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# The Value of Getting into the Weeds

There are various kinds of leaders in our industry, although most fall into two groups: those who have risen through the ranks of their organization where they have focused on the hands-on use of technology and the enabling role it plays in the business, and those who tend to leave the technology to the technologists and treat it as just another tool and a means to an end. There are no right or wrong ways, just different approaches to technology and separate paths followed.

Two technologists from the first group who feature in this month's issue of *Waters* are Halcyon Capital Management's Charles Walters, the subject of this month's cover story by Anthony Malakian (see page 22), and Veronica Augustsson, CEO of Stockholm-based Cinnober Financial Technology. While Walters and Augustsson have different approaches to their technology, given that Walters is a consumer and Augustsson is a producer, their careers aren't all that dissimilar in the sense that they both cut their tech teeth through long hours of development work, implementing new pieces of software, and applying technology solutions to business-specific problems at the organizations where they have worked.

While the phrase "getting into the weeds" might suggest a scenario where one becomes bogged down in the minutiae of a particular subject, when it comes to capital markets technology, details matter. A lot. It takes a full appreciation and understanding of the details to recognize the opportunities, practicalities, implications and challenges that technologies offer the business, a scenario alluded to by Augustsson when I met her in London in early April. "My driving force isn't all about trying to understand everything about the capital markets, but rather about understanding how technology can be used. I want to be at that crossroads," she said. Walters echoes Augustsson's sentiments, explaining what exactly it was about the Manhattan-based hedge fund that he found so appealing: "What attracted me to Halcyon is I like getting my hands dirty and understanding things at a deep level and understanding the business proposition in a real way," he explained. Clearly, focusing exclusively on technology development to the detriment of their business applications is dangerously myopic and can prove terminal if unchecked, hence the premium Walters and Augustsson place on the relationship between the two fundamentals.

And what about the second kind of leader? Is there anyone who springs to mind who has assumed a senior technology-focused role with limited hands-on tech experience? Yes, Deutsche Bank's global head of innovation, Elly Hardwick. She describes herself as "not a technologist," and yet she plays a pivotal role in the identification and implementation of new technologies that help her client—the bank—further its business interests. And as luck would have it, she's the subject of next month's cover story. **W**

**Victor Anderson**  
Editor-in-Chief

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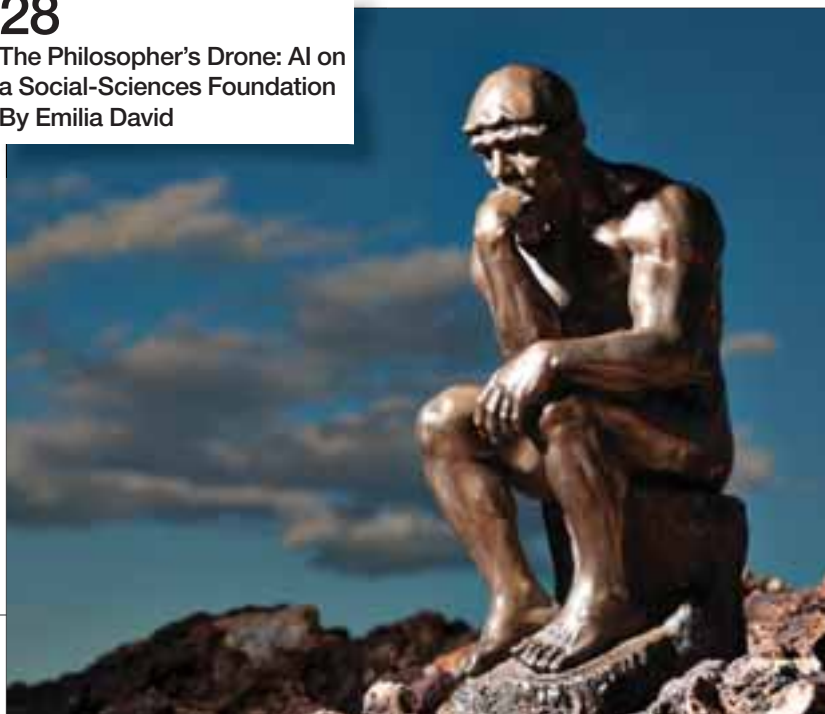


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# NEX CEO Sees Opportunity for Opportunities after CME Deal

Michael Spencer says he expects the CME Group to continue investing in fintech startups after takeover.

By James Rundle

**O**n March 29, CME Group made a formal offer to acquire NEX Group in a cash and shares deal that values NEX at around \$5.4 billion.

The rationale for the deal largely centers on NEX's electronic-trading offerings, including foreign-exchange platform EBS and BrokerTec, which is the leader in US Treasuries trading, along with NEX's post-trade businesses including TriOptima.

However, NEX has also been aggressive in recent years investing in early-stage fintech startups through its Euclid Opportunities vehicle, now known as NEX Opportunities after NEX emerged from Icap's sale of its voice-broking arm to rival inter-dealer broker Tullett Prebon in 2016.

Through that arm, NEX has made a range of investments stretching from seed capital through to Series C funding rounds in firms as varied as RSRCHXChange, OpenFin, Axoni, Cloud9, Enso, and OpenGamma.

Some of those firms have even been brought in-house. However, NEX Opportunities was not mentioned in either the initial offer released on March 29 or in slides accompanying an analyst presentation.

During a call with journalists held on the same day to discuss the offer, NEX Group CEO Michael Spencer said he expects the same practice to continue in the enlarged group.

"The NEX Opportunities project we started about five or six years ago has been very effective and very successful for us," Spencer said, in response to a question from



**Michael Spencer**  
NEX Group

*Waters*. "I think it's worth bearing in mind that [legacy] Icap funded TriOptima as a startup in 2002 when it was an idea, not even a business, and that project obviously turned out extremely well, and TriOptima is a very successful and profitable business for us. We found there has been value in this entrepreneurship, in locating and investing in startup businesses, and we expect to continue to do that."

CME's acquisition of NEX is subject to regulatory and shareholder approvals. Under UK takeover rules, other interested parties have 21 days to submit a counter-offer for NEX, which cannot hold a shareholder vote before that—CME shareholder approval is not required for the deal to proceed.

## Brexit Bull

Assuming the various approvals are received, NEX and CME say they expect the deal to close in the second half of 2018. Following the move, the group headquarters of the enlarged CME Group will be in Chicago, while its European headquarters will be in London.

"London already is CME's European headquarters; it will remain that way and only get bigger

from a London perspective," said CME chairman and CEO Terry Duffy, in response to a question from *Waters* on the same call.

While the CME already has a significant presence in the British capital, employing several hundred people there, it has also pulled back on its European operations in recent years, closing both CME Europe and CME Clearing Europe in 2017. As such, the move is also a renewed vote of confidence in the city's future, as the UK's imminent departure from the European Union has seen financial services firms of all stripes set up significant operations in other European cities. This is to avoid being locked out of the single market or lose "passporting" rights after Brexit, which allow them to offer products and services throughout the bloc.

"From our point of view, and Terry and I are in complete agreement about this, notwithstanding Brexit, London is going to be the most important financial center within Europe—and this is not a pro- or anti-Brexit, politically-partisan opinion whatsoever," said Spencer, who will become a special adviser to CME and join its board after the deal closes. "NEX has made appropriate moves to passport some of our businesses into Europe, and in any case, it has a big operation in Stockholm, a smaller operation in Milan, and we're passporting the BrokerTec electronic platform into Amsterdam. We are absolutely not taking a Brexit view at all, but London is the right place for the enlarged CME business to head-quarter itself in Europe." **W**

## THE BOTTOM LINE

- Despite the notable omission of NEX Opportunities from current documents pertaining to the takeover of NEX Group by the Chicago Mercantile Exchange (CME) Group,

NEX's CEO says he expects the group to continue identifying and investing in fintech startups after the deal's closure.

# Deutsche Bank's Joerg Landsch on Creating a Successful Innovation Lab

While speaking at this year's North American Innovation Summit, Joerg Landsch ran through what he believes makes for a successful innovation lab. [By Anthony Malakian](#)

As banks increasingly look to understand and take advantage of the explosion of fintech startups that are populating the market, three different models have emerged: setting up a corporate venture-capital unit (such as Citi Ventures), the development of incubators or accelerators (such as JPMorgan In-Residence), and the creation of innovation labs. Deutsche Bank (DB) chose the latter.

Deutsche Bank Innovation Labs has offices in Berlin, Silicon Valley, London and New York, with another to open in Singapore later this year. While delivering the opening keynote address at this year's North American Innovation Summit, Joerg Landsch, head of Innovation Labs Americas for DB, said one of the biggest lessons learned as the bank went down this path was to start with a challenge, rather than looking at the technology first.

"When we started in the beginning, we started with solutions," he said. "We went to Silicon Valley, saw great technologies, got excited by about 95 percent of the solutions, went back, tried to bring these great technologies to the firm, and—surprise, surprise—there weren't [any business units] excited by that great technology. I can give you a long list of great solutions that we weren't able to get into our organization. So we changed our model—start with the problem."

By identifying the problem first and then finding the right solution, it's easier to budget, ensure the appetite and governance is in place, and that the business unit has "skin in the game," he said.

When it comes to evaluating new technologies, Landsch puts them into three buckets, or "horizons." Horizon 1



**Joerg Landsch**  
Deutsche Bank

is for tools that bring short-term results, that don't have a huge impact, but will bring returns within 12 months. Horizon 2 is for projects that will take between one and two years, but that will improve processes significantly while adding revenue, or reducing cost or risk. And Horizon 3 is for topics that are truly revolutionary, such as quantum computing or distributed-ledger technology (DLT). These innovations are likely three or more years away from coming to fruition and can't show any "successes" for a long time, thus making them very challenging, he said.

To be able to better understand the fintech marketplace, Deutsche Bank Innovation Labs has created a funnel system that starts with "discovery." This means meeting with startups. Over the last three years, between the four Innovation Labs, DB has met with about 2,500 fintech companies to create a list of qualified startups that could be useful to the bank in the future.

Next, they "evaluate" the potential players and conduct their vendor due diligence after creating a challenge statement. Next they "execute" the vendor's proof-of-vision (PoV) and build the initial solution. Finally, they "adopt" the solution and roll it out, should everything run smoothly.

An example of this process is the work Deutsche Bank has done with WorkFusion, which has a cognitive machine-learning platform that automates the process of training and selecting machine-learning algorithms for work that's too complex for robotics.

Deutsche Bank Innovation Labs had been following WorkFusion since it started out of the MIT Research

Lab. DB then identified a challenge for trade finance operations in India and started looking for options to improve incoming document management.

The innovation lab then conducted three PoVs using small samples of day-to-day data flows, each testing a different use-case in order to hone in on the perfect use-case, which ended up being for the bank's asset management operations. After the PoV, they then moved to a production pilot. And, finally, WorkFusion was rolled out to full production for asset management operations and DB Innovation Labs is now assessing opportunities to implement WorkFusion's solution in other areas of the bank.

## Bringing in the Business

Landsch said it was key to separate the Innovation Lab from the actual bank headquarters. The New York-based lab is about a seven-minute walk from the bank's 60 Wall Street main office. This allows the unit to create an ecosystem that is separate from the business.

He added that it's vital to have business people working alongside the technologies to create the end implementation. So they bring in executives to let them see what they're working on. Over the last 12 weeks, the New York innovation lab has brought in over 1,000 employees from Deutsche Bank from across the globe.

"What we discovered very early on is that a project [can't be successful] if we don't have business people and technology people in the room, both participating in the project," he said. **W**



# Trade Bodies Release Framework for Penetration Testing

The guidelines seek to establish best practices for a key cybersecurity measure. **By Hamad Ali**

A framework for the regulatory use of penetration testing in the financial services industry, published at the beginning of April by the Global Financial Markets Association (GFMA), seeks to engage regulators globally with a common framework to facilitate open dialogue and establish an industry-wide process for conducting penetration tests.

Some of the contributing organizations to the framework include Credit Suisse, ING Bank, Morgan Stanley, Citi, Bank of America, UBS, Standard Chartered, Wells Fargo and BNY Mellon.

“The document is not to identify where penetration testing has not worked or to identify a problem,” says Allison Parent, executive director at GFMA. “The framework is designed to provide a resource that both the regulators and private sector can use to work toward consistent penetration testing programs to avoid duplication of efforts. The framework was developed with the input of global firms and regulators that provided best practices regarding how we can work together going forward to achieve both public and private-sector goals.”

Penetration tests consume significant amounts of time, effort, and resources, GFMA says, with global financial firms potentially subjected to testing every jurisdiction they conduct business in.

“Take global institutions, for example, which might have a presence in over a hundred countries around the world,” says Thomas Wagner, managing director of financial services operations and



**Thomas Wagner**  
Sifma

technology at the Securities Industry and Financial Markets Association (Sifma), a member lobby group of the GFMA. “If you have a hundred regulators all asking for these kinds of tests, it is just not an efficient use of a firm’s resources.”

The development of the framework was a lengthy process, involving three working groups meeting on a weekly basis over a six-month period from July to December 2016 to discuss and collaborate on an initial draft.

Last year, the groups reviewed the document with a number of regulatory bodies and central banks and solicited their input, resulting in a set of principles that was issued in December 2017.

April’s release focuses heavily on the ways in which regulators can work with firms to standardize approaches and resolve outstanding issues, which not only include resource concerns around complying with numerous requirements, which may vary greatly in approach, but also touch on practical security concerns.

One of the key issues that came up during discussions is that regulators have sometimes outsourced penetration testing to third parties.

There are significant concerns about having these results in the hands of third parties, says Wagner, in that firms are effectively handing over “the keys to the kingdom.”

“Having that kind of sensitive information anywhere outside of the firm is a major concern,” he adds.

## Cyber Threats

Meanwhile, the threat of cybercrime continues to rise. In its semiannual assessment of threats, risks and vulnerabilities to the financial system, published on April 5, the European Securities and Markets Authority (Esma) said that the operational risk outlook for financial markets was high—and deteriorating in the future—largely owing to the persistence of cyber-attacks against institutions.

The need for common frameworks has also become acute as wider initiatives around penetration testing and cybersecurity in general increasingly appear—and aren’t just confined to national jurisdictions. In the US, for instance, cybersecurity rules are being implemented on a state-by-state level, such as the New York Department of Financial Services’ rules, which came into force in 2017.

“What we are asking regulators to do is that, for those firms that have robust pen-test programs in place, let’s work together,” Wagner says. “What we want is an open, transparent process where the regulators can discuss what they see as a risk, and what they would like to see tested, and have the firms conduct the tests in collaboration with their regulators.” **W**

## THE BOTTOM LINE

• As cybersecurity concerns mount across the financial industry, penetration testing has emerged as a key line of defense for firms looking to safeguard their systems against outside intrusion. But

with regulators increasingly putting their own programs in place, one industry body believes that global standards are now needed—and it has come up with a solution.



# European Watchdogs Warn on Cyber, Cloud and CCPs

The bloc's primary financial regulators say immediate work is needed to protect systems. [By James Rundle](#)

**E**uropean financial regulators have issued a stark warning on rising risks from cyberattacks and Brexit, saying that urgent action is required to “improve fragile IT systems” and that firms should immediately begin taking “risk mitigating actions” regarding the UK’s withdrawal from the European Union.

The European Securities and Markets Authority (Esma), the European Banking Authority (EBA) and the European Insurance and Occupational Pensions Authority issued the warnings in a joint report on risks to the financial system, published on April 12. The three regulators comprise the EU’s financial oversight apparatus and are collectively referred to as the European Supervisory Authorities (ESAs).

In particular, the ESAs said, any disruption in access to central counterparty (CCP) clearinghouses could have a severe impact. In the event that the UK and EU fail to negotiate an exit deal protecting the status of UK-based CCPs, the regulators said, the UK would be considered a third country. This means that CCPs located in London will not be authorized by the EU, and will not be regarded as equivalent under European law, which could result in high capital charges for EU-based institutions to use them.

“This might pose risks to market continuity, as financial flows could be disrupted and liquidity provided by UK-based counterparties could be affected,” wrote the ESAs. “It might also challenge banks domiciled in the EU 27 through increased capital requirements for exposures to UK CCPs. These exposures are substantial, as UK CCPs currently act as

clearinghouses for a large share of the derivatives trading activity of EU 27 parties.”

Since the UK’s vote to leave the EU in 2016, the bloc’s regulators have been engaged in an increasingly bitter battle over the oversight of CCPs. The European Commission has proposed rules that may require CCPs it regards as systemically important to relocate to the EU 27—in particular LCH, which clears the vast majority of euro-denominated swaps.

However, it has also proposed extending its oversight to third-country CCPs, a move that has angered the US and has the potential to spill over into a major diplomatic incident. Commissioners at the Commodity Futures Trading Commission (CFTC) have taken turns criticizing the EU over the incident and suggested that it is being watched at the very highest levels of political power.

Industry bodies such as the Futures Industry Association (FIA) have also sharply criticized the EU’s proposals, saying they threaten the stability of the global derivatives market.

## Deteriorating Outlook

In addition to the risks posed by Brexit, the ESAs also warned over heightened operational risk associated with cybersecurity, and an increasing reliance on outsourcing.

While market infrastructures are relatively well-regulated and are obliged to report cybersecurity incidents, penetration test results and other cybersecurity measures to regulators, the ESAs said, the move to public cloud and the concentration of service provision in a handful of companies has the potential to become a systemic risk.

“Outsourcing to cloud service providers also poses risks beyond those of the traditional IT outsourcing,” the ESAs wrote. “Increased reliance on service providers, in particular with regards to critical activities, may impact the ability of institutions to manage their strategic, reputational, compliance and operational risks. In addition, concentrations of outsourcing providers may lead to increased systemic risk, for example when technical problems or solvency issues lead to non-continuity of the services covered by cloud providers.”

Esma, the ESAs said, is taking the lead on developing a supervisory approach to handle cloud computing, based on the EBA’s previous work in this area. The ESAs also mentioned the emerging field of cyber insurance, but effectively said it was at too early a stage to judge its efficacy. This mirrored a judgment from the US Federal Financial Institutions Examinations Council on April 10, which released a letter to financial institutions saying they were not obliged to carry cyber insurance at this stage.

Other areas of concern in the report included environmental risks related to climate change, which the ESAs warned firms to become actively aware of, and the importance of stress testing in markets that could suffer sudden risk premia reversals.

Included in a separate box to the main body of the report, the ESAs also warned about the risks associated with digital currencies, given the potential for bubbles to form, and demonstrably extreme volatility, along with the lack of a robust secondary market to manage risk. **W**

# Regnosys to **Expand** Reach with Bank, Regulatory Implementations

In addition to its work with Isda, fintech startup Regnosys also has projects in the works with ING Bank and the FCA. [By Anthony Malakian](#)

In February, after conducting a request-for-quotations process with about 15 vendors, the International Swaps and Derivatives Association (Isda) announced that it had selected Regnosys to develop a digital version of its Common Domain Model (CDM) to provide “the bedrock of standards” upon which new technologies could be rolled out upon. It was quite the coup for the fintech startup.

Leo Labeis, cofounder and CEO of Regnosys, says the project is on track to produce an initial framework for a digital representation of the CDM for the rates and credit asset classes by mid-May. “The next phases are really going to be about expanding the scope to potentially capture other types of instruments or capture other types of legal artifacts, and another direction for future development is to actually run a proof-of-concept (PoC) of usages of the CDM,” he says.

Regnosys was founded by Labeis and Pierre Lamy, both of whom are Goldman Sachs alumni, with Lamy coming out of the investment bank’s technology department and Labeis an engineer in Goldman’s foreign-exchange trading and sales division. Last May, the vendor closed a \$900 million private funding round. Its Rosetta platform is built on open-source tools and it provides evidence of regulatory compliance, traceability to data sources and to the regulatory handbook.

While the Isda win garnered global headlines, the vendor is also working on a PoC with ING Bank and is hoping to expand into other global banks. “The PoCs for us will be about developing and honing



**Leo Labeis**  
Regnosys

these products that sit on top of Rosetta through these partnerships,” he says.

It is also part of a large collaborative effort being run by the UK Financial Conduct Authority (FCA) to examine how technology can make the current system of regulatory reporting more accurate, efficient and consistent.

In November, Regnosys was one of 18 entities that came together to successfully develop a PoC that could eventually allow for regulatory reporting requirements to be machine-readable and executable. The group combined the expertise of regulatory and government entities such as the FCA and the Bank of England, with financial institutions like Credit Suisse, HSBC, and Santander, consultants, academics, law firms and other vendors in addition to Regnosys.

The goal for the FCA is to make a straight-through process where a rule is ingested, it’s machine-readable, the rule can be changed, and the rule and changes automatically flow out to financial institutions. The PoC lays the groundwork to automate regulatory reporting in order to reduce the need for costly interpretations for banks, and it could also potentially cut costs in terms of time and manpower.

“In a nutshell, the point is we take some of the regulator’s rulebook and disambiguate the text to bring it to a digital artifact that is executable,” Labeis says. “So on that first prototype we were able to directly use and process institutions’ transactional event data through the software to get the right output as per the rule.”

While it’s important to note that Regnosys is just one of many entities

working on this project, Labeis says Regnosys can play an important role as the CDM can be used to create a clear definition of all the entities in the model. This is vital because rules will have to be written where the text and rewrites are standardized in order to be machine readable (and executable). If the rules are written in such a non-ambiguous way, then the end-platform can take that non-ambiguous “artifact” and have it auto-generate software that can detect a firm’s granular event data and then process that in accordance with the rule to produce the required output. Labeis believes the CDM is capable of doing just that.

“We believe the CDM is a fantastic resource—and not just the Isda CDM, but CDM as a concept that applies to the derivatives market and could be applied more broadly across financial services—to provide the ability to write machine-executable regulation,” he says.

The FCA released a “Call for Input” on February 20, which will close on June 20. Then the regulator will publish a feedback statement summarizing the views received and the proposed next steps.

“Having the CDM for the industry—you could have CDMs for the derivatives industry, but the concept is applicable across the board—but if you had that then you would be able, in the same model, to tie the regulatory obligations together in a consistent way, shared across the industry and that will go a long way in simplifying regulatory implementations across the entire industry,” he says. **W**

# For Systematic Internalizers, Volumes Only Tell Half the Story

Identifying what constitutes true trading activity and addressable liquidity is key to analyzing the success of market reform, experts say. [By Hamad Ali](#)

Ever since the revised Markets in Financial Instruments Directive (Mifid II) took effect on January 3, there has been growing interest in systematic internalizers (SIs), entities designed to capture client trades executed against a broker's own book. SIs were created under the first iteration of Mifid to increase transparency in trading outside regulated markets, but because of the presence of dark pools and broker crossing networks, they never really took off.

Mifid II changed all that, by effectively dismantling crossing networks, and by placing limits on how much trading in individual names can take place on over-the-counter (OTC) markets and dark venues, setting thresholds on this through a mechanism known as the double volume cap. Most major trading banks and electronic market-makers now operate an SI. Observers worry that dark activity may be taking place on SIs rather than crossing straight over to lit markets, but it has proved difficult to generate a true picture of precisely what has happened.

"The whole point of Mifid II was to push more trades onto venues, particularly lit venues, to improve transparency and to reduce [activity in] the OTC market," says Tim Cave, a London-based market structure analyst at Tabb Group. "What has happened is that a lot of trades that were previously being booked in the OTC market are now booked under the SI regime. So on a notional basis, there has been a big increase in SI volumes. But not all of them are executable trades—there is some double reporting of trades going on, there is a lot of give-up and give-in trades, which are hedging transactions."



**Tim Cave**  
Tabb Group

This leads to a problem for market observers, in that this activity can be hard to measure, and in turn, properly analyze. Data reported by participants can be misleading in the sense that, as Cave says, measuring purely on volume alone has proved to be a red herring. Others agree.

"Since January, we have seen our clients highly interested in the volumes that are reported as SI volumes," says Robin Mess, CEO at analytics firm Big Xyt. "Very quickly in January, the trading community realized that of the volumes that are reported as SI volume, not all of it was relevant."

Big Xyt has since introduced a new functionality to its flagship product, Liquidity Cockpit, aimed at identifying addressable liquidity by filtering out the background noise of data lines that may not paint a perfect picture of just what is going on inside SIs. That's not to say the activity itself is illegitimate, but it does add weight to volumes that may not be entirely representative of pure trading activity.

"There are a lot of really technical trades that aren't actually executions," says Tabb's Cave. "So the volumes at the moment look very inflated. But I think if you actually analyze that activity more in-depth, I think there has been a bit of an uptake in SI volume. And that figure will probably grow more and more as the year goes on and the buy side becomes more comfortable interacting with SIs."

There has also been concern from trading venues that SIs enjoy a competitive advantage in a post-Mifid II world, owing to discrepancies in pricing between lit venues and the SIs. The European Securities and Markets

Authority (Esma) has been taking note and recently clarified its position on the concept of "prices reflecting prevailing market conditions," which effectively orders harmonization in tick sizes—or the increments by which prices increase and decrease—between SIs and regulated markets. It has also released a new Q&A looking at activity in SIs.

Regulators and lawmakers who put Mifid II together saw the SI as a bridge between replacing the old OTC regime for so-called upstairs trading, and the desire to shift activity to a venue where it can be more easily monitored. However, there have been concerns that participants may use SIs, along with other mechanisms such as periodic auctions, to circumvent the spirit of the volume-cap rules.

Market operators, in particular, have stressed that while dark trading remains perfectly legitimate for large-in-scale orders, routine trading should be taking place on lit venues, in keeping with the transparency objectives in Mifid II.

"It's really a question of what the purpose of the dark markets is. Are they there to protect institutional style trading? In that case, that has a valid reason," says Rebecca Healey, head of EMEA market structure and strategy at Liquidnet. "And the introduction of the tick size regime within SIs means there is not essentially this idea of price improvement, [so that] might not necessarily be the case. It is really asking fundamental questions about what do market participants need from dark markets, and why and in what circumstances can they successfully return to the lit." **W**



# VERONICA AUGUSTSSON:

## At the Crossroads of Business and Technology

When you first meet Veronica Augustsson, CEO of Stockholm-based Cinnober Financial Technology, it's difficult to imagine a more unlikely fintech CEO. But as with so many things in life, appearances can be misleading. *By Victor Anderson with photos by Jonathan Goldberg*

Veronica Augustsson assumed the reins at Cinnober at the age of 33. That she was young, relative to other heads of large third-party technology firms, is not the only noteworthy feature of her rise through the Cinnober ranks. She had also spent almost her entire working life at the firm, joining as a programmer shortly after completing her master's degree at the KTH Royal Institute of Technology in Stockholm, although the initial part of her career in technology did have its trials. Augustsson studied computer science and did her master's thesis with Enea, a Swedish IT firm that specializes in real-time operating systems, although as she soon discovered, the storm clouds that had been gathering on the technology

horizon for some time were about to rupture. "I joined Enea for six months or so in 2001, but that was after the dot-com bubble burst," she recalls. "I think I joined in May, and in July they started laying off staff and a few months later it hit us. I was the last one in and the first one out."

The future would have appeared bright for Augustsson while she was still at university, given the great demand for engineers at the time across numerous industries on the cusp of deploying technology to support their growth and development, and notwithstanding the turbulence created by the dot-com crash and her Enea blip, she was back on track in April 2002 when she joined Cinnober. "As a developer, when I was studying





in school, companies would come and try to hire us before we had even graduated,” she says. “They were offering us what we thought were huge salaries, but just a few months later you couldn’t find a job. From the point of view of the dot-com crash, if you were a developer, there were no jobs. I then got in touch with Cinnober through a woman I knew when I was doing my master’s, who was working at the company, and they were hiring. So I sent in my application without knowing anything about the company—of course I went to the website, but I didn’t know much about Cinnober—and I got a job as a developer. I immediately liked the culture and atmosphere.”

#### First Role

Augustsson’s first task was to build the matching and registration platform for NordPool, the Nordic power markets, before moving on to a project Cinnober had with the London Metal Exchange. But it was the American Stock Exchange (now NYSE American) relationship that proved pivotal for Augustsson in terms of cementing her transition to the capital markets, a move that saw her relocate to New York for a year, which she describes as “extremely helpful” because of its position at the very heart of the financial world.

“

“I’m a naturally curious person—even when I was a developer, I always wanted to know more than just the project’s requirements of how to build something. And so I always tended to work closely with the customer. I also wanted to challenge them and ask them why they were building something and what the rationale was.”

“Sweden is not a financial center, even though we are good with technology and fintech especially,” she says. “What I learned there I couldn’t learn in Sweden. Just being on Wall Street and mixing with the traders and developing an understanding about how and why systems are used and why they need to be reliable was very important.”

Augustsson explains that her transition from an entry-level engineer specializing in real-time systems to someone grappling and becoming comfortable with the complexities and nuances of the capital markets was not without its challenges. If anything, she says, that transition is still a work in progress. “Yes, it was challenging, and I still don’t know everything,” she says. “I’m a naturally curious person—even when I was a developer, I always wanted to know more than just the project’s requirements of how to build something. And so I always tended to work closely with the customer. I also wanted to challenge them and ask them why they were building something and what the rationale was. My driving force isn’t all about trying to understand everything about the capital markets, but rather about understanding how technology can be used. I want to be at that crossroads.”

#### Cinnober’s Hot Seat

While Augustsson’s installation as Cinnober’s CEO in 2012 would undoubtedly have raised some eyebrows within the organization due to her age and lack of experience, she had been at the firm for 11 years by then. By that point, she had developed an intimate understanding of nearly every aspect of its offerings by virtue of hands-on experience when the board came calling. Be that as it may, did the question come out of the blue for her or did she have aspirations of landing the top job?

“No, I wasn’t really surprised,” she says. “You can’t decide on the timing in terms of when you get that sort of question. I was 33 and I had two young kids, and so I had a lot going on in my life, but it was good because we weren’t a listed company then—now we’re listed on the Stockholm Stock Exchange. Where the company is today, I’m not sure whether I would have got the question due to my lack of





“My driving force isn’t all about trying to understand everything about the capital markets, but rather about understanding how technology can be used. I want to be at that crossroads.”

experience, but back then, I think I was the right fit and I and the company have grown a lot.”

Indeed, a glance at the two most important measures of a company’s health—staff numbers and revenues—underlines Augustsson’s assessment: Under her leadership in the last five years, Cinnober’s head count has grown from 150 to 350 and its revenues have more than doubled to just over \$41 million in 2017. That doesn’t rival the industry’s largest players—FIS (\$2.32 billion), SS&C Technologies (\$1.68 billion) and IHS Markit (\$945 million), for example—but it’s also nothing to be sniffed at.

### Pipeline

When Augustsson assumed the reins at Cinnober, the firm had a strong sales pipeline and her initial strategy entailed growing its presence in its core market: exchanges and clear-

inghouses. However, she also had designs on establishing a presence in the investment banking and brokerage sectors, while also amending the firm’s revenue model, which at the time was heavily reliant on—and therefore exposed to—large, one-off deals.

“I have taken our revenues from about 20 to 25 percent recurring up to about 75 percent,” she says. “But we also wanted to use the assets that we had in other segments. I didn’t have a clear picture of what those segments were and how we were going to do that, but after a year or two we started looking at the banks and brokers. Back then we were focused more on growth than profitability and we were also focused on innovation and building new solutions. But I learned that profitability is a challenge when dealing with engineers; we’re on that journey right now, but we’re not there yet.”

Another key focus for Augustsson is the acknowledgement that as a service provider, Cinnober has to work in partnership with its clients such that they have a hand in driving much of the development around the firm’s technology and services, and by so doing increasing the general transparency throughout the organization, especially when it comes to monitoring the status of development work. “When it comes to our traditional focus [exchanges and clearinghouses], we deliver the heart of their business and so it’s natural for us to work in partnership with them,” she explains. “I think we’re a very transparent company; we always invite our clients to participate in projects if they want to, and we also open all our tools to them. For example, we open our issue tracking system to them so that they have 100 percent transparency into everything that is going on.”

## No Surprises

Augustsson insists that transparency is important in order to build trust, as is delivering on promises and developing an intimate understanding of the client's business so that all future development can be supported. "If I promise the client that we are going to deliver something on a specific date, we must do that and it must have the right scope. It's also important to understand where they see their business and what their books of work look like for the next, say, three years. We have a monthly steering committee meeting where I or someone from senior management participates, and likewise from the client's side. We go through the status of the projects and how we are running in terms of production. We try to ensure that there are no surprises and we try to be as transparent as possible."

Given Cinnober's stance on transparency and collaboration, it's safe to assume that Agile plays a prominent role in all its development work and the communication thereof, an assumption Augustsson confirms, adding that as a developer, she has known no other way. "We're totally Agile," she says.

Cinnober uses Slack and Jira extensively and even utilizes electronic scrum boards as a core feature in many of its projects, allowing clients to continually assess their projects on a daily basis if they so wish. "Even though they might not monitor things on a



daily basis, the fact that they are able to provides them with confidence that we are doing what we said we were going to do," she adds.

## Scope Creep

Considering the closeness of the collaboration Cinnober is happy to foster and maintain between itself and its clients, some might warn that scope creep is an almost inevitable byproduct, a concern Augustsson is aware of. However, she argues that collaborating, flexing and regularly pivoting (when necessary) during the course of any project is normal and that, if anything, it should be encouraged, given that the

look and feel of whatever functionality is delivered by way of regular sprints is likely to reflect what the client wants at that specific time rather than what it might have wanted at the inception of the project. "It's a challenge from time to time, but you don't want to sit down and spec everything out in great detail because then you're back to the Waterfall model," she explains. "When we start a project, we have a pretty good understanding of what it entails and we develop a fairly detailed scope document, but we are keen—both from our point of view and the client's—to minimize scope creep. I think this goes back to the trust issue; we're not here to screw clients on price and we trust that they aren't here to try to increase the scope just because they might have that opportunity."

As an engineer, Augustsson unsurprisingly manages her professional life along the lines of one continuous Agile project, complete with sprints and regular feedback loops to ensure that scope creep is kept to a minimum and performance and delivery are optimized. "The way I tend to work is that I prepare fully for every meeting for the week ahead. I try to define what success means for each of those meetings and what I want the ideal outcome to look like. Before I go to sleep, I give myself feedback to assess whether I achieved what I wanted to. If not, I try to work out why that was and I include frequent feedback loops instead of a yearly review." **W**

## FIVE TAKEAWAYS FROM AUGUSTSSON'S INTERVIEW

- Capital-markets technologists should make every effort to work in partnership with their third-party technology providers so that they have a hand in driving the development and delivery of their technologies/projects.
- User-firms should demand access to their providers' development tools in order to gain greater transparency into the status of their projects/solutions. Making such demands is not unreasonable; it's just good business sense.
- For large numbers of capital markets firms and their service providers, Agile isn't just a development methodology; it's their only development methodology.
- When it comes to spec'ing a project, firms should be wary of building in too much detail, given that detailed, rigid spec documents can lead back to the Waterfall methodology. Instead, change (pivoting) should be encouraged along the route to delivery, given that it helps to minimize scope creep and ensures that the functionality delivered
- is pertinent and appropriate to the market's current demands.
- Third-party technology firms should look to develop products and functionality that customers need when the delivery date rolls around as opposed to delivering what they wanted when the project was initially spec'ed. Agile entails regular, iterative roll-outs based on what clients want at a specific time, which means a single, big delivery at the end of the project is unlikely ever to transpire.



# Market Cops Turn to CRIME-FIGHTING ROBOTS



Surveillance officers and investigators at exchanges are increasingly turning to robotics and AI to help them do battle with would-be crooks, but some are finding that the technology still has some way to go. **By James Rundle**

**A**lthough the focus of Paul Verhoeven's 1987 cyber-punk classic, *RoboCop*, is the eponymous cyborg, the most influential character in the film is actually ED-209. The former is a disruptive element, a cybernetic organism designed to replace humans, while the latter is a "dumb" robot designed to support and augment human processes. Unsurprisingly, it's the robot that future-Detroit's cops are keen on, and not the resurrected Officer Murphy—and it's a concept that is finding support in real-world policing circles today.

The development of artificial intelligence (AI) in finance, particularly among its own police force, is following similar lines. Market surveillance has emerged as one of the key areas

of development for AI and its various subsets—such as machine learning and robotic process automation (RPA)—because it's a data-heavy process that is ripe for the benefits of automation and the application of robotic intelligence.

But while it may be tempting to think of an army of software bots being able to replace frazzled investigators and surveillance analysts at today's stock markets, the reality is a little different.

"What we're doing in a productive way is applying machine learning in terms of extracted knowledge of surveillance analysts, to assess a certain situation or scenario with the overall intention of bringing up the true positive ratio," says Carl-Frederik Scharffenorth, senior surveillance analyst at the trading





“Ranking and scoring of alerts is just the beginning. We are already working on alternative detection models for alerting, and we are using machine learning to process and extract relevant information out of news and communications details.”  
**Valerie Bannert-Thurner, Nasdaq**

surveillance office of Deutsche Börse. “Our work still depends so much on the human decision to take up a case or not.”

Deutsche Börse is not alone. Most major exchanges around the world are investigating the applicability of AI to their surveillance processes, and some are further along than others. With a little development, the technology could become something special indeed.

#### Alert! Alert!

As per Scharffenorth’s comments, much of the work involved in fusing AI with surveillance processes to date has tended to focus on fine-tuning the notification process for analysts. Surveillance personnel have long complained that the scourge of their working lives is the false positive, an alert generated in response to a potential breach that actually turns out to be innocent—or more regularly, nothing at all.

In September 2017, Nasdaq announced that it was launching machine learning on its Nordic stock exchanges. Designed to assist surveillance officers, it analyzes data and historical trends to assign a rating to an alert generated within the system, which in turn prioritizes those deemed likely to lead to a Suspicious Activity Report (SAR) and subsequent investigative actions.

“At market open, you’ll have a burst of activity, and therefore a burst of alerts,” says Joakim Strid, head of European surveillance at Nasdaq. “At certain times of the day when there are important announcements or other events that may lead to volatility or increased trading activity, those will generate alerts. At those times, when you have maybe 60 alerts coming your way, the score will be able to help the analyst make decisions on which represent the highest likelihood of them taking an action, and they can choose to focus on them first.”

The technology used by Nasdaq on its Nordic exchanges has since been implemented at Hong Kong Exchanges and Clearing (HKEx), through the US operator’s Smarts product. Spokespeople at HKEx declined to answer specific questions about their use of AI in surveillance, but said the exchange would continue to evaluate its performance as time goes on.

Other exchanges in Asia are also getting in on the AI game, with the Japan Exchange Group expanding its use of AI in surveillance in March 2018, using systems developed by Hitachi and NEC Corp. A spokesperson for the exchange group says it will continue to “establish the use of AI in surveillance operations in a constant and reliable manner.”

This level of sophistication marks a step-change from how surveillance has typically been conducted in the past, by using rules-based engines to pick up classic cases of market abuse, such as layering and spoofing, where orders are entered rapidly to artificially inflate or depress the price of a stock; wash trades, where two firms effectively conduct a riskless trade as a means of payment; and banging the close, where trades are entered near certain times where the day’s reference price is set for a stock, currency or commodity.

This was generally how venues such as the London Stock Exchange Group (LSEG) conducted their first-line surveillance in the early years of the millennium. While the LSEG could not provide comment in time for publication, a source with direct knowledge of the exchange’s technology base says that this “began to run out of steam” around six to seven years ago.

The exchange then began using machine reading to perform statistical analysis, in order to detect outliers and analyze patterns between datasets, in an early attempt to reduce “noise” in analyst signals, such as alerts. It has since advanced its use of machine learning into other areas, such as collusion theory and fine-tuning alerting processes, as with its contemporaries.

“What we are looking at is essentially a set of markers on a map that allows an experienced analyst to zoom in on abuse. Our machine learning helps to dramatically reduce their workload by distilling a million events down to a few points of interest,” the source says.

But as AI continues to gain ground, there has also been a recognition that it may not hold all of the answers to the market’s problems—and indeed, proclamations of a new golden age in machine learning may be exaggerated.

### Malfunction! Malfunction!

Although the science of AI, in its current form, has been around for decades, its recent and rapid emergence as a field of serious interest can essentially be boiled down to three factors: the proliferation and availability of data, a significant decline in the cost to store said data, and finally, the level of compute power now available to process and analyze the data has rapidly increased.

“Frankly, it’s more accessible,” says Rivka Gewirtz, a senior director at surveillance specialist NICE Actimize. “We now have analytical capabilities that exist on the cloud, which means that can build models, discover features, run them on production data, all within our environment on the cloud, and then deliver these models for implementations, which is also new. Previously, many financial institutions were resistant to adopting advanced analytics, because it meant they had to take on data scientists, they had to build out an environment, and they had to have all kinds of expertise that were both hard to find and not cheap.”

To be sure, this technological development marks an entirely new era of possibility for surveillance more broadly. But market surveillance, such as that performed on stock exchanges, is a very particular beast. Many of the techniques developed using AI for fraud, or anti-money laundering can have applications within market surveillance, but simply throwing a machine-learning algorithm at a problem isn’t always the best solution.

Part of this is due to the nature of the data held by stock exchanges, and how the accuracy and completeness of the data is impacted by ways in which firms access the market, Deutsche Börse’s Scharffenorth explains.

“Exchange surveillance itself is a very unique field, and we have to overcome some problems with data,” he says. “Member firms, especially if they provide services to a broader group of clients, have very good data that’s better segmented. For us, it’s very difficult in



that we have, for instance, one member that has a setup where a lot of clients are trading entities aggregated behind one ID, and therefore that ID represents various people, with all of their diversity. We face a lot of challenges in terms of how we can know when to apply machine learning at all, because the data source is not as homogenous as it should be.”

Even within the realms of alerting—AI’s surveillance gravy train—by most accounts there are limitations to what AI can—or perhaps, should—be applied to. Deutsche Börse has

been working with vendor Scila AB on its classification algorithm, but Scharffenorth says its efficiency often depends on the problem in question, and the range of inputs that can be used to detect it. A simple pump-and-dump scheme, for instance, with a sudden, sharp price dip from mass selling, isn’t necessarily a nuanced issue that machine learning is best deployed to solve.

“It tends to work better the more dimensional the view you have a on a certain alert,” he says. “If you look at something like layering, which takes into account multiple aspects of trading where you sit at a certain level in the order book, you occupy a certain amount of the volume being offered, and at the same time, you look at time ranges where you’re buying or selling, or whether it’s a directional trade involved. The wider the parameter space of an alert is, the better the classification and the machine learning is, because the broader the input, the better the output.”

Likewise, while the raw cost of computing power has dropped significantly with the advent of public cloud services and turnkey compute resources, these algorithms, not to mention neural networks and other AI-specific power monsters, still require a significant backbone to run. The size of the datasets needed to train these models, also, boggles the mind.

The source at the LSEG, for instance, says that 15 years of trading data out of London amounts to around 200 terabytes, while it has access to Nvidia Volta graphical processing units, which means it can power neural networks through the 110 teraflops of compute power it has. This is a distinct advantage for the exchange, the source says, which needs this level of information to train its new automated analyst system.

“Sophistication of analysis techniques has always been limited by [compute power]. But today’s processing capabilities has opened up the doors to a whole new universe and you

can deploy more sophisticated methods,” the source says. “To do this, you need in place an existing surveillance system as well as a neural network that is primed with random starting conditions to generate collusion behaviour. The two networks then work together to train the discriminator network.”

The key moving forward will be in figuring out how to blend these practices. Rather than simply using automation, or machine intelligence, or another strand of AI in isolation, experts say, the fruits of this endeavour will be borne through fusions of different disciplines.

### Fusion Power

One example of this is the increasing interest in combining behavioral science with AI development. Nasdaq, for instance, acquired London-based behavioral science specialists Sybenetix in July 2017, while Chicago-based Trading Technologies snapped up cognitive tech house Neurensic in October 2017.

But increasingly, the benefits of combining automation, such as RPA, with machine intelligence are becoming clear. Rather than focusing on a single topic, bringing multiple AI streams together provides a way to save investigators time while also bringing the positive aspects of more sophisticated alerting to their attention.

Compiling information from disparate systems, for instance, has typically been a manual, time-consuming task, which can now



**Matt Hodgson**  
Mosaic Smart  
Data

be done by bots. Extrapolating that a stage further, given the ability of machines to do this in a fraction of the time it takes a human investigator to do it, a wider variety of datasets are able to be included, as well as unstructured data.

“Ranking and scoring of alerts is just the beginning,” says Valerie Bannert-Thurner, global head of risk and surveillance solutions at Nasdaq. “We are already working on alternative detection models for alerting, we are using machine learning to process and extract relevant information out of news and communications details. We are leveraging clustering algorithms to look for behavioral outliers, and we allow our customers to use tools and languages like R and Python to investigate and explore patterns within their data.”

Technology vendors, too, are exploring how they can link unstructured data with more traditional information, such as trader communications. This would allow investigators to determine links not just between trading activity, but individual entities, where it might not have been clear to a human eye before.

“I was seeing the early stages, where you select a trader, and all of his or her transactions and relationships, and this is really awesome; you also see their entire history of communications,” says NICE Actimize’s Gewirtz. “You now have the ability to look at totally unstructured communications in combination with their historic transactions, which you can see in an entity view, as well as a line view, depending on how you want to move forward.”

The LSEG source, too, says that the exchange is looking at AI and its techniques in other areas, including risk management, although they say the exchange is over two years from a real-time risk engine at this point.

Others are looking even further afield. On April 20, Mosaic Smart Data announced that it was partner-

ing with the European Space Agency to see if machine-learning algorithms used to monitor deep-space satellites could be effectively deployed within financial markets for surveillance purposes. The vendor will conduct a feasibility study, but believes the algorithms could be used by both banks, for their own surveillance requirements, as well as exchanges.

“These machine learning models spot potential technical issues on satellites before things go seriously wrong by learning what ‘normal’ behavior is and then spotting anomalies in the data from the tens of thousands of elementary parameters,” says Matt Hodgson, CEO and founder of Mosaic. “In a similar way, when it comes to market surveillance, you are trying to spot anomalies, the behavior that lies outside the normal trading patterns that might indicate an error or trading in bad faith of some kind. Just like on the satellite, you are trying to establish what data points lie within the normal distribution and then pick out those unexpected novelties for closer examination by compliance team.

“The difference is that satellites have tens of thousands of inputs, and catching something before it goes wrong can save millions of dollars in damages. In the markets, there are millions of data inputs, but catching something earlier could save hundreds of millions, possibly even billions,” he continues.

Despite limitations and drawbacks, then, the future seems bright for AI in exchange surveillance. “The use of machine learning is going to be prolific and it will improve the way we operate across the whole surveillance spectrum,” says Bannert-Thurner. “It will allow us to become significantly more efficient in the way we detect, analyze, investigate, and manage alerts and it will also allow us to do things differently [compared] to before and open up whole new opportunities and approaches to identify suspect individuals and behaviors.” **W**

### SALIENT POINTS

- AI is seeing widespread use in market surveillance, particularly in terms of fine-tuning the alerts that analysts and investigators receive.
- While some remain relatively nonplussed by AI, others have ambitious goals to combine different disciplines.
- AI is in active deployment on some exchanges today, including the Nordics and Japan.

# RTS 28: THE DATA HUSTLE



Just as one regulatory deadline falls in Europe, another rears its head. From April 30, best execution requirements kicked in across the continent, but market participants fear that problems remain with full compliance. *By Josephine Gallagher*

**A**t the start of this year, fundamental changes to Europe's trading rulebook kicked in, often resulting in last-minute panics, system changes, and Christmas lunches eaten at office desks.

While most of Europe managed to survive the revised Markets in Financial Instruments Directive's (Mifid II's) January 3 deadline, brokers have become increasingly nervous about April 30. On that day, new rules kicked in requiring firms to disclose specific details about the venues they use and the quality of execution they provide to their clients.

It sounds simple, but look beneath the surface, and the provisions within Regulatory Technical

Standards 28 (RTS 28) are keeping traders and compliance officers awake at night.

"The reports are due now on April 30 and when I'm getting a call as recently as last Tuesday from people asking for help, you can see that it can't be simple," says Andre Nogueira, director of trading analytics at ITG. "Firms have had almost a year to prepare for this—almost a year and some are still not ready."

## Crunch Time

As just a fraction of a larger puzzle that makes up Mifid II, RTS 28 and the reporting of execution quality have been the subject of huge debate and controversy for years.





“What I have seen so far leads me to believe that firms are not well prepared. We have a few large clients who have regular calls with us trying to sort through their own data. They are constantly talking to their legal counsel and figuring out what data they need, or additional data they need, to send us.” **Andre Nogueira, ITG**

The mandate has set new regulatory and technology hurdles for investment firms, including categorizing the top five execution venues and entities used across asset classes, summarizing how best execution was achieved, managing the costs of implementation, understanding what is expected of regulators and combining these efforts to meet the first deadline on April 30.

John Jannes, head of product trading analytics at IHS Markit, says he has spoken to firms, which up until recently intended to produce the RTS 28 reports alone, describing the workload as an “operational nightmare” and “spreadsheet hell.” Within his role working for a provider of trading analytics and information solutions, Jannes is in constant talks with firms about their ability to fully comply, and believes that many are still not ready.

“What I have seen so far leads me to believe that firms are not well prepared,” he says. “We have a few large clients who have regular calls with us trying to sort through their own data. They are constantly talking to their legal counsel and figuring out what data they need, or additional data they need to send us. Even though we provide them file specs and everything on what we want, what they can provide doesn’t always line up perfectly.”

While many claim that, although European authorities have largely regarded the contents of RTS 28 as a simple exercise, the scale of the workload, the costs of implementation and the challenges at hand have been largely underestimated.

“Starting to get this information together is going to be a significant drain on resources, a significant effort within the firm and investment within the firm to prepare this information,” says Allan Goldstein, COO of Trade Informatics, a provider of quantitative analytics.

For medium to large firms, let alone multi-asset, multi-market-making heavyweights, RTS 28 has become a major data challenge that requires extensive flexing of resource and technology muscle. Just to begin, firms are having to capture, categorize, and publish in a readable format streams of trading activity across a range of asset classes, sub asset classes, and execution destinations. This is no easy task and can often come with a hefty price if a third-party provider is added to the mix.

“Mifid II, from an implementation perspective, is expensive—from a data perspective, from a technology perspective, from a workflow and process perspective,” says ITG’s Nogueira. “Try to do things in Mifid

II without automation, without technology—it’s just not possible.”

To add to this data exercise, firms are required to report whether an explicit order executed on a trading venue was passive or aggressive but this does not apply when a passive or aggressive order is sent to an entity such as a broker, unless the portfolio manager or order transmitter has specifically given instructions to do so. This can become a logistical nightmare in cases where firms operate across multiple brokers and have to capture data such high-touch or low-touch orders, broker instructions, and algorithms that have a particular trading style that is passive or aggressive.

In addition to the multiple tables, classifications and data capturing, firms are also obliged to publish an assessment of how they achieved quality execution in the best interests of their investors. Since January 3, firms have had to update their execution policies, but the first reports are expected to demonstrate how these policies were adhered to and pinpoint areas where improvements need to be made. Although proving this process of quality execution may pose challenges to begin with, Rebecca Healey, head of market structure at trading venue Liquidnet, and co-chair of the EMEA regulatory subcommittee of the FIX Trading Community, says firms have come a long way in the UK compared to other European markets on improving best-execution policies and processes.

“There has been real progress in terms of the whole concept of best execution, and rather than hiding behind a woolly statement, firms—particularly in the UK—have done a huge amount in looking at the best-execution process, and it is much more than getting three quotes or looking for the best price,” she says. “It should be a much more holistic overview of what a best-execution policy should entail.”



**Allan Goldstein**  
Trade  
Informatics



The underlying objective of RTS 28 is to set a benchmark for all investment firms across the industry and provide a new level of accountability and transparency that has never existed before. The European Securities and Markets Authority (Esma), the regulator responsible for turning Mifid II into actionable standards, indicates that to allow investors to scrutinize and make robust comparisons between firms' performances, the annual public disclosure must be made available in machine-readable format on a web-based platform for a minimum of two years.

"Effectively, by shining a light on it, they expect people to make better decisions, and that's really what this is about," says Ben Stephens, managing director at Instinet, an agency broker owned by Japanese bank Nomura. "By making firms be transparent,

they have to publish their routing policies and have to show the outcomes of those, and can effectively be held accountable. Putting that data in the public domain means that it's difficult for firms not to behave in the way they state they are behaving."

But it's not all doom and gloom. Regulatory authorities have offered a glimmer of hope that, even if firms can't do everything perfectly the first time around, there may be some margin for error.

### Best Efforts

In an effort to ease into the first year, investment firms are expected to provide the first annual report on what is described as a "best-effort basis." Esma has acknowledged the difficulties of compiling all of the requested data in cases where it is tied to the previous year and stems from the provisions under the original Mifid.



**John Jannes**  
IHS Markit

In the months following the adoption of RTS 28, Esma published various Q&As to help market participants grasp a greater understanding of the mandate, its interpretations and what is expected of investment firms. Despite these efforts, some firms have struggled to interpret what is meant by best efforts. The real question is how will this translate to the regulators when assessing the first batch of reports published? According to some, this could potentially impact firms' approach to subsequent years.

"The regulators give a lot of latitude to firms and the sufficiency of the reporting for the first year, but I think there is an implicit risk that reporting firms use that as a rationale for not addressing the full scope of the rule until much later, which is a bad thing," says IHS Markit's Jannes.

Broadly speaking, however, queries about what constitutes "best efforts" are

often a case of splitting hairs. Most brokers spoken to for this article consider it to mean assessing all the data required, filling in the gaps where possible and acknowledging in the reports where and why the gaps are present.

"It is important to know that you don't have to be perfect in the first year but if you do have gaps, from a transparency perspective and to keep with the spirit of the regulation, you should disclose what these gaps are and make sure that you address them for the next year, says ITG's Nogueira.

Liquidnet's Healey, who actively works with trading firms and organizations to help address key industry issues such as RTS 28 is under no illusion that the first reports will be perfect, but rather sees this as the first step for the industry in the right direction.

"Firms are working on this now—has everybody got it right yet? Probably not," she says. "I think we need to be very clear here. Esma has outlined in its Q&A that it is not expecting the first report to be perfect—it's best endeavors, it's a best-efforts basis but it's important that we start the process, because starting the process is how you can refine it and learn from it and then improve it."

As assessments of the first annual reports are expected to officially begin at the end of the month, RTS 28 will authorize local regulators to take legal action and issue heavy fines in cases where firms fail to comply. Historically



**Rebecca Healey**  
Liquidnet

speaking, regulators have shown that they are more than willing to clamp down on best-execution failures. In the US, regulators have issued heavy fines, in some cases penalizing major banks and trading firms to the tune of millions of dollars, in response to breaches of SEC Rule 605, a regulation that requires broker-dealers to publish a quarterly report on best execution.

The UK's Financial Conduct Authority (FCA) is similarly expected to ensure investment firms meet its best-execution reporting requirements under RTS 28 and Mifid II, even if it has promised to be lenient in the beginning with firms that are making good-faith efforts.

"We expect firms to be compliant with their obligations under Mifid II and where they are not, action will be taken and that is consistent across the board; it's not just for Mifid II," said Mark Steward, director of enforcement and market oversight at the FCA, during a press conference held on April 9.

### Survival of the Fittest

The problem with RTS 28 isn't necessarily a compliance issue, most say—rather, it's a data-management issue. Instinet's Stephens says the secret is to ensure all data is order and that keeping a close eye on it makes the process much easier.

"If your data is already in good working order, then producing these types of reports is quite easy," he says. "Markets are becoming more and more electronic and if you're already running electronic trading infrastructure then this should be bread and butter to you. If you are not then it's much harder."

By this point, firms will have a good idea of what their best-execution policies are and would have been updated since the beginning of the year. Up until the RTS 28 deadline, firms should fully understand and have mapped out how they are achieving

quality execution according to its policies. This summary of analysis of best execution asks firms to fully assess where best execution was realized and to scrutinize where improvements need to be made in the next year.

Esma recognizes that firms may choose to provide "more granular reporting" in addition to what is required, as this can be used to justify orders made, decisions taken or gaps in the information. Overall, regulators will be looking to see if firms can justify any discrepancies and demonstrate the efforts to comply with the mandate, and provide its clients with "meaningful information" that allows investors to scrutinize the execution quality achieved and compare that with other investment firms.

"We are very conscious, from our own perspective as well, that Mifid II is a very challenging piece of legislation, but by the same token we do expect firms as well as ourselves to be in compliance with what's needed," said the FCA's Steward, at the press conference. "It produces a lot of data for us that is enormously valuable and helps us to do our job better and more efficiently in the future so it's really important that we make it work."

The key is to understand RTS 28 is an evolving process—a challenging process for firms, but one that many believe will bring about new changes and dialogue that never existed before. Ultimately, this mandate is expected to force firms to clean up their data, improve best-execution methods, and inject new transparency and accountability. The underlying lesson is to meet the challenges head on, embrace this new level of transparency, and expect more changes to come.

"You either embrace change or you resist it. Overall, providing information to people is a positive, says Stephens. "Where there is more information made available, where there is better governance, there is better government." **W**

## SALIENT POINTS

- Investment firms are preparing for the first round of RTS 28 reports due on April 30.
- The scale of work involved in the three C's—capturing, compiling and categorizing the data—seems largely underestimated.
- The first annual reports will be vetted by regulators on a "best efforts basis."
- Over the coming years, RTS 28 is expected to evolve and improve the standards of reporting of best execution.



**Ben Stephens**  
Instinet



As a consultant, Charles Walters had worked inside some of the largest hedge funds in the world and after almost two decades, he decided it was time to put his “schooling” to the test. Now at Halcyon Capital Management, Walters talks about the lessons he’s learned along the way. By Anthony Malakian with photos by Timothy Fadek

### In the much-debated

book *Outliers*, author Malcolm Gladwell wrote that what made The Beatles a great band were the years the quartet spent playing live shows in Hamburg, Germany. From 1960 to 1964, The Beatles played over 1,200 shows, amassing 10,000 hours of real-world experience. The crux of the book is that 10,000 hours of focused practice—doing, playing, programming, writing, and so on—is the “magic number to greatness.”

Charles Walters likes the 10,000-hour rule. From 1997 to 2014, he gained something of a PhD in hedge funds as a consultant. Walters is like that Johnny Cash song—he’s been everywhere, man. Whether as a project manager or a senior consultant, he’s been inside hundreds of buy-side shops—some that are still thriving, others that have vanished. Elliott Management, York Capital, Paulson & Co., Greenlight Capital, Icahn Associates, Pequot Capital, Allen & Company, Oaktree Capital, Fortress Investment Group—the list goes on and on. “In the late 90s, I had an amazing opportunity to gain, essentially, a real-world PhD in hedge funds,” Walters says. “I learned different ways to solve a problem. I saw first-hand how different hedge funds were run and the different platforms they used.”

Another hedge fund on that list is Halcyon Capital Management. He first entered Halcyon as a senior consultant back in 2006. By that point, Walters was an expert on all things Advent Geneva—the ubiquitous portfolio management system—and most anything else produced by Advent Software (now SS&C Advent). If you had an implementation or decommission that needed oversight, Walters was a top name on that list to do it.

Nearly a decade passed from those first days at Halcyon, with Walters coming and going, aiding the fund with a variety







# *The Hedge Fund Doctor*

Charles Walters  
Halcyon Capital Management

of projects. Then, in 2014, the two stopped circling one another and made the relationship official, with Halcyon naming Walters as its CIO. “I had been working at Halcyon as a vendor for a decade,” he recalls. “The executives and I used to kid that it was the longest job interview they ever had. There were times when some people would think I was a Halcyon employee and would ask why they hadn’t seen me around.”

For a man who had roamed New York and Connecticut like a hedge-fund Ronin, it was time to put some of what he learned to the test by running technology for a firm managing over \$9 billion.

### ‘Halcyon SoHo’

While giving a tour of the tech department’s new digs, Sara Langbecker, director of application development, asks Walters with a laugh: “Did you show him the door?” Sure enough, against one of the interior walls in the middle of the office that the tech department occupies, there’s a near floor-to-ceiling bookshelf adorned with a host of tchotchkes.

Pull on one of those decorations and the bookshelf pops open, revealing a door that leads to a hallway. There’s also the British-inspired red telephone booth. There’s the tile floor that looks like wood. There’s the exposed ceiling. And as you might expect, there are whiteboards plastered on most every wall, replete with scribbled notes. It’s the IT version of a fancy SoHo loft.

The office, which was reopened in 2015, is split into four sections, and the segment that houses the majority of the technologists sits in the corner, featuring massive windows that provide a view of St. Patrick’s Cathedral and the scenery of Madison Avenue and 51st Street in Midtown Manhattan. Walters’ office has neither windows nor a computer. It has a phone and one day might feature an abacus, just to throw



potential vendor clients off the scent of how tech-forward the place is. (His actual computer, which features multiple screens, is in a room in a shared space.)

One of the many things that Walters has learned in his travels is the importance of attracting and retaining talent. It’s the reason that under Walters’ stewardship, Halcyon has embraced experimenting with new tools, languages and products. It was also the thinking behind this space—that, and the fact that it makes for a nicer environment for Walters, himself, to come into on a daily basis. “We’re a little bit different than the rest of the firm, we have a different purpose, but we’re also attracting and trying to retain different talent with a different outlook on life,” he says. “This space helps with that, and it’s also nice for me since I have to be here, too.”

The room definitely helps in giving off a fintech-startup feel. But

it takes more than hidden doors, phone booths and outstanding views of Midtown to build platforms for a hedge fund that runs a diverse set of strategies—while stylish, the substance is there.

### The Great Migration

Halcyon was founded in 1981. Today, with over \$9 billion under management, it has offices in New York, London and Luxembourg, with over 110 employees. While it oversees an array of strategies, it’s largely described as a credit fund. Halcyon has also been a leading firm in the realm of litigation finance, with the pension and endowment fund Hartford HealthCare recently committing \$20 million to Halcyon.

The fund’s diversity was a major reason Walters decided to sign on as CIO. It’s generally said that there are two types of technologists: change agents and maintenance people. Both are necessary, but Walters is certainly the former. Beyond the technology, he wants to understand fully how the business works. Halcyon has business units that are kind of like law firms that trade stocks. They have some business units that are more like equity research firms that trade stocks. They have some business units that have specialties in certain investment products that are a blend of those two focuses. As such, they need technologists that are also subject-matter experts. “The player-coach model is very popular in the hedge-fund space,” he says. “What attracted me to Halcyon is I like getting my hands dirty and understanding things at a deep level and understanding the business proposition in a real way.”

In 2016, Halcyon replaced its order management system (OMS). The previous third-party OMS had been in use for almost two decades—it was the hedge fund equivalent of Bank of America changing its core banking system. To help with the

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“After you’ve been at a few places, you start to understand that it takes a lot of different inputs—a lot of different perspectives—and things change over time. It’s that willingness and understanding to take in different perspectives and views that served me well, served my clients well, and is now serving Halcyon well.”



migration to the new platform—which was a blend of Eze Software and Black Mountain Systems—Walters sat on the trading desk for the first eight months to both support the models they were updating and to figure out how best to streamline workflow, front-to-back. It was important to demonstrate that he had a knowledge of the business and the pains they’re experiencing.

It also helped that he’s experienced his fair share of migrations and understands that nothing goes 100 percent smoothly. “I’ve worked with a lot of hedge funds and what I always tell people is that no one did everything perfectly” Walters says. “It was always fascinating for me to see the different approaches people—and even different departments—would use to solve different problems. And I always say that these different hiccups are part of the process of bringing in a new platform, a new system.”

### The Meandering Path

Born in Maryland, Walters was raised in Greensboro, North Carolina, and graduated from the University of North Carolina at Greensboro. After earning degrees in economics and history, in 1995 he took a job at Wachovia—which was gobbled up by Wells Fargo after the financial crisis—where he was thrown into a project overseeing the migration of Wachovia’s proprietary trust system to a third-party solution.

Looking to explore the world beyond the Tar Heel State, in 1997 he took a job at Advent Software—acquired by SS&C Technologies in July 2015. Three years there and a drive-by during the dot-com era at Banter Systems in 2001 and a stint helping the Salvation Army with an accounting project post-9/11, he settled into the consultant life at his own company, Charles Walters Technology, then at Ryan Associates from 2005 to 2012, and finally at his own spinoff, Jake Roy Pillar, which

was eventually bought by Options IT (now known as Options). From there, Halcyon’s siren song called.

For Walters, the Tao of a successful technology department is this: You need different approaches—different ideas—to solve the problems that spring up on a near-daily basis inside a buy-side firm. The most successful hedge funds he’s seen embrace outside input. Often, as a consultant, egos can get in the way. A trader fresh off his Harvard to Goldman Sachs to hedge fund tract is going to be less inclined to hear a vendor out, even if that vendor has worked inside some of the most notable hedge funds in Midtown and Greenwich. “After you’ve been at a few places, you start to understand that it takes a lot of different inputs—a lot of different perspectives—and things change over time. It’s that willingness and understanding to take in different perspectives and views that served me well, served my clients well, and is now serving Halcyon well,” he says.



It's a perfect match for Walters, too, as Halcyon is always on the lookout for new investment opportunities, which allows the technologists to explore new techniques for structuring and crunching data, trying out new visualization tools, and dabbling in solutions that employ artificial intelligence (AI). "What attracted me to Halcyon was how entrepreneurial they have been over the years," he says. "They've added different lines of businesses. They've been unafraid to venture into other areas that other firms may be hesitant to, as long as it's in their wheelhouse and makes sense to them. They're investing hedge-fund-type assets in more of a private equity-type structure."

### Targeted Solutions

If you spend enough time in the consultant world, you learn that everything is either coming or going. One day, you're helping a firm with a new portfolio accounting system; five years later, you're helping them migrate to a different system. Walters isn't looking for a one-size-fits-all model when it comes to technology. Halcyon's structure, with its different businesses, is better served with more targeted solutions. Walters presented a vision for the company that was different from what had been implemented here previously. It moved away from a one-size-fits-all approach to one that looks similar to something like a mini-prime broker or fund administrator.

This structure has included the democratization of data so that technologists can support specific business functions to give them the information they most need. Additionally, it is helping the firm adjust to new requirements stemming from the revised Markets in Financial Instruments Directive (Mifid II).

Under Walters, Halcyon is now also embracing open-source tools as it moves away from Microsoft and SharePoint projects in an effort to provide more e-discovery solutions to a firm that can benefit from legal-oriented tools. This has also meant a shift to HTML5



in order to make grids and views that were traditionally only available on the desktops, also available on mobile devices. That move is helping to underpin the firm's data visualization efforts, which have been rolled out in fits and starts, but the goal is to allow traders and investment professionals to find abnormalities or disturbances more easily, and present that information in a graphical format that is easily processed and consumed. "I'm generally agnostic, in many respects, to the technology; it's about what's going to benefit the business and fit into the overall IT strategy," Walters says. "We're lucky enough that we're both small enough and big enough to be platform-agnostic and deliver to our users more high-touch solutions than firms that have mandates and not much flexibility."

### The Seeker

Walters likes to have a lot of irons in a lot of fires—he's a bit of a restless seeker. In his final year of college, he was a real estate appraiser and bought his first property at the age of 22, which he eventually flipped for a profit. Walters and a friend also created a placebo pill that can be sold at pharmacies—

believe it or not, the Duane Reades in Manhattan don't traditionally offer such a pill. He has, even at Halcyon, been experimenting with virtual and augmented reality (VR/AR). He brought Google Glass onto the trading floor to see how price and data alerts could be consumed without changing one's field of vision.

While Walters has amassed his 10,000 hours in the service of hedge funds, it doesn't mean that he's finished exploring other avenues of interest. And exploring is the key word. In addition to being a VR/AR enthusiast, he also likes toying with drones. One of Walters' non-hedge fund ventures is pizza—specifically, he's a co-owner of Williamsburg Pizza in Brooklyn. So naturally, when you're a technologist and own a pizza shop, why not try and create a new delivery mechanism? Everyone has their own claim to fame, but Walters' is this: Williamsburg Pizza became the first company in New York City to successfully deliver a pizza via a drone.

Once again, Walters is a change-agent kind of technologist. "How many pizzerias have a chief technology officer?" he asks, with a smile. **W**



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# THE PHILOSOPHER'S DRONE:

## AI on a Social-Sciences Foundation



With artificial intelligence adoption growing, firms are seeing more value in having a better background on human behavior to further develop the technology—but this is still a fusion of disciplines largely missing in the industry. Is social-sciences education the answer to an industrial skill gap?

By Emilia David

A little-known fact in the world of artificial-intelligence (AI) development is that emails from employees of defunct energy company Enron form the foundation of training for most aspects of machine learning. This dataset, released after the scandal broke, is free and publicly available. These emails help make the basis of predictive models for machine learning and other forms of AI to determine how humans speak, act and think.

Experts say this is a problem—a supposedly unbiased technology is learning human behavior with data gleaned from a biased source, and not with information and programming vetted by developers that have

a much better understanding of the human mind.

As more tasks become automated, the need to better analyze behavioral trends and create surveillance of potential wrongdoing increases, especially when AI becomes a larger and more ubiquitous part of modern life. But as the technology develops, AI practitioners must better understand how human beings think and behave so the technology keeps pace with what it is trying to track. Companies working on AI say potential new hires have to exhibit some understanding of human behavior, so they must be encouraged to take classes in social sciences for the long-term development of the technology.



“Letting people understand how cognitive systems work and how they are similar to how we process information as humans and how we learn different responses to different stimuli is very similar to how cognitive systems learn based on the data that they’re getting.” **Josh Sutton, Agorai**

AI, as used in the capital markets, largely looks at statistical models and deploys machine learning to better understand certain patterns, and correlative trends between seemingly discrete datasets. But, according to firms working with AI now, numbers are only part of the equation in its development.

Josh Sutton, CEO of software and data asset marketplace Agorai, says the first step in building better AI is educating developers on how cognitive systems work so they get a sense of why learning about behavior is important.

“The state of affairs today is one that is in dire need of improvement. I believe the first step is education,” Sutton says. “Letting people understand how cognitive systems work and how they are similar to how we process information as humans and how we learn different responses to different stimuli is very similar to how cognitive systems learn based on the data they’re getting.”

### Philosophy 101

The social sciences—the study of society and human behavior, broadly speaking—are not normally high on the priority list for engineering curricula, or even for the students themselves. They cover a

variety of disciplines but generally they are concerned with understanding societal issues through the lens of economics, politics or human thought, rather than how computers work. There is an assumption that people fall into one of two categories: those who gravitate toward the arts and social sciences, and those who are more interested in math and science. And they don’t generally cross paths very often, focusing only on their areas of interest. Schools offering AI courses, either at the undergraduate or graduate level, rightly prioritize teaching the fundamentals to their students.

But institutions of higher education have long been concerned about the ethics of technology. With the development of AI and the growing level of interest in it, several universities have set up centers focused on exploring ethical issues around AI. One such initiative is a fund from the Knight Foundation, which along with the Omidyar Network and other philanthropists, offers a \$27 million pool of capital for research applying the humanities and social sciences to AI development, called the Ethics and Governance of Artificial Intelligence Fund. Administered

jointly by Harvard’s Berkman Klein Center for Internet and Society, and the Media Lab at the Massachusetts Institute of Technology (MIT), research has included a look at the ethics of driverless vehicles, determining the impact of information quality on the news media, and humanizing the use of algorithms and machine surveillance for criminal intelligence.

These centers seek to enable engineers to understand the wider social impact of what they create, and to see the unintended consequences that can occur if development goes unchecked. Natalie Saltiel of the MIT Media Lab’s Ethics and Governance of Artificial Intelligence department, says AI systems have a significant impact on daily lives, the democratic system and business, so it is imperative everyone involved understands the possible consequences of the technology.

“We want people to think more holistically and to understand that the choices they make have an impact and they have a sense of responsibility,” says Saltiel. “It’s not mutually exclusive because we believe you can’t have technology solutions for society or social solutions without involving technology. We think it should be more inclusive in the design layer.”

MIT and Harvard have partnered for a class open to both technologists and social scientists to discuss the larger ethical questions around technology, particularly in AI. According to Saltiel, the classes are often well-attended. But despite positive moves in this area, there’s still an apparent skills gap within the financial industry.

### Behavioral Backgrounds

In many ways, this is inevitable, given AI’s status as an emerging technology.



**Joe Friscia**  
NICE Actimize



The focus of many firms is to create viable products that work as expected and then the technology will continue to grow from there. Eventually, machine learning, cognitive systems and other AI are going to start needing less human intervention, particularly if training datasets become more available, so understanding behavioral patterns has become ever more important in these relatively embryonic stages.

Background knowledge around behavior is not the forte of some current AI practitioners but companies working with the technology want longevity for their workforce and their industry. To those who already work in AI, a well-rounded developer makes the difference between a passable predictive tool and a great one, and they say they would like to hire more of those people. In the financial industry,

particularly, understanding the possible motivations of people is crucial, according to Jay Biondo product manager for Neurensic, a behavioral analytics and AI company recently acquired by Chicago-based Trading Technologies. This is something gained through exposure to behavioral science rather than something gleaned from just looking at models.

“We try to predict trader behavior so it can’t just be numbers; you have to think about behavior, especially when it comes to rules that are intent-based,” Biondo says. “You need to understand what a trader’s intent would be in order to create a system or a model that would be able to accurately classify that behavior. I don’t think you’d be able to do it with just the numbers, it has been tried in the past and that’s why those systems were limited.”

Part of this is down to the nuance of human nature, and the competitive dynamics of the financial markets. While bad eggs can be relatively easy to spot in most cases, it’s the unexpected corners that often hold the nastiest surprises, he says.

“When you’re versed in behavioral science, you start to understand that when there are bad actors in markets, other people who may not have made the decision to act badly may start because it’s a competitive arena, they feel they need to keep up, and it starts a ripple effect,” he says. “If developers understand this copy-cat behavior they can understand the motivation behind why they want to start working on a system like ours.”

The capital markets have seen a large influx of AI-based products and services in the past few years. A 2017 report from the McKinsey Global



Institute showed financial services as one of the leading sectors in AI spending in the next three years. The report noted spending for AI in 2016 was estimated to be around \$26 billion to \$39 billion, with the majority of investment coming from technology giants like Google and Baidu. Ranging from machine learning to deep learning, adoption of these services has increased as the industry becomes more comfortable with the technology. But this pace of adoption by the market also means the technology can mature and change quickly.

Peter Memon, head of emerging technology for financial technology services provider and consulting firm Synechron, says that adding these “fuzzy” skills to an engineer’s toolbox should happen “sooner rather than later” particularly because of the higher rate of change and adoption.

“A traditional engineering education didn’t have social sciences. I remember when I was a student I wasn’t interested in taking those classes, but if you want to make better systems you need to understand that it is critical to gain knowledge on how humans think and behave,” Memon says. “It’s more than beneficial, it’s necessary and with the rate of change now astronomical, it would be foolish not to start sooner rather than later.”

Memon adds that AI and machine-learning technology being developed now have the ability to replace humans like never before, so it is even more vital for AI practitioners to build up skills that guide machines better.

Trading Technologies’ Biondo notes that highlighting the utility of the social sciences for AI development will entice more people to take in a few classes, although others in the industry point out that not everyone needs to take social science classes, because it largely depends on the kind of technologies they want to focus on.



**Peter Memon**  
Synechron

Lately, school curriculums have begun to offer electives in departments outside of engineering or computer science, but students still have to be encouraged to take these additional classes. But those interviewed for this article largely stopped short of saying social-science classes must be mandated. They note that fundamentals still need to take precedence, particularly within the relatively short time frame of schooling.

### Long-Term Development

Of course, AI still has a long way to go and certainly issues like getting reliable training data are a priority, but for many in the industry, it doesn’t hurt to start thinking about the future and the possible impact AI has in the world at large.

Eventually, AI technology will evolve and learn from better datasets available. This means the role of the developer will also change. The future workforce will demand fewer analysts that read raw data in favor of people who will put into action what the machines suggest. People will now be called upon to advise or guide the machines to the right kind of data to suggest better predictability. This means, in the future, people knowledge of how humans think and act will be in far greater demand than someone who can write a model for an AI to follow.

“There has been a shift in the workforce that started from automation, and we began to see dramatic benefits and an impact on the kind of

jobs available—a shift from administrative to knowledge workers, to more advisory positions,” says NICE Actimize president Joe Friscia. “Soon, we will see analysts replaced by computers, and we will no longer need analytics done by humans, but rather mimicry of humans. So, we will need people to advise these machines on how to work. We need not just an understanding of how computers work, but how people interact.”

### The AI Übermensch

Other initiatives focus on expanding access to AI through encouraging more diversity in data, the engineering talent pool and use-cases. Beyond improving the skill set of the workforce and more robust development of the technology, adding the social sciences layer to AI brings with it an understanding of the greater role AI plays in society.

As the technology evolves, so does the workforce, and so does demand. The financial industry, however, is not waiting for that demand to change. It is in the midst of developing technology that predicts potential bad behavior, intuitively changes in the market, and seeks out how clients and institutions can meet revenue potential. But the industry also wants to be in the forefront of encouraging this workforce evolution for the good of AI in the long term.

Agorai’s Sutton and others in the industry say that while computer science undergrads may not need to study Nietzsche or Plato just yet, that time will come. **W**

## SALIENT POINTS

- Firms working with AI believe engineers will need background knowledge in the social sciences, particularly when working with behavioral science, as the technology evolves.
- The workforce will eventually change to help guide AI so an understanding of cognition becomes important.
- Universities are offering social science electives but to encourage students to take these classes, its benefit to the technology needs to be underscored.

# Bond Trading Takes Steps to Resolve Voice and Screen Conflict



The growth of fixed-income trading platforms in recent years, and a push by regulators to enhance transparency through electronic means, has had a substantial effect on how bonds are traded. But as the market evolves, it's becoming clearer that voice and screen trading may have to coexist for some time yet. **By Hamad Ali**

**E**ver since the equity markets first went fully electronic, countless column inches have been devoted to whether the same will happen in fixed-income markets. Great strides forward have been made in this regard—the increasing dominance of platforms such as Bloomberg, MarketAxess and Tradeweb, for instance, is evidence of that—but even with the effects of sweeping new regulations in Europe being felt this year, the future shape of market structure is more like a chimera than a brand new digital beast.

“Electronification will start affecting relationships. All that said, though, I still believe that voice will have a role in all the big deals,”

says Usman Khan, co-founder and interim CEO of bond-trading platform Algomi. “I think electrification still counts for 30 percent of the volume; 70 percent is still done by voice. And that is psychological. Think about it—when you want to buy mortgage or you want to buy a large premium type of contract or product, you still want to talk to a human. So that psychological barrier is yet to be crossed from an electrification point of view.”

Indeed, just as the American essayist Charles Dudley Warner once observed that politics makes strange bedfellows, voice and electronic are increasingly facing a future of uneasy coexistence.



“The voice market is still where you would trade your really large-sized corporates. I think some of the things that have come out of Mifid II, people here look at and say they kind of make sense to do. We are looking at things like trading cost analysis, best execution analysis, being able to prove best execution—things like that were already in the works here at our firm long before Mifid II.” **Mike Nappi, Eaton Vance**

### Mifid II

The fact that voice and electronic trading may reach a détente in the future, as opposed to one killing off the other, may seem incongruous given the stated aims of regulators in their reform of market structure since the financial crisis. Across asset classes, this has often taken the form of pushing trading onto electronic platforms, as in the case of swaps and other over-the-counter (OTC) derivatives, or in the case of the fixed-income markets, sweeping changes to improve transparency in pre- and post-trade processes.

Nowhere was this more evident than in the revised Markets in Financial Instruments Directive and Regulation, known as Mifid II. That package of rules, which came into force in the European Union (EU) on January 3, 2018, enforced a new regime for requesting quotes and reporting trades that is, if not entirely electronic, then at least substantially so, says Marcus Schueler, head of regulatory affairs and trade structure at Tradeweb, one of the leading electronic platforms for bond trading.

“From a Mifid II perspective, the main change for the corporate bond market was the introduction of pre- and post-trade transparency requirements, as well as the systematic internalizer

regime,” he says. “From January 3, for every transaction involving a European platform or a European counterparty, you need to check what type of pre-trade and post-trade transparency obligations apply. This is somewhat similar to what we have had in the US in the form of the Trade Reporting and Compliance Engine (Trace) for a number of years. But it is a much more carefully calibrated and therefore complex process.”

The new rules effectively cemented a process that has been under way for decades in bond markets, in that tickets are written and executed on-screen, as opposed to purely over the phone. This is not an accident—regulators have believed for some time that auditable, traceable electronic means of trading are preferable to the relatively opaque world of phone trading, and have built their rules accordingly.

“We have experienced a lot of growth over the past few years but I think Mifid II has definitely helped drive clients toward electronic trading solutions,” says Gareth Colman, head of product management, Europe and Asia, at MarketAxess, which operates one of the largest corporate bond trading venues. “In order to protect the best interests of the end-investor, the regulator feels it



**Marcus Schueler**  
Tradeweb



**Michael Sobel**  
Trumid

beneficial to create transparency and broader oversight of market interactions traders will move toward.”

Regulators themselves have also been open about this. Consider, for instance, recommendations to improve reporting standards for the corporate bond market issued by the International Organization of Securities Commissions (Iosco) on April 5.

Among its recommendations is the need for regulatory authorities to have access to pre-trade information, as well as implementing post-trade regulatory reporting requirements for secondary markets. A regulatory source familiar with Iosco’s thinking explains that it is more common for regulatory reporting to cover post-trade information, but it is less common for them to report to regulators’ bids, offers or indications of interest. Where such information is available to regulators, the source says, they will have a better perspective on how the market is working. For instance, a plethora of bids but a drought of offers may indicate liquidity problems, or point to market integrity issues that require consideration and urgent resolution.

Despite this, however, many traders—and especially salespeople—see the need for voice in the future, and warn that inexorable drives toward electronification may serve the end user in terms of reducing cost, but may harm them in other ways.

### Impersonal Relationships

Given its nature as a highly voice-reliant market, fixed income has traditionally been a people business. It is not uncommon for veteran sales traders at banks and brokerages to have relationships with the key people at their accounts that go back years, and often blur the lines between professional and personal



circumstances—they go to their children's weddings, they often meet outside of work, and these relationships endure across institutions as well. A particularly effective salesperson, for example, will often take their accounts with them when they change banks or brokers.

The implications of this aren't just limited to personal friendships, though. A long-term relationship between a broker and their account allows each side to understand investment objectives, to recommend specific instruments and to tailor sales to suit the risk appetite of an institution. While screen-based trading offers obvious benefits, some of them say, it risks abrogating these relationships and reducing them to transactional associations.

"I've been in this market for a long, long time and I don't see it ever

going back to the way that it was, when it was dominated by voice," says a New York-based salesperson at a fixed-income boutique with more than 30 years of experience. "The regulators and the clients don't want it, but it has the result of pushing the market into being transactional rather than relationship-based. In the past, I knew my accounts well, I knew what they needed, what bonds they should buy, and what would help them achieve their investment aims as a result. That's starting to slip away now, and is it going to be better in the long run for the client? I'm not so sure."

The move to the screen has shrunk spreads, they say, which may be good for the bottom line of the client, but is bad for the people on the sell side, most of whom are paid on commission. This is having the



**Brad Tingley**  
Greenwich  
Associates

effect of squeezing out those with institutional knowledge gained from years of experience.

Some traders are more sanguine about the transformation prompted by regulation such as Mifid II, and point to the fact that large-in-scale trades are still largely arranged by voice. Mike Nappi, a senior trader at Eaton Vance, is one of them. His team uses a combination of trading platforms as well as voice. The majority of trades on a ticket-count basis are done via platforms, but when it comes to volume the majority is done by voice.

"The voice market is still where you would trade your really large-sized corporates," he says. "I think some of the things that have come out of Mifid II, people here look at and say they kind of make sense to do. We are looking at things like





“We have experienced a lot of growth over the past few years but I think Mifid II has definitely helped drive clients toward electronic trading solutions. In order to protect the best interests of the end investor, the regulator feels it beneficial to create transparency and broader oversight of market interactions traders will move toward.” **Gareth Colman, MarketAxess**

transaction-cost analysis, best execution analysis, being able to prove best execution—things like that were already in the works here at our firm long before Mifid II. What Mifid II does for the firms is validate the path I think the market has been going down anyway—which is more regulation and transparency—more so than maybe was in the market three or even five years ago.”

Algomi’s Khan, too, acknowledges that these reforms have prompted a shift from relationship-based to more transactional trading, and that trading is no longer about “having a discussion over a football game and doing the trade the next day.” However, he says, there have been benefits as a result, one of which is how it has empowered clients to challenge pricing set by their brokers.

“Now it is more about whether it’s a good price for me,” he says. “When they perform transaction cost analysis, it is all about understanding why the price is what it is as opposed to just accepting it for what it is. So there is a lot of that happening now.”

### Chimera

As such, most see a place in the future for both voice and electronic

trading. Large-scale orders still aren’t suited for electronic trading in the same way that smaller trades are, and given the nature of corporate bond markets—particularly those that aren’t classified as investment grade—the liquidity profiles of instruments actually make it actively difficult to trade through a displayed order book.

“Corporate bonds are what would be considered less liquid,” says Michael Sobel, president of New York-headquartered bond-trading platform Trumid. “There are fewer transactions in a given security during the day. So you don’t have kind of continuous pricing that is important as a backbone for many electronic trading system. They are less liquid and trade in chunky sizes, which makes trading in them electronically bit more complicated.”

In addition, the growth of electronic platforms for fixed-income trading—according to the International Capital Market Association, which tracks them, there are over 100 operating at present—means that many struggle to build a critical mass of users.

“No one is really going to want to be able to put their orders up on the screen that other people would be able to see, if they are not going to be able to have that order filled,” says Brad Tingley, an analyst at research firm Greenwich Associates, who recently authored a white paper on the impact of Mifid II on corporate bond trading that was published on March 15.

Still, even as voice may continue to play a part in the future of the bond market, electronic trading is continuing to eat away at its territory, especially given the shot in the arm it received via Mifid II. Indeed, many expect other jurisdictions to follow suit.

Trumid’s Sobel, for instance, says he thinks it is likely that regulations such as Mifid II will become best-practice in the US. He also sees an increasing desire, if not demand, for best-execution measurement and the like. “There are significant operational efficiencies around straight-through processing and general cost of execution that electronic trading can provide. And improvement in the quality of platforms themselves I think will continue to pull traffic to electronic platforms,” he says. **W**

## SALIENT POINTS

- While much of the discussion over the past decade has been whether electronic trading will replace voice, it’s likely that a hybrid form will emerge as its ultimate state.
- Mifid II and other regulatory requirements around transparency are pushing trading to the screen, but the liquidity profile of certain instruments and large-in-scale trading remains largely suitable for phone trades.
- Veteran traders are concerned that fully electronic trading will rupture important relationships in the market, and may result in less overall quality of service for clients.



# SINGAPORE EXCHANGE

## Hits Back at India's Data Pull

Despite its share price taking a beating, when the Singapore Exchange was notified that Indian authorities had decided to call off data licensing agreements with foreign countries, the bourse is making moves to salvage what it will soon lose. **Wei-Shen Wong** investigates new developments in India's land grab and how the country's stance impacts the Asian market overall.

It was only two months ago that India made a somewhat protectionist move, banning the use of index data from its domestic exchanges to create derivatives listed on overseas markets, directly cutting off some exchanges and index providers.

On February 9, India's markets regulator the Securities and Exchange Board of India (Sebi) asked the National Stock Exchange of India (NSE), the Bombay Stock Exchange (BSE) and the Metropolitan Stock Exchange of India (MSEI), to terminate their existing market data licensing agreements with foreign partners.

The news triggered the biggest intraday plunge—about 8.75 percent to a 52-week low of S\$7.20 (\$5.49)—since

November 2008 in the share price of the Singapore Exchange (SGX), which lists futures based on NSE's Nifty 50 Index.

Although shocking, the SGX quickly reassured market participants that trading for its entire India suite of products will continue to operate as usual—at least until August, when the notice period agreed with NSE runs out, ending almost 18 years of NSE sharing Indian securities data and licensing Nifty products.

India's main grouse with having its market data licensed to foreign exchanges and other data providers was that liquidity in Indian markets was flowing away to foreign jurisdictions like Singapore.



“It’s such a novelty—an exchange pulling the license on this, on a product that’s quite highly liquid outside of its home market. It’s not something where we have precedents so it’s very difficult to draw conclusions about what will happen after August, given that we don’t have comparables in the marketplace.”  
**Stephane Loiseau, Societe Generale**

In a joint statement, the Indian exchanges said, “It is observed that for various reasons the volumes in derivatives trading based on Indian securities including indices have reached large proportions in some of the foreign jurisdictions, resulting in migration of liquidity from India, which is not in the best interest of Indian markets.”

India’s move to end the data licenses of it domestic exchanges with foreign exchanges and data providers means that contracts like SGX’s Nifty 50 Futures Index would cease to exist. Beyond being a data move, this decision could create ripple effects for risk systems and processes, trading algorithms and platforms, and operations departments.

This sudden pullback from India may have been in response to SGX’s decision to introduce single-stock future contracts on the top 50 Indian stocks on February 5, an initiative that the NSE had sought to delay. NSE CEO Vikram Limaye previously said the SGX’s move would shift liquidity away from India.

Another product that could be impacted is MSCI India Index, which is seen as more of an investment product compared with the Nifty 50 and, as such, is arguably mostly a trading tool.

Stephane Loiseau, managing director, head of cash equities and global execution services for Asia-Pacific (APAC) at Societe Generale (SocGen), tells *Waters* that it is impor-

tant to distinguish the two products because they both have reasonably different functions.

He says the MSCI India Index is mostly used by institutional asset managers as a way to get exposure to the Indian market. “Therefore, you could argue that if this product becomes unavailable in August and is not replaced by an equivalent product, liquidity won’t necessarily go back to India,” he says, adding that much of the turnover in the MSCI India Index’s underlying equities is driven by banks trading stocks to hedge their exposure to the index. “If that product doesn’t exist anymore, then the need to hedge that product doesn’t exist anymore, so we can assume that the underlying liquidity in the India stock market would also disappear.”

India’s move to retract its data licenses from foreign exchanges and other data providers received harsh feedback from index provider MSCI, which suggested that the move might result in MSCI lowering India’s weighting in its indexes, or changing the country’s classification in its suite of products.

“MSCI strongly suggests the Indian exchanges and their regulator Sebi reconsider this ‘unprecedented anti-competitive action’ before it leads to any unnecessary disruptions in trading or a potential change in market classification of the Indian market in the MSCI indexes,” MSCI officials said in a statement, declining to comment further.

Sebi and the three exchanges either declined to comment for this story or did not respond to interview requests.

### SGX Strikes Back

Although the August cutoff date for when the licensing agreement with the NSE runs out is looming, Lyndon Chao, managing director for APAC equities and post trade at the Asia Securities Industry Financial Markets Association (Asifma), and a 26-year veteran of Morgan Stanley, says he believes the SGX will figure something out.

“It may be that they have a product that introduces a higher tracking error but it’s significantly cheaper and more convenient to use alternative products to continue the way they’re operating,” he says.

True to its word, the SGX, on April 11, announced that it will list new Indian equity derivative products in June 2018, to allow market participants to seamlessly transition their current Indian risk management exposures.

The exchange, which was not available for further comment, said these products will add to the existing Indian single-stock futures offering. It added that work is under way to evaluate a joint trading and clearing model in the Gujarat International Finance Tec-City (GIFT City) between the NSE and SGX to continue meeting the risk management needs of international participants.

Michael Syn, head of derivatives at SGX, said in a statement, “SGX has worked hard over the past two decades to promote the development and internationalization of India’s capital markets. We are still exploring a solution that would bring the liquid international market directly into GIFT City, in a way that meets our clients’ regulatory requirements while growing the overall market. In the meantime, we will continue with our new India equity derivative products, which international portfolio investors need to maintain exposure to India.”



**Lyndon Chao**  
**Asifma**



A senior bank executive, who requested anonymity, says it was surprising that the SGX was quick in turning around for the launch of a new suit of products. “They are making an effort to provide continuity of the product post the end of the licensing agreement,” the executive says.

### The Devil Is in the Data

There were previous worries about how the SGX would be able to introduce similar products without the data from its Indian counterparts. SocGen’s Loiseau adds that typically, licensing agreements are quite comprehensive and would cover all types of scenarios including usage of data that’s made available from other sources.

“Market data is quite a proprietary product for an exchange so they have quite a bit of control on this. Also, you can imagine that a derivative product needs real-time prices, so you won’t be able to do it with end-of-day data,” he says. Technically, it is possible to create a derivative product using end-of-day data, but practically, it is unlikely that it will be a successful product if it can’t rely on real-time data, particularly for the purposes of investors, traders and market-makers, Loiseau adds.

According to Indian business news website Livemint, the NSE is studying the technical and legal aspects of SGX’s new products. If usage of data in the way SGX plans falls under the licensing agreements, the NSE could decide to take legal action.

Looking at a similar case back in 2002, the New York Mercantile Exchange (Nymex) sued the Intercontinental Exchange (ICE) for using its settlement prices in its over-the-counter (OTC) derivatives contracts. Nymex claimed it held copyrights in individual settlement prices and that ICE misused its trademarks for its swap contracts. ICE had referenced Nymex as the exclusive source of settlement prices for certain energy futures contracts.

The ruling judge terminated the lawsuit on the basis that Nymex’s set-



tlement prices were not copyrightable by law, and that ICE had not infringed on any copyright or trademark in referencing Nymex’s publicly available settlement prices in its OTC derivative contracts.

Asifma’s Chao says it would really depend on how the contract between the NSE and SGX was crafted and how the NSE defines its market data. “Some exchanges might say that their market data is 100 percent theirs, even the historical information, so if it’s proprietary then no one can use it without licensing it. Different exchanges have different rules and policies,” he says.

Michael Wu, senior equity analyst at Morningstar Investment Management, says that if SGX’s new products do not require a subscription to NSE data, then investors may still choose to trade on SGX, and liquidity would not return to India’s domestic markets.

A source close to the SGX says the single-stock futures will not be impacted by the licensing agreement as they are not based on any such agreement.

### Liquid Liquidity

It is questionable at this point whether or not pulling back its data will actually return liquidity to India’s domestic exchanges. Loiseau says this is a complex issue, which requires an intimate knowledge about the users of the different products—SGX’s Nifty 50 Index Futures and MSCI’s India Index—which he says are the two products people are interested in, in this debate.

“Obviously, it’s difficult to know for sure the divide between the different types of investors because there is no data that can help quantify in an accurate way why investors are using the different products. It’s reasonably accepted that you’ve got risk managers on one side and investors on the other side, and those two categories won’t be impacted in the same way by the license decision,” he says. “It’s such a novelty—an exchange pulling the license on this, on a product that’s quite highly liquid outside of its home market. It’s not something where we have precedents so it’s very difficult to draw conclusions about what will happen after August,



**Michael Wu**  
Morningstar  
Investment  
Management  
Asia



given that we don't have comparables in the marketplace."

According to Livemint, trading on SGX accounts for about 40 percent of Nifty futures turnover and about 70 percent of open interest in the contracts. One of the reasons India offshore derivatives have become popular is that setting up a foreign portfolio investment (FPI) or identification to trade in India can be a cumbersome process, Asifma's Chao says.

"People in the industry say it takes several months—between three to six months, on average—to get an FPI registered in India. So those who wish to get exposure have found it convenient to tap into offshore channels. Historically, broker-dealers have been able to issue participatory notes (P-notes) to provide investors with easy access to Indian markets, but since July of last year, P-notes have faced heightened regulatory restriction—so much so that the market barely exists anymore," Chao says.

P-notes were issued by registered FPIs to overseas investors looking to participate in the Indian stock market without registering themselves directly. Last year, Sebi took measures to discourage the misuse of P-notes, including levying a fee of \$1,000 on each instrument to check for misuse, such as channeling black-market money.

This, among other factors, has caused foreign investors to shift their trading activity to offshore derivatives on foreign exchanges like SGX, which has been gaining significant market share of the Nifty 50 Index Futures.

"It's very clear that Singapore shifted quite a lot of liquidity away from India on the SGX," Chao says. "They've offered a simpler product, which is easier for foreign investors to access, and is also probably cheaper. There are fewer tax issues to deal with, so it has become competitive. I'm not sure how the new restrictions will play out in the end for India, if this will really achieve the objective ... to migrate the flows [back] onshore."



**Sharmila Whelan**  
Asianomics

Sebi has recognized the FPI registration challenge and has previously said it will take steps to improve and simplify the registration process—though observers say streamlining it down to a matter of days is "very optimistic."

While some investors do already have FPIs or the necessary IDs to trade in India, other investors who have historically preferred to trade offshore might not want to go through the hassle of the registration process. "If offshore channels continue to get cut off, that could impact investment into India," Chao adds.

It seems that India has the most to lose in this game, the senior bank executive says. "As much as you understand the exchange's strategy to bring this derivative liquidity back onshore, it also has an underlying component, which has its own liquidity onshore," the executive says.

### Influencer? Maybe Not

Sources generally agree that other jurisdictions will not follow in the footsteps of India's decision. Sharmila Whelan, deputy chief economist at independent research provider Asianomics, says, "If anything, financial and trade integration within the region is deepening. Asian markets used to be highly correlated with movements in US stock markets, but that is weakening, as intra-regional portfolio flows grow."

She believes there is definitely a protectionist element to India's decision to cut off data licenses, but that is not the entire picture. She says Narendra Modi, the current prime minister of India, has been under a lot of pressure. "Things like the long-term capital gains tax on foreign investors and the recent 10 percent import tax on key smartphone components, I think those are really accelerating the 'Made in India' agenda that Modi has, but also, he has one eye on the upcoming elections," she says.

This move, though, worryingly comes at a time when investors are already nervous about India, about fiscal slippage, public sector bank bad loans and its widening current account deficit, Whelan adds.

Chao, on the other hand, says the protectionist approach is bad for markets. "Money doesn't like to be constricted or restricted—money likes to flow freely. If, as it flows across borders, it runs into barriers, it just breaks up the liquidity and makes it harder to flow. The cost of trading would go up and for a lot of these passive ETFs—given that the fees they charge have now gotten so low—if it becomes more expensive to trade certain markets because of the increasing barriers then those fees to customers might go up and may attract fewer investors to participate. So the overall activity might slow down," he says.

Thomas J. Monaco, managing partner at boutique research firm Silver Point, says he believes India will reissue the license agreement to the SGX, just at a higher fee.

It is interesting to see how such a decision could resonate not only within India's capital markets but other markets as well. While there's no saying exactly how India will respond to the SGX jumping back to launch new India-based derivative contracts in June, it is also hard to tell, for now, if India will get what it wants—liquidity flowing back to domestic markets. **W**

### SALIENT POINTS

- Indian market regulator Sebi is terminating its three exchanges' existing market data licensing agreements with foreign partners.
- Index provider MSCI says the move could result in lower weighting of India in its indexes, or a change in the country's classification in its suite of products.
- Two months after India retracts the data licenses, the Singapore Exchange says it will launch new India equity derivative products, in June 2018.
- Experts question if India's decision will actually draw back liquidity to its domestic exchanges.

# Protectionism Seeps into the Capital Markets



What started with Brexit and the election of Donald Trump is now taking hold in India—protectionism. This worries Anthony greatly.

“**T**rade wars are good, and easy to win.” That asinine statement was tweeted out on a Friday morning in March by President Donald Trump. The entirety of the quote is even more ridiculous, but that snippet may end up being his “read my lips: no new taxes,” moment—though how can one tell, with the daily blast of philosophy that Trump tweets?

The President’s insistence on getting into a trade war with China has sent even Republicans into panic mode, as it spits in the face of the conservative belief that free trade and open markets are good for jobs and the economy, and help promote freedom around the globe. Trump’s tweet is at odds with Presidents Ronald Reagan and George HW Bush. While Bill Clinton signed the North American Free Trade Agreement, Reagan and Bush were the architects.

The Republican Party has been splintering over the last decade; Republicans who espouse ideas championed by Reagan are today called RINOs, or Republicans in Name Only. What started with the Tea Party has led to an “America First” Republican president.

Ironically, Trump’s potential trade war with China could have a massive impact on his base, Middle America. In response to Trump’s proclamations, China announced new tariffs on a wide array of US goods, including soybeans, corn, cotton, wheat and tobacco. Even before China’s Ministry of Commerce made that announcement, Republican senator Ben Sasse

of Nebraska had this to say about Trump’s idea that trade wars are good, and easy to win: “Trade wars are never won. Trade wars are lost by both sides. Kooky 18th century protectionism will jack up prices on American families—and will prompt retaliation from other countries. Make no mistake: If the president goes through with this, it will kill American jobs—that’s what

“

**Let’s keep our markets open and avoid the collateral damage that result from trade—and data—wars.**

every trade war ultimately does. So much losing.”

Now you might be asking yourself, “Why the hell am I reading this in a magazine that covers technology in the capital markets?” Good question. Two reasons: First, I like to use this space to discuss politics and issues that touch on tech, but that aren’t inherently specific to tech. Which brings me to point two: I was reminded of Trump’s protectionist tweet while reading about the fight emerging between India and Singapore (see page 36),

On February 9, India’s market regulator, the Securities and Exchange Board of India (Sebi), asked the country’s three stock exchanges to terminate their existing market data licensing agreements with foreign partners, which could hurt the Singapore Exchange, which lists futures based on the National Stock Exchange of India’s Nifty 50 Index.

It’s a really interesting story, expertly laid out by our editor in Asia, Wei-Shen Wong. My takeaway, though, is the concern around the protectionist tone that India is taking in this instance. India’s Prime Minister, Narendra Modi, is up for re-election in 2019. His party, the Bharatiya Janata Party, has recently lost a few regional elections and now there are whispers that he’s going to be in for a fight next year. Most any politician worried about re-election will pivot toward populist-nationalist solutions to drum up support at home.

The problem with protectionist policies are the unintended consequences. Singapore is already setting in motion plans that will not only help it avoid any problems resulting from India’s decision, but that might hurt Indian exchanges and investors. Many of the sources that Wei-Shen spoke with said that this decision will hurt India going forward at a time when it is struggling to get on par with the other major markets in the region, including Hong Kong, Tokyo, Australia and mainland China, as well as Singapore.

## Open Arms

As cybersecurity becomes more of a global issue, as markets become increasingly intertwined, as algorithms take a greater role in how work is conducted, and as climate change continues to create issues that we couldn’t understand previously, cooperation and openness are going to be vital in solving these issues. Let’s keep our markets open and avoid the collateral damage that result from trade—and data—wars. **W**

**Down with protectionism?**  
For more information and readers’ feedback please join the discussion at [waterstechnology.com](http://waterstechnology.com)

# Riding the Peaks and Troughs

There are many cases where established models of hype and practicality hold true. Bitcoin, however, is not a technology, and people who try to present it as such aren't fooling anyone, James argues.

## Is bitcoin just about money?

For more information and readers' feedback please join the discussion at [waterstechnology.com](http://waterstechnology.com)

A few months ago, I was having lunch with the head of a Chicago-based proprietary trading firm, talking about cryptocurrency. "You've heard about the Gartner hype curve, right?" he asked me, just as I'd taken a bite of my sandwich. I tried to mumble a reply without spraying him with turkey salad, which I assume he took to mean "no" in journalese. Not to be deterred, he drew it out on my notes for me, a handy addition to already hard-to-read shorthand.

"I think we're here," he said, pointing to the top of the peak-of-expectations curve, which marks the point where the hot air starts to go out of the room and the maturity cycle kicks in. I said it looked like the price curve of bitcoin over the past few months, only we were somewhere further down at this point. He didn't laugh, which I attribute to the piece of lettuce that managed to fall on his finely crafted illustration at that precise moment.

It's easy to see why that might be the case. In crypto, particularly, things are moving at such a fast pace that it's impossible to keep up, but it's not precisely what I would call innovation, as such. Rather, tried-and-tested technologies from traditional asset classes—order and execution management systems, auto-hedging tools, algorithmic trading, big data-driven risk and surveillance systems, to name a few—are being introduced to a market that simply hasn't had them before.

I said as much, and he shrugged. I don't have his verbatim response, because he was still holding my pen

when he said it, but it amounted to something along the lines of how maturity doesn't necessarily mean development or innovation as such, but a period of settling in.

### The Dip

The "Trough of Disappointment" as it's known to everyone with a consulting degree and an MBA in something equally ambiguous, or "the dip" as it's known to everyone else, is a necessary



**In crypto, things are moving at such a fast pace that it's impossible to keep up, but it's not precisely what I would call innovation.**

stage in development. It's when people realize that this technology isn't going to change the world, that it might not have the global utility once fathomed, and ultimately, anyone who hired personnel with "guru" or "evangelist" in their job title might need to rethink staffing arrangements.

The Gartner curve, after all, is a well-established pattern of market psychology. But as technology develops faster, and increasingly, in unexpected ways, the model is becoming compressed. In some cases, it's not truly applicable by those who use it.

Bitcoin is a good case in point. Anyone who reckons the mass interest that swept retail and institutional money last year had to do with anything other than the bull run in its price is deluding themselves.

Likewise, the institutional interest that's still going on, which I covered in a feature in April, is similarly geared around immature market structure on one end, and the tools (and expertise) to exploit that effectively for profit on the other.

Blockchain is slightly different. Artificial intelligence (AI) is slightly different. Crypto, I'm afraid to say, is all about the dollar. Yes, there are potential use-cases in different fields—central bank activities are often cited—but even the central banks have come out with a "thanks, but no thanks yet" determination through various international bodies and studies, pointing to its immature stage of development.

If the inherent volatility in cryptocurrencies continues, and perhaps bitcoin or another token jumps back up into a bull run again that manages to entice people into taking out mortgages or spending their student loans on these investments, interest will pick up. But again, this is purely for financial reasons.

The prop shops are hardly different. As our lunch came to a close, I asked the CEO where he'd come in on the price curve and where he'd gotten out. After explaining that he was still in because he believed in the future of cryptocurrencies, he admitted that he'd gotten in that summer and substantially out in December. "It's still a business," he said, half-apologetically. "I have to make money." **W**



# Human Capital



## Data Sales Vet Chmiel Joins AlgoTrader

Richard Chmiel, former CEO of satellite imagery analytics provider RS Metrics, has joined Zurich-based algorithmic trading platform vendor AlgoTrader AG as its COO, responsible for the company's sales, business development, customer satisfaction and marketing functions.

Chmiel was most recently chief revenue officer at news and social media analytics provider Accern, prior to which he spent 18 months as CEO of RS Metrics. Before that, he served as senior vice president of global sales and marketing at tick database and analytics pro-

vider OneMarketData, where he spent seven years, and held senior sales roles at Skyler Technology, LatentZero, SunGard Trading Systems, and BrokerTec, prior to which he spent 12 years as sales manager at Bloomberg.

Based in New York, Chmiel reports to AlgoTrader CEO Andy Flury, who says he will help guide the vendor's growth and develop its brand, secure new clients and partners, and refine its service offering.

## EDM Council Appoints Bottega Executive Director

Former interim managing director John Bottega is the Enterprise Data Management (EDM) Council's new executive director. Bottega stepped into the interim leadership role in November 2017, following the departure of Mike Atkin, who shifted his focus to advancing the EDM Council's research and education initiatives.

Bottega has been involved with the non-profit trade association since 2005, when he was an industry contributor, and served as chairman from 2007 to 2014. He then joined the council's executive team as a senior advisor. Bottega has more than three decades' data management experience, most recently as CDO at Bank of America, and previously at the Federal Reserve Bank of New York and Citi.

## Bond Data Expert Petrunik Sets Up FiStrat Consultancy

Fixed-income data specialist Bill Petrunik has founded his own New York-based advisory business, FiStrat, which aims to provide consulting services to smaller data companies—



John Bottega

especially around the challenges of collecting and managing data—either as a consultant or as an advisory board member.

Petrunik was most recently global head of fixed income at Boston-based fixed-income pricing and analytics provider Advantage Data, prior to which he was senior vice president and global head of fixed income for credit at Thomson Reuters, where he spent nine years, having joined the vendor as a result of its 2005 acquisition of Loan Pricing Corp., where he was a managing director. Before that, he was a relationship manager at the Bank of Nova Scotia.

## Enyx Enlists O'Connor for US Sales

New York- and Paris-based hardware feed-handler and market gateway provider Enyx hired Kevin O'Connor at the start of April as vice president of sales for North America, based in Chicago.



Richard Chmiel



## SmartStream RDU Onboards Bigelsen for Sales



Eric Bigelsen

O'Connor, who will be responsible for selling the vendor's feed-handler and market gateway solutions—both of which run on a single field-programmable gate array (FPGA) card—was previously a US sales executive for UK-based hardware feed-handler vendor Celoxica, prior to which he was an account executive at Firm58, a Chicago-based provider of cloud back-office solutions for broker-dealers and trading firms.

He also held sales and business development roles at SR Labs (now Vela Trading Technologies) and derivatives trading software vendor Actant. Before that, he held several trading roles, including market taker at Brandt Equities, market maker at JES Securities, and floor broker and market maker at Caffray Trading.

At Enyx, he reports to New York-based co-founder and chief sales officer Laurent de Barry.

### Hammonds Out as Deutsche Bank's Leadership Woes Continue

Deutsche Bank's senior leadership took another blow on April 19 when the German investment bank announced that Kim Hammonds, the bank's group COO, will leave Deutsche Bank on May 24. A new group COO is to be nominated in the near future following consultations with regulators.

Hammonds initially joined Deutsche Bank in 2013 as its co-head of technology and operations. She was elevated to the group COO role in August 2016. She became quickly known within the financial industry as an outspoken voice on technology issues, and was tasked

Industry veteran Eric Bigelsen has joined the SmartStream Reference Data Utility (RDU) as head of sales for the Americas. Bigelsen will lead the sales and business development efforts for the RDU with a focus on banks, broker-dealers, asset managers, hedge funds and trading companies.

Bigelsen's financial services experience includes senior vice president roles at Moody's Investor Services and Moody's Analytics. Previously, he was senior director at Fitch Solutions, head of sales at

Cube Content Governance, and an investment consultant at Dean Witter Reynolds.

with upgrading the bank's aging infrastructure. Prior to Deutsche, she held senior technology roles at Boeing, Dell and Ford.

Press reports have speculated that comments she made at an internal Deutsche Bank event in March, in which she described the bank as "dysfunctional," may have contributed to the decision to leave, in addition to slow progress on technology reform. Deutsche Bank says the decision was made by "mutual agreement."

Hammonds' departure comes at a time of upheaval for Deutsche Bank, after its CEO, John Cryan, was effectively ousted by the bank's supervisory board. Christian Sewing, a lifelong Deutsche Bank employee, who started his career as an apprentice, was named as the new CEO on April 9.

It is also the latest blow in a rough few years for Deutsche, which has struggled to fully recover since the financial crisis, and which has seen its stock value dip in recent years. Sewing's installation will mean this is the third leadership team the bank has had since its hard-charging CEO Josef

Ackermann departed in 2012, having spent years trying to rapidly expand the bank's footprint and make it a global challenger in investment banking, markets and retail banking. Deutsche Bank's experiment with co-CEOs in Anshu Jain and Jurgen Fitschen also ended abruptly, when Jain left in 2015. Fitschen subsequently handed the baton to Cryan in 2016.

### Former Bats Data Boss to Co-Head New Cboe Markets Division

Cboe Global Markets has promoted Bryan Harkins to executive vice president and co-head of the exchange group's newly created Markets Division, comprising product, sales, business development and account management functions across its US equities, options, exchange-traded products, derivatives and foreign exchange (FX) businesses.

Harkins was most recently head of the exchange's US equities businesses—including the former Bats and Direct Edge market platforms acquired by Cboe—which included responsibility for sales, product



development, listings, and strategy, as well as for overseeing its suite of market data and market access products. He joined Bats via its acquisition of Direct Edge, where he was COO, prior to which he was managing director of transaction services at Nasdaq, and strategic account manager at the Brut ECN prior to its purchase by Nasdaq. He also served as a technical account manager at Tradescape, and as senior electronic connectivity specialist at Instinet.

Harkins' co-head of the new division is Andy Lowenthal, who was previously head of Cboe's global derivatives business.

### **Bogen to Head Execution Services for Dash Financial**

Jamie Bogen has been appointed as Dash Financial Technologies' newest managing director, responsible for execution services at the firm. As part of her new role, she will be responsible for pushing

forward the firm's business strategy for the buy side, and for developing its capabilities in execution customization and data analytics.

Prior to her appointment, Bogen spent nine years at agency broker Bloomberg Tradebook, where she was a senior client relationship manager. Before that, she was a senior managing director in Bear Stearns' asset management arm, and had spent the bulk of her career—over 20 years—at the bank.

Dash has undergone significant change in recent months. *Waters* reported in March that the firm's co-founders, Peter Maragos and David Karat, had successfully negotiated a management takeover of the business from private equity owners GTCR, just over a year after it was merged with Convergenx's LiquidPoint. Financial terms of the deal were not disclosed, but the transition was backed by another private equity firm, Flexpoint. Daniel Edelman, Flexpoint's principal, gained a seat on the board in exchange for its support.

### **IBM Taps Former CIBC Exec Dhot for Cognitive Analytics**

Tarundeep Dhot has joined IBM as associate partner for cognitive and advanced analytics in Toronto, responsible for helping IBM's clients to "transform themselves into truly cognitive enterprises" by structuring and leveraging their data assets to support growth.

Before joining IBM, Dhot was principal consultant for artificial intelligence and advanced analytics at consultancy Capco, prior to which he spent seven years at CIBC in various roles, including director of advanced analytics, senior consultant, and business analyst. Before

that, he served as a web administrator at Concordia University, and a search quality analyst at Google.

At IBM, he reports to Charbel Safadi, partner and Canadian leader for cognitive business decision support, and Daniel Cascone, lead account partner for the Canadian financial services sector.

### **Bob Santella to Succeed Neil Barua as IPC CEO**

Communication technology and services provider IPC Systems has named Bob Santella as its new CEO, succeeding Neil Barua, who will leave the company to pursue other opportunities.

According to the company, Santella has a track record of leading businesses through technological transformations, including software and software-as-a-service (SaaS) transitions. He recently served as president of the global trading group at FIS, which he joined when it acquired SunGard in 2015. At SunGard, he was the president of its brokerage group, leading all trading software and services businesses.

Prior to that, he was the COO at Fox River Execution, which was acquired by SunGard, and before that he held senior management positions at alternative asset firms, SAM Investments and RAS Investments.

Barua joined IPC in 2014 after its acquisition by Centerbridge Partners from Silver Lake Partners, where he was an operating advisor. *Waters* named him as the best third-party technology vendor CIO or CEO at the 2017 American Financial Technology Awards, owing to his success in building out the vendor's Unigy 360 platform. **W**

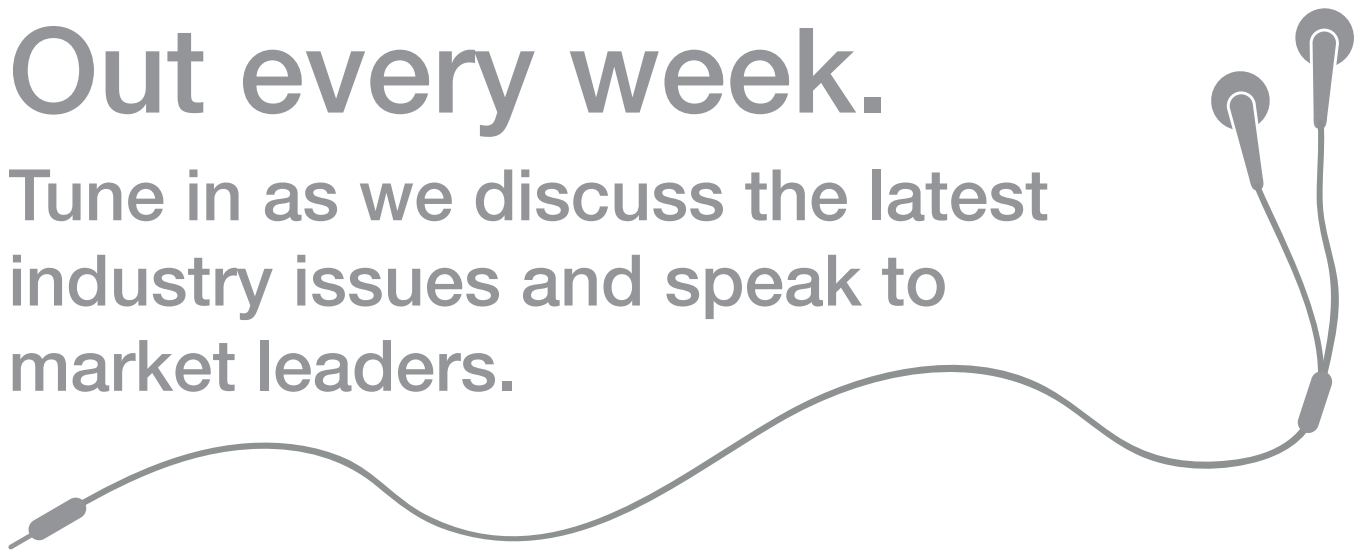
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