration is the openness of the process of creating standards.

It's complex, but shouldn't be impossible to define. Other industries have done it. Open-source software means it has code that anyone can see, change or enhance. More broadly, open source is widely accepted to mean a product includes permission to use its code, design or content. An open house means anyone can enter during a set period of time. In open balloting, the voters' choices are not kept confidential. Open banking refers to greater transparency around financial data and the use of open APIs that developers use to build services.

You get the idea.

The problem is that due to the popularity and cool factor of open source, the word open now has a positive connotation, indicating that a product or service (or identifier or data source) is superior, advanced and progressive. And so, standards producers toss the word around like bead necklaces at Mardi Gras, but of course, that dilutes the definition of the word until it is completely devoid of meaning.

I'm not a standards expert, but as a journalist, it bothers me when words do not have precise definitions. Under the current use, at best, the definition of open is completely contextual, bending and flexing to fit the intended meaning, whether producers are talking about fees, licensing, access or process.

It's a heady time for standards evangelists, with knowledge, technology and collaborative efforts aligned like the stars, lighting the way for previously impossible achievements, like an upper-level ontology, to become reality. That said, they are a group that likes to argue about definitions, because it's their *raison d'être*—data and how it's labeled must be aligned to its precise meaning, via standards, or else it is worthless. It would be a shame to see focused, driven standards leaders bogged down in arguments over their own industry segment glossaries, and progress stifled because the building blocks so often celebrated when discussing lineage are allowed to remain fuzzy and unstable.

As standards leaders advance with their attempts to define data, first, they should define what "open" means. [WI](#)



# Be Like Water

Navigating the Chinese market can be a daunting task, with firms constantly being kept on their toes, waiting to see what moves local regulators make. Wei-Shen Wong thinks it's better to adopt a more flexible approach and go with the flow.



**T**here is a famous quote written by martial arts legend Bruce Lee. It goes something like this: “You must be shapeless, formless, like water. When you pour water in a cup, it becomes the cup. When you pour water in a bottle, it becomes the bottle. When you pour water in a teapot, it becomes the teapot. Water can drip, and it can crash. Become like water, my friend.”

Personally, this quote has had a significant influence on my journey with *WatersTechnology*. It was advice given to me by a good friend, just before I moved out to Hong Kong. “Be like water,” he told me. These words have helped me stay the course, particularly when faced with the challenges that come with moving to any new city.

I find that these words of wisdom from Lee are, in fact, truly like water—adaptable to any situation or circumstance. Being flexible is an invaluable characteristic of any firm, for instance, particularly when considering setting up shop in China, or even when looking at investing in Chinese assets.

During a recent trip to Shanghai and Beijing to meet with some foreign banks and asset managers, as well as local institutions, there was a recurring theme—dealing with Chinese regulators is a daunting challenge.

## Capricious Regulators

These regulators, such as the People's Bank of China, as well as others that concern financial institutions, are infamous for implementing regulatory changes quickly—sometimes without any warning.

One example is when the China Securities Regulation Commission (CSRC) imposed restrictions on trading in stock index futures after a brutal selloff in 2015, resulting in a 99% drop in trading volumes for CSI 300 index futures. The restriction was to prevent more losses, and was aimed at stabilizing the market.

Later restrictions included raising the required deposit on the value of a contract and capping daily trading in a single futures product to only 10 lots per investor, among others.

**“Foreign firms operating in the country, or those interested in getting their feet wet in China's markets, have to tread cautiously because there is no such thing as a playbook to follow.”**

Regulators also maintain implicit control over the use of technology, in some cases even the algorithms used to trade. According to a deputy general manager at a Shanghai-based asset management firm, the use of algos has to fit within the framework allowed by the CSRC.

“I think a lot of people choose not to use it because the process is just too painful. However, if they choose to use algos, it will usually be bundled within HundSun Technologies, a large financial software provider based in Hangzhou. They probably have about 99% market share,” he says.

HundSun was established in 1995

and is listed on the Shanghai Stock Exchange. It provides technology and services to the institutions of securities, futures, funds, trust, insurance, bank, exchange, and private placement.

“You don't really know what the requirements are, but basically the CSRC guys say if you use HundSun, there won't be a problem. If you use something else, you will waste a lot of time dealing with the regulators. To break into the financial software market here is not easy. Portfolio managers' compliance teams always have to consider if the CSRC is going to agree with this. If not, forget about it,” the asset management firm's deputy general manager adds.

It is also the case that onshore firms have an interesting relationship with regulators in China, to the point that even predefined contracts can be renegotiated.

“Regulation in China is hugely different from the ‘free world,’ because here everything is regulated by the CSRC, explicitly or implicitly. Anytime you want to make a move, the first thing you'd do is talk with the regulators. The CSRC becomes the go-to person rather than an already defined contract,” he says.

In that sense, foreign firms operating in the country, or those interested in getting their feet wet in China's markets, have to tread cautiously because there is no such thing as a playbook to follow.

Or perhaps a playbook does exist—it's just that local regulators behave like water. [wt](#)

# Human Capital



## Swift Names Pérez-Tasso CEO

Global payments messaging utility Swift has named Javier Pérez-Tasso as its new chief executive, following an internal and external search to find a replacement for current CEO Gottfried Leibbrandt, who will retire in July after 14 years at the organization.

Pérez-Tasso, who has been with Swift for almost 25 years, was most recently CEO of Swift Americas and UK region. He will take up his position on July 1.

## Collibra Cages Lyons for Data Security

Data governance platform provider Collibra has hired Myke Lyons as chief information security officer, responsible for setting direction for the vendor's information security function and overseeing its application and product security teams.

Lyons was previously head of security strategy for the security business unit at cloud computing provider ServiceNow prior to which he was technical project manager at advertis-



**Roland Anderson**



**Ramesh Pulandaran**

ing and marketing agency Grey Group, and senior security analyst at streaming media technology provider Core Media Technologies.

Based in New York, Lyons reports to Collibra co-founder and CEO Felix van de Maele.

## Eagle Alpha Swoops on Richards

Social media analytics and alternative data provider Eagle Alpha has appointed data industry veteran Dale Richards to its board of directors, to advise the vendor on areas such as product roadmap, business development, and strategy.

Richards currently runs Island 20 Ventures, an advisory firm focusing on data and technology, and has also served on the board of alternative data marketplace Quandl. He has held senior positions within the data industry over a 35-year career, including US president of First Derivatives, which acquired his enterprise data management consultancy LakeFront Data Ventures in 2010, and president of EDM at SunGard.

## Cusip Promotes Market Data Product Pro Bastian

Cusip Global Services (CGS) has given its director of market and business development, Matthew Bastian, an expanded role as senior director of market development. He remains the organization's West Coast representative.

"My promotion reflects new responsibilities related to standards development, including an increasingly active role within both the local US (ANSI X9) and global (ISO) standards bodies," Bastian says.

Before joining CGS, Bastian was a product development director at S&P Capital IQ.

## Due Diligence Body IDDO Adds Silitschanu to Board

The International Due Diligence Organization, an industry association that aims to set standards and processes for due diligence decisions, has appointed Phillip Silitschanu to its advisory board, to provide capital markets industry insight and expertise, and to help steer the vision and growth of the body.

Silitschanu is currently director of strategic relationships at tokenization platform Token IQ, which he joined last year after spending the past nine years as research principal at his firm Lightship Strategies.

## TP Icap Nabs Ex-Nex Exec as Data CTO

Interdealer broker TP Icap has hired Roland Anderson as CTO of its Data & Analytics division, to support a pipeline of planned new products. He replaces Martin Walters, who will retire in June after 25 years at the firm.

Anderson was previously operations manager at CME Group following its acquisition of Nex Group, where he was head of operations for the broker's Nex Data division, and was also information services operations manager at Icap.

He reports to Eric Sinclair, CEO of the Data & Analytics division.

## GoldenSource Taps Trading, FinTech Vet Pulandaran

Data management platform vendor GoldenSource has named former Broadridge and SunGard exec Ramesh Pulandaran head of Asia-Pacific sales to boost the vendor's client base and ability to serve existing clients in the region, which is its fastest-growing geography, officials say.

Most recently, Pulandaran spent



**Matthew Bastian**



almost five years at Broadridge Financial Solutions as MD of capital markets for Asia-Pacific.

At GoldenSource, Pulandaran is based in Singapore, and reports to Neill Vanlint, MD of global sales and client operations.

### TRG Screen Splits Technology, Product Roles, Names New CTO

Data inventory management platform provider TRG Screen has hired Grant Putre as CTO in New York, responsible for development and IT operations for all of the vendor's software and internal IT.

He replaces Richard Mundell, who has been named chief product officer, responsible for product strategy and management, and for identifying strategic partnerships.

Putre was most recently CTO at Bluefin Payment Systems, prior to which he was CIO at Veracity Payment Solutions.

Both report to TRG Screen CEO Steve Matthews.

### T-Rex Snaps Up San Cristobal for Chief Product Officer

New York-based data management software vendor T-Rex has hired former Thomson Reuters and Bloomberg exec Tricia San Cristobal as chief product officer to oversee product strategy and development for its existing and future technology solutions.

San Cristobal was most recently global business manager for the Enterprise Platform at Refinitiv (the former Financial and Risk division of Thomson Reuters).

San Cristobal reports to T-Rex founder and CEO Benjamin Cohen.

### Thasos Taps Metaxas as CRO

New York-based alternative data provider Thasos, which captures geolocation data from mobile phones, has hired Chris Metaxas as chief revenue officer, responsible for all sales activity and strategic partnerships. Metaxas was previously CEO of loca-

## HART TO HEAD DATA COALITION

Nick Hart has been named CEO of the Data Coalition, an open data trade association, and interim president of the Data Foundation, an industry-focused open data research organization.

His experience mostly stems from work with the US federal government. He was director of the Bipartisan Policy Center's Evidence Project, where he remains as a fellow, and previously was its policy and research director. His PhD is in public policy from The George Washington University, and he also holds advanced degrees from Indiana University Bloomington in environmental science and policy.

In his new role,

Hart will drive the Data Coalition's policy agenda, which advocates for a government-wide open data policy, and open data for management, regulatory compliance, and laws and mandates. He will direct thought leadership, programming, and education with an aim to elucidate the value of open data for government and society.

The Data Coalition hosts the annual RegTech Data Summit, and when asked about how capital markets plays into the organization's mission, Hart highlights the Coalition's ongoing support of the Financial Transparency Act (HR 1530 in the 115th Congress),



**Nick Hart**

which he calls the first regtech legislative proposal in the US.

"The proposal would direct the eight major US financial regulatory agencies to collect and publish the information they collect from financial entities in an open data form, electronically searchable, downloadable in bulk, and without license restrictions," he says.

The organizations are based in Washington, DC.



**Chris Metaxas**



**Craig Broderick**

tion data and analytics provider Digital Recognition Network, which was acquired earlier this year by Motorola.

Metaxas reports to Thasos founder and CEO Greg Skibiski.

### Credit Benchmark Taps Ex-Goldman Sachs CRO to Lead Advisory Board

Consensus credit ratings provider Credit Benchmark has appointed former Goldman Sachs chief risk officer Craig Broderick to set up and lead a new advisory board that will guide the vendor's strategy and market position.

Broderick will be tasked with assembling the advisory board comprised of senior executives or public officials "who understand risk broadly and the power of data to better inform decisions," Credit Benchmark CEO Bill Haney tells *WatersTechnology*.

Before joining the vendor, Broderick spent 34 years at Goldman Sachs in risk management roles, including chief risk officer. He also serves on Bank of Montreal's board of directors.

### Northern Trust Promotes Burns to Head Funds Services

Northern Trust has announced that industry veteran Ryan Burns is to head its global fund services Americas business. Based in Chicago, Burns will oversee client service and set business strategy for investment clients in the Americas. He succeeds Dan Houlihan, who was promoted to head of asset servicing in the Americas last summer.

Burns has more than 20 years of experience in financial services technology and relationship management.

### Drawbridge Partners Appoints Tadijanovic as CTO

Cybersecurity consulting firm Drawbridge Partners has appointed Viktor Tadijanovic as CTO, a role based out of its New York office. Tadijanovic will guide the company in its technology direction and strategy, as well as lead the engineering, product and customer engagement teams.

Prior to joining Drawbridge, Tadijanovic was a co-founder of the Abacus Group in 2009. [WT](#)

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