

waterstechnology



Desktop App Interoperability in Motion

WatersTechnology sits in with RBC and OpenFin as they improve the bank's internal OMS

Comprehensive view of your data for regulatory reporting



Our customers tell us that they need to use transformative digital strategies to remain relevant in today's challenging financial landscape. Strategies that will allow them to improve operational control, reduce costs, build new revenue streams, mitigate risk and comply accurately with regulation.

To help you make the journey towards digital transformation, we provide a range of solutions for the transaction lifecycle. AI and Blockchain technologies are now embedded in all of our solutions, which are also available in a variety of deployment models.

Digital transformation. Reaching the summit just got a little easier.

info@smartstream-stp.com
smartstream-stp.com



CONTROLS



REGULATIONS



REVENUE



RISK

Editor-in-Chief Anthony Malakian
anthony.malakian@infopro-digital.com
Editor at Large Max Bowie
max.bowie@infopro-digital.com
European Editor Jo Wright
joanna.wright@infopro-digital.com
Editor, Asia Wei-Shen Wong
wei-shen.wong@infopro-digital.com
Senior Reporter Josephine Gallagher
josephine.gallagher@infopro-digital.com
US Reporter Emilia David
emilia.david@infopro-digital.com
European Reporter Hamad Ali
hamad.ali@infopro-digital.com
Reporter Rebecca Natale
rebecca.natale@infopro-digital.com
Head of Editorial Operations Elina Patler
elina.patler@infopro-digital.com

Global Content Director Victor Anderson
victor.anderson@infopro-digital.com
+44 (0) 207 316 9090
Commercial Director Ince Saleem
Tel: +44 (0) 20 7316 9258
ince.saleem@infopro-digital.com
Business Development Executive Sonja Patillo
Tel: +1 212 776 8083
sonja.patillo@infopro-digital.com
Business Development Executive Arnaud Morell-Coll
Tel: +1 646 736 1887
arnaud.morell-coll@infopro-digital.com
Account Manager Daniel De-Bruce
Tel: +44 (0) 20 7316 9126
daniel.debruce@infopro-digital.com

Marketing Manager Louise Sheppey
tel: +44 (0) 20 7316 9476
louise.sheppey@infopro-digital.com
Design Lisa Ling

Corporate and Single Subscriptions
US: Barbara Fairman tel +1 646 736 1852
info@waterstechnology.com

Global Brand Director Katie Palisoul
katie.palisoul@infopro-digital.com
Global Editorial Director Duncan Wood
duncan.wood@infopro-digital.com
Group Publishing Director Lee Hartt
lee.hartt@infopro-digital.com
Managing Director David Pagliaro
david.pagliaro@infopro-digital.com

Infopro Digital Head Office
Haymarket House
28-29 Haymarket
London SW1Y 4RX
tel: +44 (0) 20 7316 9000
fax: +44 (0) 20 7930 2238

Infopro Digital US
55 Broad Street, 22nd Floor
New York, NY 10004
tel: +1 646 736 1888

Infopro Digital Asia
Unit 1704-05
Berkshire House, Taikoo Place
25 Westlands Road
Quarry Bay
Hong Kong
tel: +852 3411 4888

Infopro Digital Customer Services
tel: +44 (0) 1858 438 800

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

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

Published by Infopro Digital Risk Limited. Copyright Infopro Digital Risk Limited (IP), 2019. All rights reserved. No part of this publication may be reproduced, stored in or introduced into any retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the copyright owners.



On Blockchain Skepticism

In journalism, a healthy dose of skepticism is required. This is especially true if you cover politics or technology—fields where embellishment (and straight out lying) are part and parcel of the game. Since none of us here at *WatersTechnology* is a technologist, in order to know what's real and what's a mirage, we have to talk to a whole lot of people and sift through hyperbole.

If you've ever read my musings on the topic of blockchain, you'll know that I am highly skeptical of this emerging technology. For the October 2016 issue of *Waters*, I wrote a feature headlined, "Blockchain: The Revolution Has Been Over-Hyped." I followed that up this past January with an editorial headlined, "The Death of Blockchain (Hype)". Don't get me wrong: For certain purposes, blockchain—and we're using that as a catch-all for distributed-ledger technology (DLT)—can be useful, but it's just a tool in the broader toolbox. The idea that this will be a bigger revolution for the capital markets than the internet is, in my humble opinion, idiotic.

The reason for my skepticism is that when I talk to chief technology and information officers at some of the largest banks and asset managers, I find more frustration than exuberance. This is especially true if I'm chatting with them over a beer and the conversation isn't being recorded. Here's the simple fact: A lot of banks have invested a fair amount of time, resources and human capital in exploring how blockchain can revolutionize their organization. How willing are these blockchain evangelists going to be to hold their hand up and say, "You know what, we tried, but honestly, there are other tools and platforms that are more appropriate for financial technology than blockchain."? That's how you lose a job, fair or not.

Make no mistake, there are instances of good blockchain implementations in the capital markets—of course there will be ... this isn't snake oil—but these projects have been targeted and have filled gaps where other tech implementations have failed.

As Josephine Gallagher details on page 26, there's a fair amount of disillusion permeating the market when it comes to DLT. That doesn't mean that these projects will fail, but the proverbial trough of disillusionment is here for some.

We at *WatersTechnology* will definitely continue to report on the blockchain wins, but we're also not going to shy away from pointing out the delays and the failures. That's how technology progresses. And you know what ... we're going to fail, too. When we do, I want you to call me out. That number is +1 646-490-3973, or just spew bile at me via email: anthony.malakian@infopro-digital.com.

One last thing: We're open to publishing counterarguments. Send me an email with what you got. I think I'm going to be on the right side of history on this topic, but I also thought that there was a 0% chance that Brexit would happen or that Donald Trump would be elected US president, so I've been wrong (plenty of times) before, and I'll (probably) be wrong many times in the future. I'm here for the conversation. **wt**

Anthony Malakian
Editor-in-Chief

waterstechnology

Contents

1 **Editor's Letter**

4 **New Perspectives**

11 **Opinion: Tapping AI for Buy-Side Growth—SS&C**

12 **Open Outcry**

13 **News Desk**

14 **Brokers Cry SOS on Rule 606**

The SEC's revised requirements around order-routing transparency pose challenges for brokers—the greatest of which may be collaborating to track orders through the maze of brokers and execution, without specific guidance or mandates. By Max Bowie

24 **Microsoft Sees Trade Finance, Bond Issuance as Ripe for Blockchain Growth**

Marc Mercuri of Microsoft explains where the tech giant sees room for blockchain solutions in the future. By Hamad Ali, Emilia David, and Anthony Malakian

26 **The Blockchain Shakedown**

While some say blockchain will be a bigger revolution than the internet, the hype is clearly dying down. Josephine Gallagher speaks with experts in Europe and Asia to see where there are still hurdles to be overcome—if they can be.

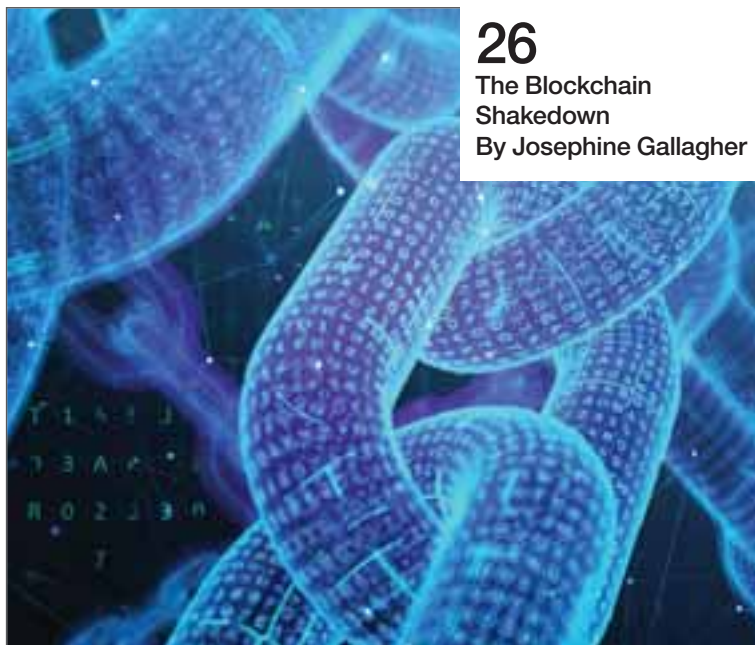
30 **The KYC Headache Worsens**

The onboarding process has always been a slog, even before KYC and AML requirements, which are only becoming more complex. Slowdowns mean loss of money and increased reputational risk—and hefty fines if it's done poorly. Technology can help, but there is still a long way to go. By Rebecca Natale, with additional reporting by Anthony Malakian



14

Brokers Cry SOS on Rule 606
By Max Bowie



26

The Blockchain
Shakedown
By Josephine Gallagher

36 **Warrants Issuers Battle Algo Predators in Hong Kong**

The threat of high-frequency traders have forced banks to spend big on tech. Chris Davis reports.

40 **Outsourcing Takes to the Front Office**

Fee compression and regulations limiting capital have forced some asset managers and hedge funds to rethink what is core to their business, including the trading desk. Enter the outsourced trading desk. By Emilia David

44 **Hunting for Alpha on the Net**

The immense growth of online data is driving an increasing number of asset managers to deploy web-scraping tools to find unique investment insights. Hamad Ali explores the benefits and challenges of this en vogue skillset.

48 **The Cloud Breach Blame Game**

As cloud computing becomes an ever-more critical component of any modern financial technology infrastructure, and cloud deals are coming under increased regulatory scrutiny, Joanna Wright finds out that firms will be unable to pass the buck for data losses.

52 **Max Bowie:** **The Problem with Patents**

53 **Joanna Wright:** **Fighting Bad Robots**

54 **Wei-Shen Wong:** **What Is Your Problem?**

55 **Human Capital**

GET MORE ONLINE

News. Webcasts. Video. Audio. Special Reports.
Get it all at waterstechnology.com

48

The Cloud Breach
Blame Game
By Joanna Wright



18

The Waters Profile:
RBC and OpenFin
By Anthony Malakian

JP Morgan Turns to Machine Learning for Options Hedging

These new models sidestep Black-Scholes and could slash hedging costs for some derivatives by up to 80%. By [Nazneen Sherif](#)



JP Morgan is using machine learning to automate the hedging of some equity options, a move that one quant calls a “game-changer”.

The bank started using machine learning to hedge a portion of its index vanilla flow book last year. Since then, it has been able to hedge its exposures faster, and quote higher volumes as a result.

“The real advantage is we are able to increase volumes quoted because we are faster,” says Hans Buehler, global head of equities analytics, automation and optimization at JP Morgan in London. “If you have to manually manage this, you have to divert somebody’s time and sit them down to focus on it.”

One senior quant calls JP Morgan’s approach a “base-level rethink” of hedging, which he says will benefit illiquid markets in particular. He estimates the technique has the potential to cut hedging costs for certain commodity derivatives by as much as 80%.

“There are lots of places in the market where there is either illiquidity in the hedging instruments you have or large transaction costs or products that have risks that are unhedgeable,” says Mark Higgins, chief operating officer and co-founder of Beacon Platform in New York and co-head of JP Morgan’s quantitative research team until 2014.

“In those places, it will be a real paradigm change in how people can approach optimal hedging,” he says.



Hans Buehler
JP Morgan

JP Morgan’s new hedging program uses complex statistical regression, a type of machine learning that tries to find statistical relationships between variables by trawling through large amounts of data. The technique relies on historical market data rather than risk sensitivities—or Greeks—to estimate hedging costs, a dramatic shift from the popular Black-Scholes model.

Last Year’s Models

“Black-Scholes Greeks were very useful in the 1980s because we didn’t have a ton of data and we didn’t have a ton of computing power. So this was an approximation that worked very well for a long time. Today, we have much more data. If you revisit the problem of

hedging derivatives now, I don't think you would sit there and build the Black-Scholes model," says Buehler.

Machine learning models consider many more variables and data points when making hedging decisions, and can generate more accurate hedges at greater speeds, he says.

"We can incorporate much more information into that process. Because it is purely data driven, we can use signals, market information and flow information."

For instance, commonly used volatility models, such as the local volatility model, struggle to effectively capture the impact of transaction costs on profit and loss (P&L).

"The impact of transaction costs on a local volatility model is very hard to do in an analytical sense," says Buehler. "In our approach, it is basically built in. So you know immediately what the implementation costs are, which in classical finance is hard to achieve."

JP Morgan has used similar machine learning models to provide optimal execution for clients in cash equities for nearly two years. The bank plans to roll out comparable technology for hedging single stocks, baskets and light exotics next year.

Quants are embracing so-called model-free machine learning techniques, such as complex statistical regression, to solve sticky problems. These approaches attempt to identify patterns in data without necessarily trying to explain the results within an existing model framework. More advanced methodologies are also in the works.

Deep Hedging

Buehler was one of the co-authors of a recently published paper on so-called deep hedging. He says the contents of the paper are part of an "ambitious project" at the bank, which will allow it to hedge positions multiple time-steps ahead. This means it can provide hedges along a path of times rather than just a single period of time in the future.



“There is no fundamental physical law that governs risk factor dynamics. Our best hope is to take the vast amount of available data and analyze it in its entirety, without imposing any convenient mathematical models. This is why keeping the hedging model-free and Greek-free is such an appealing proposition.”

Alexei Kondratyev, Standard Chartered

The research has already attracted interest from others in the industry who are eager to apply it in their own businesses. Beacon Platform, for instance, is researching the application of deep hedging in commodity derivatives and variable annuities.

For example, an investor that buys the rights to run a natural gas storage facility would need to determine the best way to delta-hedge their exposure to commodity prices. They could hedge at the storage location, where transaction costs might be high, or take on some basis risk and hedge at a more liquid hub location. Deep hedging techniques can tell the investor how to

distribute their hedges between these locations.

"Deep hedging for that situation gives you a quantitative model that, when you actually introduce basis volatility and transaction costs at different locations, tells you interesting things about how you spread the delta-hedges in different locations and gives you a better business outcome," says Higgins.

The same holds true for variable annuities sold by life insurance companies, which provide a variable payout at retirement based on the investments of the buyer. These products carry hard-to-hedge risks, such as mortality or early redemption. Deep hedging can be used to more accurately model these variables.

Higgins says his firm's research found that for natural gas storage, deep hedging lowered transaction costs by 50–80% compared to the standard risk-neutral hedges, depending on the market structure, while the standard deviation of P&L was 50–90% smaller.

Greeks Tragedy?

Other quants say these sort of techniques could mark a frontier in pricing and hedging derivatives.

"There is no fundamental physical law that governs risk factor dynamics," says Alexei Kondratyev, a managing director at Standard Chartered in London.

"Our best hope is to take the vast amount of available data and analyze it in its entirety, without imposing any convenient mathematical models. This is why keeping the hedging model-free and Greek-free is such an appealing proposition."

This is not to say the Greeks will be consigned to the scrapheap. Buehler says they still form the backbone of risk limit-setting for books that are automatically hedged.

"We still use the Greeks as a risk control. We have limits on vega, we have limits on term structure, and so on. But in terms of the hedging decision, it's no longer used," he says. **WT**

Morgan Stanley Explores Using AI to Better Trade Equities

The bank is investigating how artificial intelligence can be deployed to select the best algorithms for trading, as well as for suggesting intelligent IOI suggestions based on clients' trading profiles.

By [Wei-Shen Wong](#)

Morgan Stanley is exploring various ways that artificial intelligence (AI) can be used to help clients better trade in equities.

Kerr Hatrick, executive director and quantitative strategist at Morgan Stanley Asia, said the bank is trying to figure out how to best use various forms of AI—namely, machine-learning techniques—to make suggestions regarding which algorithms to use to trade equities in a particular market condition.

“We are also interested in looking at the problem of whether last night's stock price, which jumped up, is going to continue or whether it's going to fade away in the morning. We're looking at the problem of whether there are too many people saying the same thing in the market and we're looking to use machine-learning techniques to identify that,” he said.

Reducing Trading Friction

Another area where the bank is considering using AI is in deriving insights from the trade-volume curve. Hatrick, who was speaking at the Asia-Pacific Financial Information Conference (Apfic), which was held in Hong Kong on June 12, said one of the difficulties with trading—especially in large amounts—is trying to understand when to trade with the least friction, a point that he says is very important for Morgan Stanley to know.

“Last, but not least, is the need for algorithms to try and understand what is going to happen to the price over the next event, the next second, the next minute, the next half hour. And it may well be that the different kinds of [AI]



“Last, but not least, is the need for algorithms to try and understand what is going to happen to the price over the next event, the next second, the next minute, the next half hour. And it may well be that the different kinds of [AI] techniques will be useful to tell you this.”

Kerr Hatrick, Morgan Stanley

techniques will be useful to tell you this,” he added.

Morgan Stanley is also using machine-learning forms to intelligently suggest indications of interest (IOI) to clients, based on their expected investment behavior.

Machine Learning

Hatrick, who runs the Morgan Stanley Execution Services Strategy unit in Asia, noted that AI is a wide-and-deep

field. For the purposes of stock selection, algorithm selection, and trade optimization, it's the discipline of machine learning that is yielding the most positive results.

“What I'm trying to say is the kind of techniques used in modern trading algorithms are very varied, and some of them would come under the heading of AI, but most of them will come under the heading of machine learning,” he said.

Drawbacks

One of the issues that firms can run into with trading algorithms is bias, which Hatrick said can be “insidious” at times.

“They are all learning from the same data. We all struggle to make our algorithms and give [them] different data. Perhaps we even feed them alternative data, but the root of that is prices and volumes, so they're all looking at the same data,” he said.

The challenge with that is trying to ensure the market stays fair and orderly, although all the algorithms might be looking at the same signal.

“Imagine I have a signal that suggests trading a stock. How long is that signal going to remain unique? Maybe I'm the second, maybe the third, to come up with that signal,” Hatrick said. What results next is a herd mentality where the market starts “running” in the same direction because these similar algorithms are picking up on the same signal.

Hatrick believes this issue is something the industry will increasingly need to address as machine-learning algorithms continue to make their way into the world of trading. [WT](#)

Liquidnet Builds Netflix-like Functionality for Buy Side

The network provider is leveraging AI to make investment suggestions and dig out sentiment from spoken announcements. By [Josephine Gallagher](#)

Liquidnet, the buy-side-focused network provider, is building out an analytics platform that will act in much the same way as Netflix and other streaming services.

Based on the shows you watch and like on Netflix, once enough data about you has been acquired, the platform uses artificial intelligence (AI) to suggest other TV shows and movies you might be interested in. Similarly, Liquidnet plans to spend the coming year building out its platform so that it can use AI to adapt to individual users, enabling it to predict recommended actions and create trading preferences. The project also aims to provide more granular and personalized data to users based on their historical trading activity.

Commercial tech firms such as Amazon, Google and Netflix have long capitalized on the use of customer data to create a more personal user experience. Tom Doris, chief data scientist at Liquidnet, says it's now time for the capital markets industry to catch up with the trend and make use of this largely untapped resource.

"It's that area within commercial applications or professional industries that [the financial industry] is a little behind on, but this is changing," he says. "One area we are working on is observing how users interact with our systems and how they behave in order to enhance their workflow and make them more efficient."

Doris explains that Liquidnet sits on a stockpile of data that allows it to understand users' requirements and how they interact with the platform. The added functionality will aim to improve workflow automation and includes features such as "hot buttons"



Technology under development will offer transcripts of spoken announcements in real time

to allow traders to make quick decisions around the tailored analytics.

Liquidnet is also developing an analytics platform for portfolio managers and analysts, though Doris could not go into greater detail as it is still in the pilot-testing stage. The company expects to go live with the platform in the coming months.

In February, Liquidnet told *WatersTechnology* that it was building out its in-house data container to more efficiently enhance its algorithmic suite of solutions. Some of the underlying benefits of the algo revamp include improved configuration and customization capabilities. The objective is to

also enhance the latency of intraday and real-time signals from its OTAS analytics platform to inform its algos and enable it to respond quickly to live market conditions. The improved algos have been launched in both Europe and the US.

Spoken Sentiment Data

As part of Liquidnet's drive to improve its predictive analytics capabilities, it is also developing technologies to produce real-time transcripts of spoken announcements, such as earnings calls and speeches. Natural language processing (NLP) is then used to extract sentiment data from the transcription and push out automated insights, including keywords from the text.

"There is some very promising work in this area that's happening now, but over the next couple of years we will see a lot more of that, and it will become an arms race," says Doris. "One of the things we have seen is that for those NLP providers that are analyzing publicly available content, such as earnings call transcripts, they are able to tell you what areas are considered to have positive or negative market sentiment."

One of the challenges of using such technologies is enabling them to recognize and accurately transcribe a global range of languages. Doris says that while some software can be language agnostic, the important thing is to have the local and linguistic expertise on the ground in order to gauge the relevance of the insights for market-making decisions. He notes that it's the classic case of using AI to augment what a human can accomplish by allowing them to find important information more quickly and easily. [WT](#)

“One of the things we have seen is that for those NLP providers that are analyzing publicly available content, such as earnings call transcripts, they are able to tell you what areas are considered to have positive or negative market sentiment.” **Tom Doris, Liquidnet**

State Street Plans Large-Scale Expansion of ESG Data Offering

The bank sees opportunity in providing more in-depth, quantitative data on a larger universe of environmental, social and governance factors. By [Emilia David](#)

It's been an active year for State Street Global Exchange (SSGX) when it comes to the environmental, social and governance (ESG) sector. The company has expanded its data offering and partnered with an acclaimed academic in the space to build a more robust offering.

"The Holy Grail is for the quality of data to be strong [and] to quantify ESG more intelligently than what is out there. We really want to make the data measurement tool even more robust," Mark McDivitt, head of ESG solutions at SSGX, tells *WatersTechnology*.

In the world of ESG, there is something of an arms race unfolding. While buy-side firms are increasingly looking to incorporate these vast and varied factors into their investment processes, it has come with challenges. New data providers are popping up seemingly every day and it can be a hit-and-miss process when it comes to finding materiality about which factors are better attuned to provide a positive return.

One-Stop Shop

As a result—and this is something that has been seen across the alternative data space as a whole—data and analytics providers are looking to employ a one-stop-shop model for these services.

With its web-based ESGX platform, State Street Global Exchange already allows users to identify and measure tail risks and provides a view into their ESG exposures relating to non-financial risk. The trading facility's sibling, State Street Global Advisors, the investment management arm of State Street Corp., also has R-Factor, an internal ESG scoring methodology. R-Factor incorporates the



An arms race for ESG factors is developing

Sustainability Accounting Standards Board Materiality Map, along with data from four providers—Sustainalytics, ISS-Oekom, Vigeo-EIRIS, and ISS-Governance—and blends that with SSGA's investment expertise.

McDivitt notes that this investment within State Street is part of a broader plan to offer a more robust ESG offering across the organization so that it can better tailor and target its ESG services for specific needs.

"The overarching goal around ESG is that State Street is very committed to it. Our aspiration is to embed ESG into the DNA of the company from the top down," he says.

As an example of how the firm plans to progress in the future, one of the new projects in the works is a service that provides a more quantitative way of measuring the impact democracy has on business. SSGX is working with a fund that is developing a model to determine where countries are on the democratic spectrum and rank the performance of companies doing business in that country. The model will theoretically provide a clearer picture of whether a more democratic country is a better place to do business—or might yield a result that is surprising.

It is also targeting the environmental portion of ESG—specifically, carbon.

"So, starting with the E in ESG because it's the easiest to quantify, drilling down on the provenance where the carbon is actually being admitted to the asset class, we're really trying to attack that," McDivitt says. "The only way to do that is to get profound truth data, which confirms the provenance of where the carbon is being emitted."

Eventually, he adds, State Street

wants to become a force beyond the analytics side of ESG, and in the future will look to set up a carbon trading desk, which may use data coming from ESGX and R-Factor.

The Foundation

The firm has already started to address carbon. State Street recently announced it had upgraded its offering on ESGX to provide more in-depth information around the environment aspect of ESG. The enhancement included newly integrated carbon metrics such as carbon footprint and intensity, and offers clients monthly, quarterly and annual ESG reporting.

ESGX provides ESG-specific factor exposure analysis, and this recent roll-out also included an additional asset class, corporate bonds, four new data providers—IdealRatings, MSCI ESG Research, Trucost ESG Analysis and Sustainalytics US—and improved functionality, resulting in quick, concise readings of portfolio data.

And in March, State Street tapped Harvard Business School professor George Serafeim to bolster its ESG research. Serafeim will work with researchers at State Street Associates (SSA), the bank's academic research arm that works to provide investment insights to chief investment officers, portfolio managers and analysts at pension funds, mutual funds, insurance firms, sovereign wealth funds and other institutional investors.

Through the pairing, SSA will release white papers to provide actionable insights that are drawn from anonymized data collected by State Street Corp. It marks the first time that SSA is addressing ESG. [wt](#)

Morningstar Moves Tick Data Platform to the Cloud

The vendor is partnering with Sydney-based RoZetta, which has extensive experience in handling tick data in the cloud. By [Max Bowie](#)

Data and investment research provider Morningstar has revamped its tick data delivery architecture into a cloud-based solution. For the project, it is partnering with Australian big data technology platform vendor RoZetta Technology.

The new version of Morningstar's Tick Data Solution will go live at the end of July, using a platform built by RoZetta, running on Amazon's cloud environment. Officials say the revamp will make it quicker and easier for clients to access tick data from the vendor.

"Over the past couple of years, tick data has risen on firms' priority lists," says Matt Spedden, global head of equities and market data solutions at Morningstar. He adds that the service should appeal to financial professionals performing best execution, transaction cost analysis, and regulatory compliance: "Tick data is one of the ingredients that customers need in order to fulfill those tasks."

The data can also be used for market surveillance and monitoring by compliance departments and regulators, in the front office for back-testing trading strategies, for market and liquidity analysis, and by software providers to populate analytics and research applications, and to backfill other datasets.

Morningstar's existing Tick Data service stems from its acquisition of London-based ticker plant and datafeed vendor Tenfore Systems in 2003. Since then, it has collected and stored—and in most cases, commercialized—around 2.5 petabytes of tick-level market data, which is growing exponentially year-on-year, covering 200 stock trading venues, or roughly 99% of global equities coverage.



The cloud service will offer quicker access to tick data

The dataset includes historical tick data back to 2003, with 10 years of US composite data, exchange messages and outage information, and the ability to filter by symbol or exchange, and to view market-by-order or market-by-price. Data points include trade date and time, exchange time, volume, trade price, last bid and last offer.

"Our challenge was to get that into the hands of clients—and the way that the data was traditionally stored made that challenging," Spedden says, citing the vendor's legacy storage and extraction environment, which used older technologies and typically delivered data via flat file or physical media, such as hard drives, for large volumes of data.

Specifically, the legacy technologies extracted data from an on-site storage area network using a single-threaded process. Then, the data could be copied to hard drives and shipped via courier service.

"This single-threaded extraction meant data could only be extracted chronologically, and while we could create multiple single threads, this was a manual process, adding time and complexity to the extraction process," Spedden says. "The data and new technology is all cloud-hosted, which means we can automatically scale the number of server instances—and therefore the number of threads—based on utilization. This means we can dramatically increase the speed of extracting the data, putting the data into the hands of our clients quicker."

Buy vs. Build

Morningstar as a whole is moving to more cloud-based delivery mecha-

nisms. In this case, the market data group decided to engage a third party with proven expertise in this space, rather than build the cloud platform from scratch in-house, and turned to Sydney-based RoZetta, which had supplied technology to Thomson Reuters' (now Refinitiv) tick data platform for more than a decade—starting when RoZetta was known as Sirca, an Australian non-profit technology research and innovation entity—before parting ways so the vendor could take the function in-house around two years ago.

"We made the decision to use a third party because of the experience they had [of working with Amazon]... and because they have a deep understanding of exchange data globally," Spedden says. "And we had a long-standing relationship with RoZetta in Sydney, so expanding that was a natural way for this to evolve."

Each firm brought its own specific skills to the table: Morningstar's expertise in market data and large datasets, and RoZetta's experience of working closely with Amazon as an AWS gold partner with more than 15 years' experience building tick data platforms. The result is a customized tick data platform housed on RoZetta's cloud-based technology stack.

"If a customer came to us and wanted all the US composite data for days, or even a year, historically it would have taken eight weeks to do that sort of extraction in the old environment. In the new environment, that's reduced to a couple of hours," Spedden says. "We believe that turning around the data so quickly is a bit of an advantage." [WT](#)

Could CFTC Bring Back Reg AT?

The CFTC's new chair could reopen the controversial algo-trading rules—if he gets time. By [Joanna Wright](#)

Regulation Automated Trading (Reg AT) was slammed by market participants and Republican regulators when it was proposed in late 2015, and the Commodity Futures Trading Commission (CFTC) seemed to drop the proposal after Donald Trump won the 2016 presidential election. But a changing of the guard at the commission could see the much-maligned algo-trading rule revived—albeit in a less extensive form.

Last week, Heath Tarbert, who is currently acting under-secretary for international affairs at the US Treasury Department, was confirmed as the new CFTC chair, taking over from incumbent Christopher Giancarlo on July 15. Since Tarbert's nomination in March, markets observers have been curious about what his priorities as chairman might be—especially considering that he has only 18 months on the job before a Democrat could potentially take the White House.

And so derivatives lawyers took note when Tarbert said during his nomination hearing before the Senate agriculture committee that he is willing to reopen the proposal on Reg AT to improve oversight of automated trading.

“The CFTC may do something to reopen Reg AT,” says Julian Hammar, a lawyer with Morrison and Foerster in Washington, DC. “It might not be as far-reaching as the proposal from before. But when people speak at public Senate hearings, they tend to remember it, and it sticks in the heads of the senators, who may try to follow up.”

During the hearing, Tarbert told senators that he would look at reopening the rule proposal, saying that “if confirmed, Reg AT would be something I would want to get back up and running in terms of the process of considering it.”

Also, Hammar points out that just days after Tarbert's comments, commission staff put out a report finding that automated trading orders have increased massively in futures markets, suggesting that this topic is still very much on the regulator's mind.

Source Code Controversy

The CFTC first proposed Reg AT in November 2015, during the chairmanship of Timothy Massad, who said at the time that the primary focus of the regulation was the risk that an untested algorithm could cause a significant market disruption.

The proposal set out for comment what the CFTC said were a series of risk controls, transparency measures, and safeguards for algorithmic order origination and electronic trade execution on US exchanges. Much of the proposal had broad support, as it merely codified what exchanges were essentially doing already.

Some provisions, however, outraged market participants, as well as Giancarlo, a Republican commissioner at the CFTC at the time. Critics declared these pieces of the proposal a massive overreach, saying it was so broad it would sweep into its remit market participants and technologies that in no way could be considered possible origins of another flash crash.

By far the most outrage was reserved for the requirement that traders maintain a source-code repository that could be accessed by any member of the CFTC and the Justice Department without a subpoena.

The CFTC responded to comments in 2016 with a supplemental notice to the proposal. The supplement modified the proposal to take into account the market's concerns, including putting in access obligations for government officials.



Heath Tarbert
Commodity
Futures Trading
Commission≈

When Massad resigned, and Giancarlo took over as chair of the CFTC, it seemed likely that the agency would sideline the rule. Tarbert's pronouncements show that he is at least willing to look at re-proposing it—though Hammar says the potential next iteration would probably be less far-reaching, reflecting the compromises in the supplemental notice. The fact that the issue came up in a Senate hearing at all is evidence that lawmakers are still troubled by algorithmic trading, and the CFTC may feel that it has to address the issue.

Short Timeline

There's a big caveat, however: it's unlikely that Reg AT will top Tarbert's list of priorities, since the agency has not yet finalized several important rules, including position limits and some outstanding Dodd-Frank Act implementations.

And whatever Tarbert's priorities, he might only have a year and a half in which to execute them before presidential elections in November 2020.

“I suspect he is not going to be very active given the relatively short window of time before an election,” says Hammar.

A former CFTC staffer who remains close to the agency says staff have been told that they should expect to wait at least three months after Tarbert takes office before new rulemakings start coming out.

It usually takes a new chairman time to assemble their staff and generally find their feet in the role, says the source. “But I have never heard of it taking three months! He is saying, ‘Don't expect anything in the first three months.’ This sets the tone. It shows he is not going to be an activist chairman.”

The CFTC did not respond to a request for comment. [wt](#)

Tapping AI for Buy-Side Growth

Asset managers wanting to thrive in today's landscape of squeezed margins must learn how to capitalize on innovative AI tech to deliver top-line growth, write [Dominic Flanagan](#), [Scott Kurland](#), [Tom McMackin](#) and [Marc Zimmerman](#) of SS&C Technologies

As investors have transitioned from active to passive management, asset managers have increasingly focused on reducing their fee structures to remain competitive. In today's razor-thin margin environment, successful firms will be those who can better optimize their middle and back-office operations. Two key factors that enable firms to achieve this optimization are economies of scale and the use of advanced, innovative technology.

The case for economy of scale is well understood, but how you get there is materially different today than in the past. New products in the middle- and back-office investment space use innovative artificial intelligence (AI) technologies such as machine learning, natural language processing (NLP) and robotic process automation to deliver unparalleled operational efficiency, reduced costs, and enhanced insights.

Solutions are now available that leverage AI technologies to achieve levels of efficiency in investment accounting and operations that cannot be attained by traditional technologies. The availability and advantages of "smart" tools tilt the scale strongly in favor of asset management firms that can sustain continuous investment in the technology and expertise to leverage AI effectively. It will become increasingly hard for firms that do not capitalize on these technologies to compete. Asset managers that cannot—or choose not to—invest in innovative solutions will need to leverage a hosted solution or platform service model from a vendor that is heavily invested in this space.

Big Benefits

Innovative technologies will play a crucial role for asset managers, who



AI technology can deliver huge gains in efficiency for asset managers

find themselves moving further into derivative and alternative products, such as swaps or IR futures for global hedging, limited partnerships, private equity deals, or real estate assets. The need to leverage advanced technology together with asset-specific operational and accounting expertise becomes even more critical. Without these technologies, the investment model may not be scalable enough to generate healthy margins/net returns.

The alternative asset space is ripe for the application of innovative tech such as NLP and predictive analytics. Alternatives require processing of high volumes of complex data collected from various counterparties, such as partners, administrators and property managers. This data is often available only in unstructured formats and must be carefully reviewed, parsed and processed for accurate and timely revaluation of these assets, their associated cashflows and revenue/expense streams.

NLP capabilities can help automate the retrieval, review and parsing activities associated with such large volumes of unstructured data and documents. Similarly, predictive analytics can help by suggesting and automatically populating missing or delayed data values and elements based on common or historical activities associated with each of these assets or deal types. Through the use of technology advancements such as NLP, machine learning and robotics, investment operations and accounting teams can now review, correct and/or confirm data values in a simple manner for prompt revaluation of individual assets at the close of each period. In addition, corrections and modifications made by investment operations and accounting teams can be fed back into the AI

processing engines to enable them to continuously learn and improve accuracy and confidence levels for future document or event processing.

The Options

Firms that transition their investment accounting and operations to a hosted solution or a platform service model can achieve more than cost savings. If the service/solution provider is utilizing the latest technologies, the added efficiency and accuracy delivered by these solutions will allow asset managers to deliver faster, more comprehensive services to clients. This enables the middle and back-office functions to be leveraged as a strategic growth initiative, rather than simply as a cost center.

The ability to access next-generation technology capabilities through a hosted or platform service model is a valuable option for smaller firms that lack the scale and/or expertise to effectively leverage these new tools on their own. And, refocusing from cost reduction to top-line growth is also a positive strategy for larger firms that want to focus resources on building business, rather than managing IT infrastructure.

Keeping pace with new technologies in investment accounting and operations is a critical success factor for all asset management firms. Solutions that leverage AI to achieve improvements in the quality, cost, and timeliness of middle- and back-office processes are available today, and they're continuously evolving. Asset managers who have yet to tap these technologies are already starting to fall behind. [WT](#)

Dominic Flanagan is chief development officer, Scott Kurland is managing director, and Tom McMackin and Marc Zimmerman are senior vice presidents at SS&C Technologies.

OPEN OUTCRY

What the key figures in fintech are saying this month

“



“I think outsourced trading is the fastest-growing element of the sell-side execution business. I think there are cost savings of hundreds of percent. I wouldn't be surprised if in 10 years, 90% of the market is outsourced.”
Jeff LeVeen, Jones Trading

» see page 40 for full feature...

“One of the things I'm being asked for right now from one dealer is the middle names of board of directors of two of our clients. I'm like, 'You have to be kidding

me—you trade all over the world, in all different types of instruments with these two clients, and for this particular type of trade you're asking for middle names?' So now I have to go out to a pension client and say, 'I need the middle names of your board of directors.'—it's ridiculous.”
Compliance executive at an asset manager with more than \$750 billion under management

» see page 30 for full feature...



“There is a substantial amount of friction in this 'look-through' information about what relationships brokers have: it may be competitive information, or may be stored elsewhere.”

Mark Davies, S3



» see page 14 for full feature...

“

“I think blockchain by itself is just another technology. It has been overhyped with a lot of people saying it is going to change and revolutionize the world.”

Huayi Dong, Daiwa Capital Markets

» see page 26 for full feature...



“

“There are massive compliance issues. Some people abide by the rules very clearly, and some people don't.”

Nick Jain, Citizen Asset Management



» see page 44 for full feature...

“

“Every issuer is getting faster and more sophisticated and that means the entry barrier for new issuers is not low in the warrants business here. They must have a sophisticated system; perfect connectivity; a perfect pricing system.” Asia equity derivatives sales director



» see page 36 for full feature...

“



“Guess what? Cloud vendors have very limited liability when you look at their contracts. The standard is how much you have paid them in the prior 12 months—that's it. So however much you have paid Amazon, Google or Azure is how much they will pay out for liability if you have an event that affects you.” Byron Collie, Goldman Sachs

» see page 48 for full feature...

“

“No one on senior management wants to talk about this stuff and everyone gets annoyed by it, but the bottom line is that we're all bitching and moaning, but you have to get this stuff done.” Operations professional at a tier-1 bank



» see page 30 for full feature...

NEWSDESK

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

Refinitiv Partners with Trulioo to Boost KYC Offer



Deal will offer an AML one-stop shop

Refinitiv is partnering with identity verification provider Trulioo to expand its anti-money laundering and know-your-customer (AML/KYC) capabilities.

The move marries Refinitiv's risk intelligence tools—World-Check and World-Check One—with Trulioo's GlobalGateway service, a digital identity verification platform. Trulioo's offering uses a digital network of 400 procured and vetted data sources from around the globe to provide information on more than 5 billion people for institutions to run identity checks.

This pairing creates more of a one-stop shop offering for Refinitiv's clients and will better allow it to adjust to changing regulations as they pertain to AML/KYC. A spokesperson for the vendor says it is not yet ready to announce how the services will work together in full production, whether as an add-on offering or integrated into the existing products.

TRG Buys Axon to Weld Policy, Compliance Skills

Data inventory management and usage monitoring platform vendor TRG Screen has acquired Axon Financial Systems, a provider of exchange data usage policy information, for an undisclosed sum.

TRG will take on Axon's 14 staff, including its three founders—CEO Chris Hutton, COO Steve Cowler, and CIO Aaron Garforth.

The move capitalizes on TRG's new ownership. Last November, private equity firm Pamlico Capital acquired a majority stake in the vendor, providing a cash injection to fund further product development and acquisitions. With new investment, TRG created a list of potential acquisitions as part of its strategy, and "Axon was right at the top of that list," says TRG CEO Steve Matthews.

Google Deal Propels Crux into Alt Data Utility Space



Making it easier to explore alt data

Data engineering vendor Crux Informatics has scaled up by adopting a range of tools and services from the Google Cloud Platform.

As banks and asset managers are looking to explore and test new types of alternative data, the

vendor hopes this move will allow it to help clients more quickly—and cost-effectively—get up and running. On average, roughly 80% of firms' time, energy and money is spent on downloading, validating, cleansing and storing data, says Crux Informatics CEO Philip Brittan, while the remaining 20% is spent on data science efforts that actually derive value from the datasets.

"That ratio is backward from our point of view," Brittan says. "Firms should be spending most of their time extracting value and a small piece on getting access."

Daiwa Tackles GDPR with Multi-Layer Encryption



Anonymization is a necessity today

Daiwa Capital Markets is leveraging multi-layer encryption mechanisms to anonymize data to comply with new data protection and cyber security laws globally. The investment bank is reviewing the potential of using ARX's open-source

technology to anonymize client data and support various international risk models.

Speaking on the sidelines at the Asia Pacific Financial Information Conference on June 12, Huayi Dong, global head of electronic trading solutions at Daiwa Capital Markets, said the bank is looking at using the anonymization tool for various use cases, such as regulatory reporting.

DTCC Sets Testing Schedule for SFTR Tools

The Depository Trust and Clearing Corporation (DTCC) has set testing dates for its Global Trade Repository relating to the Securities Financing Transactions Regulation (SFTR), the European Union rule that aims to reduce perceived risks related to shadow banking in the securities financing markets. The first phase of DTCC testing will start in August for third-party partners, followed by direct clients of the DTCC in October.

Kooltra Debuts Cloud-Based FX Tool

Kooltra has released the first solution on its cloud-based FXCore platform. The back-office product is delivered via a software-as-a-service model. By acting as a "plug-and-play" system that connects to internal trading systems via the cloud, it aims to enable brokers to fast-track their FX businesses and circumvent expensive, multi-year contracts for back-office systems.

Liquidnet Grows Analytics Portfolio with Prattle Buy

Just weeks after its purchase of research marketplace RSRCHXchange, Liquidnet has made another move to expand its analytics offerings by acquiring sentiment data and predictive analytics technology vendor Prattle. Liquidnet will use Prattle's natural-language processing (NLP) and machine-learning capabilities to produce analytics for its network of asset managers and provide insights for its core businesses in equities and fixed-income trading.

Itarle to Open NYC Office, Co-Locate at CME

Itarle is hiring staff for a new office in New York. As part of its US expansion, the firm is also co-locating within CME Group's datacenter in Aurora, Illinois, to beef up its global datacenter presence.

Brokers Cry SOS on Rule 606

The SEC's revised requirements around order-routing transparency pose a series of challenges for brokers—the greatest of which may be collaborating to track orders through the maze of brokers and execution venues prior to execution, without specific guidance or mandates from the regulator. Max Bowie reports.

The financial services industry gets more nervous about compliance deadlines for new regulations than a chef preparing a meal for an influential food critic who's just had root canal. Right now, it's the Securities and Exchange Commission's (SEC's) revamped Rule 606 of Regulation NMS, in particular, that brokers are fretting about.

The rule, which covers reports that provide transparency around order-routing, was originally scheduled to take effect in May. The industry, though, was offered a last-minute reprieve, as the SEC decided to extend the compliance date to October 1, 2019, after market participants requested clarification on specific data as part of the reports, and extra time to implement the changes. The SEC conceded to a delay, but it has yet to provide clarification on some of the new elements it expects as part of

the reports, which officials say will be delivered in the form of a collection of frequently asked questions (FAQs).

The industry is still worried, because without those FAQs, brokers may still have trouble meeting the new compliance deadline, despite the delay, and may have to work together to collect and share the data required by the SEC.

Mark Davies, CEO of S3, a provider of execution analytics and transaction cost analysis software, who has been involved in data industry body the Financial Information Forum's (FIF's) efforts to obtain clarity and a workable deadline from the SEC, says the industry has already put together a potential set of Q&As that the SEC could use, but no progress has yet been made.

"The number one thing the industry wants to know is when are those FAQs coming out," Davies says, "[W]e need that information fairly soon, because otherwise it just kicks the can down the road without giving us a more accurate target to hit."

Chris Montagnino, managing director of compliance services at management and data consultancy Jordan & Jordan, which administers the FIF, says participants are already coding as much as they can to portions of the rule that are clear, but an inflection point is nearing to ensure that they are adhering to the rule as the SEC intended.

"Without the clear guidance from the SEC, brokers may report their activity differently," he says. "And then

you would not be comparing apples to apples, so the reports would be useless.”

Old Dog, New Tricks

SEC Rule 606—originally known as Rule 11Ac1-6—has been around in its current form since 2000, when it was introduced to improve public disclosure of order-routing practices by requiring broker-dealers to file public quarterly reports of how they routed non-directed orders, and to provide client-specific information as requested by buy-side customers.

The new reports cover execution in “not-held” orders—orders where a buy-side firm gives its broker discretion over the price and time of execution, and where the broker may execute some of the trade as principal or route some or all to another broker. So the report provides details on the shares sent to the broker, how many of those were executed by the broker as principal, and how many were routed to other venues, and to which venues.

The reports also include more detailed information on order routing (e.g., total shares routed, total shares marked immediate or cancel, shares further routable, and average order size routed), information on order execution (e.g., total shares executed, fill rate, fees and rebates, and numerous other execution metrics), as well as metrics specifically relating to orders that add or remove liquidity.

The reason for the increased reporting complexity is that the US markets are now substantially more complex than when the original rule was introduced. “We have a market where different venues and order types have different fees. ... So the purpose of the rule is to show what routing decisions are being made,” says Ray Ross, founder and CTO of New York-based agency broker Clearpool.

Here’s how it works today: A buy-side firm knows what it pays Broker 1; Broker 1 then chooses to route the buy-side firm’s order to Broker 2, and knows what it pays Broker 2. However, Broker 2 may also choose to onward-route the trade to Broker 3, who may even enlist a fourth broker, whose fees Broker 1 is unaware of. In addition, any broker involved in this chain may choose the

“**There is a substantial amount of friction in this ‘look-through’ information about what relationships brokers have: It may be competitive information, or may be stored elsewhere.”**
Mark Davies, S3

destination it routes to based on which venue offers a rebate, rather than based on which delivers best execution.

“Today, when you get an execution report, you can see where a trade ended up. And a broker may route it to 10 different dark pools before it actually executes ... but only the execution gets sent back to the client,” says S3’s Davies.

Announcing the revised rule in November 2018, SEC chairman Jay Clayton said that in the 18 years since Rule 606’s introduction, technology has driven “significant changes” in how US equities markets function, adding that the amendment will make it easier for investors to evaluate broker execution quality “and ultimately make more informed choices about the brokers with whom they do business.”

While this is something that the buy side has been clamoring for—and even many brokers have championed—there are significant bumps in the road that have slowed 606’s progression down.

Complexities

There are two key technical challenges associated with the regulation: first, collecting and sharing the data, and second, presenting the data.

The second challenge is the easier of the two: The new data requirements are not expected to significantly impact the structure or format of the current Rule 606 reports, but merely add some new data fields.

Collecting that data, however, is the bigger challenge. Brokers will need to disclose to each other the destinations (broker or trading venue) to which they route an order—known

as “look-through” information—as well as any fees or rebates associated with those destinations, which is one of the areas requiring clarification, J&J’s Montagnino says.

There are still questions around exactly which costs should be reported, including commissions, execution fees, and/or rebates. It should be noted, though, that the SEC has already said the new disclosures will provide “the average rebates the broker received from, and fees the broker paid to, trading venues,” adding that brokers must describe “any terms of payment for order flow arrangements and profit-sharing relationships.”

But under the current rule, there is no established process for collecting and sharing that data, and in its proposed revision, the SEC does not prescribe a way of doing it.

“There is no mechanism for collecting where something was routed by a downstream broker and what relationships exist—that simply doesn’t exist today. ... And ultimately, the onus is on Broker 1, and Broker 2 is under no obligation to support Broker 1,” Davies says. “There is a substantial amount of friction in this ‘look-through’ information about what relationships brokers have: It may be competitive information, or may be stored elsewhere. ... Currently, that information doesn’t get shared—it’s internal and proprietary. Some brokers say they won’t disclose it to other brokers, which means clients (Broker 1) can no longer route to that destination (Broker 2).”

One of the fundamental questions left to be addressed by the SEC’s FAQs is how brokers will provide transparency around where every child order eventually executes, when the rule seemingly does not impose any obligation on the downstream brokers to share that information, Clearpool’s Ross says.

He notes that they already provide a whole host of other information not covered by the rule—such as quote stability and cost information about what markets charge—in real-time, end-of-day and end-of-month reports. And while Clearpool already provides clients with details of where orders were routed and the performance of each venue, via a web portal, the real



Mark Davies
S3



“

“To be able to generate six months of data on-demand is going to be a real task. ... That’s the heavy lift right there.”

Peter Weiler, Abel Noser

challenge is getting disparate systems at the various broker-dealers and third parties to talk to one another.

“The specific file formats will be a small implementation,” Ross says. “[But] getting different systems to work together will be tougher, and specifically, getting different broker systems to talk to each other will be the biggest challenge. The brokers will be focused on providing services to their clients, not on providing information to another broker’s clients.”

Without any specific mechanism in place, the burden for collecting data falls on the buy-side client’s primary broker.



Peter Weiler
Abel Noser

“For a broker to provide a report back to its buy-side client, it may have to aggregate order-routing information from two or three other brokers it uses for execution. To get all that [information] into one report may be challenging,” says Curtis Pfeiffer, chief business officer at New York-based algorithmic execution technology provider Pragma Securities. The vendor already sends nightly execution reports to clients, and Pfeiffer stresses the need to understand the relationships between parent and child orders for vendors that work with between 10 and 15 brokers, each of whom may pass orders to three other brokers.

Unless the SEC’s upcoming FAQs stipulate otherwise, the industry will be forced to work together—or not—to fulfill firms’ obligations under the rule.

“It’s a three-part process: the customer, the broker, and the broker’s broker, and they have to figure out a way to work together. Everyone is trying to figure out the letter of the law, not just the spirit

of the law,” says Peter Weiler, co-CEO of Abel Noser. “To be able to generate six months of data on-demand is going to be a real task. It requires brokers to combine multiple sources of client routing and trade records, both FIX order messages and market data, and it all needs to be stored in a secure and searchable database—and that’s pretty complicated. That’s the heavy lift right there.”

Even with all this uncertainty, though, 606 hasn’t received the kind of push-back that some other mandates have encountered.

Welcome Change

Unlike many new regulatory initiatives, the industry has been—at least publicly—positive about the new rule. Instead of resisting implementing new rules because of the cost or reporting burden, brokers seem genuinely supportive of the proposed changes, but are nervous about the amount of time needed to implement



“Getting different systems to work together will be tougher, and specifically, getting different broker systems to talk to each other will be the biggest challenge.”
Ray Ross, Clearpool

them, and how certain data-collection processes will work.

In particular, brokers who believe they do a good job of executing client orders are keen to live up to Clayton's promise of allowing investors to make more informed choices based on broker execution quality, and to be able to demonstrate that, whereas under the current rule, an order may pass through multiple brokers prior to execution, and that executing broker may have no direct contact with the client.

Still, the FAQ remains a sticking point.

The timeline for implementation of the revised rule has already been fraught with challenges: Though the SEC outlined its proposals in 2016, it adopted the finalized rules in November 2018, and stipulated a compliance deadline of May 20, 2019, giving firms a mere six months to prepare for the changes. Industry participants say that without the still-pending FAQ guidance, and because some were expecting a second round of comments and feedback before announcing the final rule—though an SEC spokesperson says a second round of comments is not customary—that timeframe was simply impractical, so firms and groups like FIF lobbied hard for an extension, impressing upon the SEC the scope of the challenges.

“As an industry, it took us quite a while to digest it, and we never got to that next level of questions before the final rule came out,” Davies says. “So it took a few months before there was industry consensus on the depth of information required.”

The compliance deadline extension to October means that firms' first quarterly public reports under the new regime

will be due by January 31, 2020, and the first 606(b)(3) client-specific reports available by November 7, 2019, assuming no further delays.

Subject to receiving sufficient guidance from the SEC, “if you have the right tools in place, you should be able to be ready within the timeframe. We're making sure that ... we can add support for look-through information if required. From our perspective, it allows us to do more testing on clients' data and ensure they are entirely happy before going live,” Davies says.

Unintended Benefits

The regulation also has further-reaching and potentially useful implications for buy-side firms beyond best execution, because the data will provide a clearer picture of the most efficient brokers to route an order to market.

“I think the best execution [component] and the transparency into rebates arrangements were anticipated, but the ability to compare and contrast execution results by broker and venue was not anticipated,” says Michael Earlywine, senior vice president of channel partner sales at Abel Noser Solutions. Whereas buy-side firms can currently only see limited statistics from the broker they deal directly with, “when a client can see 25 brokers' routing and fill data in a standardized format, the results are bound to reveal that some brokers are more efficient in how they leverage the various execution venues.”

S3's Davies adds that while the SEC's original intent may have been to expose potential conflicts of interests between routing brokers and execution venues—and that is still very much the point

for the regulator—the resulting data will indeed make it easier for buy-side firms to select the best broker(s) to route orders to, based on the information they glean from the Rule 606 reports.

But Pragma's Pfeiffer warns that the information gleaned must be considered in specific contexts when reviewed as part of a buy-side firm's best-execution policies. “Depending on whether someone's goal is to minimize impact or very aggressively source liquidity, the report could look very different. So the buy side needs to be mindful of what its objectives are, and how that affects the report,” he says.

Each of these benefits relies on firms being willing and able to share the required data, which may yet prove the sticking point that prevents the rule from realizing its full potential. And, as previously noted, some may be unwilling to part with that information—a position that attracts sharp criticism from other players.

“If you as an executing broker are unable or unwilling to provide Rule 606 data, it will put into question who can use your services,” Earlywine says, though he adds that he suspects some holdouts are simply waiting to see how much self-exclusion will hurt their business, and that the effect will ultimately be “self-correcting”—i.e., that firms will realize that the benefits outweigh the burden.

Ross offers a harsher ultimatum, suggesting that the rule may re-shape the broker landscape, and force brokers to re-think their roles. “Brokers will have to look at this and decide whether they can understand where orders are going—and if it's to a routing broker, whether they can provide that level of transparency and allow you to make configuration changes to where orders go on a client-by-client basis,” he says. “If a broker can't comply, it feels like they shouldn't be executing and handling client orders.”

Ultimately, if broker-chefs can't properly combine the ingredients to satisfy the critic's taste buds, or can't keep track of customer orders, then—while it may not be as clear-cut as “if you can't stand the heat, get out of the kitchen”—they may need to reassess their role in the kitchen. **wt**



Curtis Pfeiffer
 Pragma



Michael Earlywine
 Abel Noser
 Solutions

Anthony Malakian spent several weeks with RBC Capital Markets and OpenFin to see how desktop app interoperability works in motion. What's clear is that there are very good reasons as to why this space is becoming increasingly competitive, and why banks are embracing vendors like OpenFin with open arms.

Serendipity can strike

at any moment. Whether it's finding your true love, a new best friend, or finding a \$10 bill in an old pair of pants the day before payday, for some reason, things just fall into place. In the world of technology, serendipity tends to come after a problem occurs.

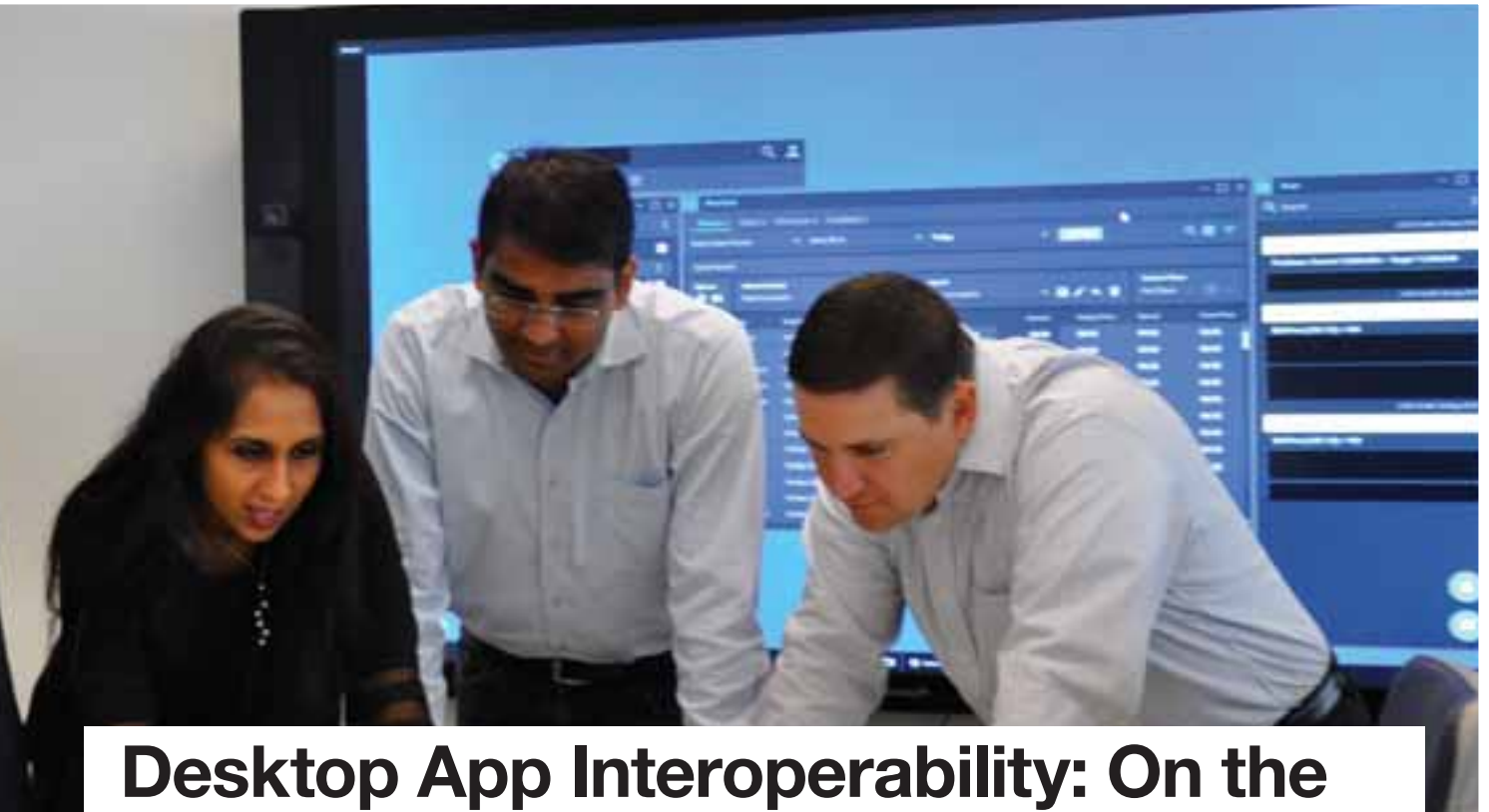
For RBC Capital Markets, the catalyst for change came in 2015 when Douglas McGregor, the investment bank's chairman and CEO, was traveling and couldn't connect to Salesbook, the company's internal order management system (OMS). When it's a product you've built, you don't want any users to experience problems using the technology, but that's especially true when it's the boss who's hitting a wall, says Kim Prado, global head of client insight, banking and digital channels technology for RBC Capital Markets, and who helped build the original platform.

As she remembers it, McGregor, one of the most active users on Salesbook, emailed her one night while on the road saying that he couldn't get the application to launch. The reason was that he was trying to run it in Internet Explorer, but for a remote login, you needed to use Chrome. Prado worried that she was going to get fired. While no heads rolled that evening, it was clear that they had a problem that needed to be addressed immediately.

"That's when the lightbulb went off—we needed something that would enable us to be browser-agnostic," she recalls.

Salesbook was originally built using .NET before moving over to the Windows Presentation Foundation (WPF) graphical subsystem, which became ubiquitous at banks for rendering user interfaces in Windows-based applications after it was released in 2006. Even before McGregor's trip, Prado and her team had realized, though, that several key issues were hampering the system. First, they couldn't deploy updates and new tools quickly: "We were not nimble, and it took so long to make simple changes." Second, training new employees "was a nightmare," she says, because there were 50 or so blotters that essentially cover the needs of every salesperson who ever worked at the bank, and there were plenty of knowledge gaps among users as to how each one worked. And tied to that, support was also a challenge





Desktop App Interoperability: On the Front Lines with RBC & OpenFin



Above: RBC's Sundeep Dadlani, Kim Prado, Nikeeta Julasana, Bankim Bhalaria and Michael DeLorenzo
Below: OpenFin's Brian Schwinn, Mazy Dar, Andre Garvin and Dwayne Jones



because, again, no one knew how each blotter interacted with the others.

And the big problem was that they couldn't deploy upgrades in a browser-agnostic way. Prado says that for a brief moment they tried to switch from WPF to HTML5 internally, but they didn't have the necessary expertise to make the change and "we learned very quickly that a browser doesn't work. Deploying into a [traditional] browser is not scalable or sturdy enough."

So the problem persisted—and then serendipity struck.

One of Prado's colleagues, Sung Juhng, went to a Bloomberg conference and found a potential solution to the challenge they were facing. "He called me up and said, 'Kim, I met a vendor called OpenFin—you need to see this,' and that's how we found them," Prado recalls.

For two weeks in April 2019, RBC allowed *WatersTechnology* to sit in on the planning session and standup scrums for a two-week sprint

to build out search functionality for Springboard, the application that allows the bank to launch Salesbook. It sits above Salesbook, which today is wrapped in the OpenFin container.

Desktop app interoperability is becoming increasingly important among the biggest banks and asset managers in the capital markets, as these firms want to both make their employees more efficient, and be able to experiment with new fintech companies and data delivery and analytics software. OpenFin, which was launched in 2010, is largely considered to be the first to successfully enter this space using containerization techniques to build a browser specific to the needs of a financial institution. This space is growing rapidly, though, with the likes of Finsemble, Finos and others entering in recent years.

This sector will be one of the bigger Wall Street tech battlegrounds over the next decade. But the purpose of this article is to show how desktop

app interoperability works in real life. It's a case study of how RBC Capital Markets is working with OpenFin, along with a smaller case study looking at the specific Springboard sprint.

(Editor's note: A longer version of this story is available on WatersTechnology.com that gives more insight into how OpenFin grew as a company and how it plans to expand in the near future.)

Stand and Deliver

On an early April morning, RBC developers from London, New York, and Toronto called in using the Cisco Webex portal for a planning/grooming session for the next Springboard sprint. Preeti Bhudia, who was serving as scrum master and who is based out of London, was essentially the traffic cop, moving proceedings along. Will Shotton, the product owner for this particular sprint, Matthew Ash, David Leung, Amit Kumar, and others listened in, as did Sundeep Dadlani, director of client insight, banking and

digital channels technology for RBC Capital Markets.

The group listened as Shotton would read a “story,” which serves as a descriptor of a particular piece of development that needs to be accomplished during the two-week sprint. The members would then score the story by assigning a number based off the Fibonacci sequence of 1, 2, 3, 5, 8, 13 or 21, which relates to the amount of time necessary to complete the task, with “1” being easy and straightforward, and then progressing up the scale from there. Each person gives a score and, based on the feedback, Bhudia would give a final score, and if everyone agreed on the number, they would move on to the next story.

There were laughs, there were cordial disagreements, and lots of pregnant pauses. At the end of the grooming session, the sprint was set to begin.

This particular sprint was aimed at adding a global search feature into Springboard. From the platform’s toolbar, users would be able to launch a text-search input box where they

“Today, if you want information across the fragmented systems that we’ve put in front of them, you really have to go hunting and pecking for the information that you’re looking for, even if you know the context to be the same.”

Sundeep Dadlani, RBC

could enter the name of a person or company, which would yield federated search results populated by all known information on that subject across every app that is wrapped in the OpenFin container—both via RBC’s internal Salesbook platform, as well as connected third-party applications.

“Today, if you want information across the fragmented systems that we’ve put in front of them, you really have to go hunting and pecking for the information that you’re looking for, even if you know the context to be the same,” says Dadlani, who joined RBC about 15 months ago.

So if you want to search for Boeing, you have to minimize and maximize different screens for three, four, or five applications, and then copy and paste the information you need. “This is a much more proactive way of engaging the user, versus the way that they have to go looking for information today,” he says.

Shotton, who was poached from Algomi and started working at RBC in May 2018 as head of front-end tech for RBC’s client and banking group, says that while Salesbook as a single application on the desktop underpinned by OpenFin was very useful, “it made sense that more applications could use the same paradigm,” he says.

He continues: “So we created this extra layer on top of Salesbook that allowed us to have multiple applications within a single desktop launcher, and that’s where Springboard came from. Once we got that far, it kind of made sense that you would have numerous windows open from different applications at the same time. Whenever that happens, what you really want to do is search across all of those applications so





that they all reacted to the same search term at the same time, allowing you to get that holistic view of whatever it is that you were searching on.”

Say Shibboleth

In mid-April, a few days before the sprint was set to end, OpenFin CEO Mazy Dar is sitting in the vendor’s cozy WeWork office on the 9th floor of 25 Broadway in New York’s Financial District. They’re preparing to leave and move into their new digs, which will be dedicated to OpenFin’s operations. It’s part a testament to the company’s growth and part to the need for extra privacy as new potential competitors seem to be sprouting up left and right.

Dar and Chuck Doerr, the vendor’s president and COO, were alums of derivatives broker Creditex Group, and moved over to the Intercontinental Exchange (ICE) after it bought Creditex in 2008. While OpenFin was launched in 2010, Dar says it was in about 2017 that they really started to realize that what they were building was the basic communication mechanism to enable desktop interoperability.

“But when you think broadly about the ecosystem and how do you

get an entire ecosystem of apps to be able to talk to one another, you need more than just the communication mechanism, right? You need the standardization,” he says.

That led to the Financial Desktop Connectivity and Collaboration Consortium (FDC3), which is an initiative created in 2018 that is led by OpenFin and that was formed by some of the largest banks, asset managers and vendors in the capital markets—including RBC—to create a consistent developer experience using standardized verbs to instruct other apps to take an action.

Basically, as long as everyone is talking the same language, then the container—the browser—is the ecosystem, but anyone can join and plug in, so long as they speak the language. It’s why Apple’s iPhone, through the iOS operating system, proved to be such a revolution in the mobile device sector—apps can seamlessly (at least in theory) talk to one another. OpenFin needed FDC3 to help get the banks, asset managers and vendors caught up to what they were trying to do individually at firms.

Even RBC’s Prado admits that it took them some time to get up to speed: “When I tell you that this thing

just worked, I mean it just worked. I handed it to my dev team and in two days they had something wrapped in OpenFin for me.” But the bank had to figure out its ultimate strategy, hire new talent—such as Dadlani and Shotton—who could help with this change, and train up the DevOps team.

Dar says the FDC3 initiative is speeding up progress because the playing field has been leveled and they know where the starting line is.

“At that time (2017), we knew generally that there was an interest in modernization and using HTML5 and our technology, but I think it took time for RBC to really formulate their strategy and then working with them, we realized over time that the key part of this strategy is incorporating syntax and new apps and having the community into what they’re doing,” Dar says. “And we also saw this pattern at other banks, as well, and that’s where standards would become really critical.”

In mid-May, OpenFin announced that it closed its Series C round of funding, raising \$17 million, which was led by Wells Fargo. The latest round brings the firm’s overall venture funding to \$40 million. In addition to Wells Fargo, Barclays participated in the round for the first time, as well as existing investors JP Morgan, Bain Capital Ventures and Pivot Investment Partners.

Continuous Development

After two weeks, the first iteration of Springboard global search was running, though it wasn’t yet ready to be released across the organization. The daily standup calls went off without a hitch, and at the end of the process, nothing was needed to be put back on the story board—though there are plenty of times where a sprint will end, and something gets put on the backlog.

Dadlani says it’s important to stay consistent with the principles of Agile development and maintain discipline, rather than rush to meet a somewhat arbitrary deadline. The key is to make sure that every two weeks, there’s a

release that is “meaningful and substantial from a user perspective.”

The most challenging part of the global search sprint was the user interface (UI) piece, as the user experience (UX) team, while happy, gave detailed feedback on areas that can be improved, Ash says. So while nothing that was scored at the original planning scrum was kicked to the backlog, there are UI improvements that were added to that list. This is standard for any kind of software development—the UX can always be tweaked.

Ash adds that while most things can be addressed and handled by the RBC team directly, the newer piece of functionality is, the more back-and-forth is needed with the OpenFin team. So, for example, the snap-and-dock functionality of global search introduced a bug into the debugging system, ironically enough. So while it didn’t affect the eventual software, it did make it difficult to work with, Ash says. He reached out to OpenFin support, which got back within two hours with a workaround for the issues until it was finally fully fixed.

From there, they ran integration testing and then completed the sprint and released that into QA (quality assurance). They also have to make sure that whatever they produce or change passes muster with the various regulators, so that will often involve an audit of some sort.

Another key piece of development is making sure that they stay consistent with the FDC3 standards.

“What you don’t see on the desktop is the OpenFin bus and infrastructure that underpins Springboard and allows us to make sure that as long as we all speak the same nouns and verbs, which in this case is the FDC3 standard that drives product and customer definitions, we can ensure that we can bring the desktop alive and have any applications that sit in this umbrella animate based on the information that is published,” he says. “The applications can be built by anybody—as long as they speak the



same language, we can communicate and interoperate across the board.”

A Paradigm Shift

In August, Prado will have been at RBC for 13 years. This is a rather unique implementation, because in many ways she’s retiring the platform she helped build using .NET and then WPF.

These integrations are never smooth as Oban Scotch with a couple of drops of water, and there are always people chiming in from the peanut gallery saying that things aren’t improving fast enough or that they don’t like the new features. Curmudgeons who don’t like change exist in every corner of a large organization. The key is to stay focused on the goal line ahead.

“What’s been really different about this project is that I am retiring my own platform,” she says with a laugh. “This is the fourth generation of the platform. I’ve had the luxury of seeing things evolve, but I’ve also had the luxury of seeing people criticize it at the same time.”

Desktop app interoperability—and specifically around the changes taking place in the vendor community today, both through cooperation and

competition—represents a paradigm shift. If all of these pieces of software that are being created both internally and among cutting-edge fintech firms can just work and communicate together in a single browser, then it will allow human traders, sales personnel, compliance officers and risk managers to be more efficient. It will also allow organizations to bring in best-of-breed analytics platforms and products that are delivered via an as-a-service model—they can experiment more and fail faster. The savings in operations costs can allow a bank or asset manager to be both leaner and to invest in new products, services and, or geographies, and people.

It’s still early days, though. But the fact that so many vendors/consortiums/initiatives are joining OpenFin in this market—and the fact that all the biggest banks and asset managers are investing people and money in these initiatives—shows just how important and competitive this space will be in the years to come.

For Prado and her team, they’re all in. “We really buy into this next generation strategy of fintech for Wall Street,” she says. “This is important and, frankly, it’s exciting.” **wt**

Microsoft Sees Trade Finance, Bond Issuance as Ripe for Blockchain Growth

Marc Mercuri of Microsoft explains where the tech giant sees room for blockchain solutions in the future. By Hamad Ali, Emilia David, and Anthony Malakian



Microsoft is pushing hard into the blockchain space. The tech giant launched the Azure Blockchain Workbench in May 2018, and has since released a new tool to verify and analyze smart contracts used on the Ethereum blockchain, while its Azure Blockchain Service is being used by Bond.One to migrate its debt issuance and trading platform to blockchain technologies. Additionally, Microsoft formed a strategic partnership to drive enterprise adoption of JP Morgan's Quorum, the bank's distributed-ledger platform. (See *Spotlight* on next page.)

Marc Mercuri, principal program manager of blockchain engineering at Microsoft, tells

WatersTechnology that the company's near-term goal is to advance the enterprise readiness of blockchain while the technology, use cases and business needs mature. But looking to the future, he says he believes trade finance, bond issuance and reinsurance are prime examples of sectors that could benefit from blockchain adoption.

For trade finance, Mercuri says multinational corporations currently expect to get paid between 30 and 90 days after shipment or receipt of goods sent to their customers, via what's often

referred to as open-account trade finance. At its core, sellers provide short-term financing for buyers as part of the trading process. As a result, sellers will often take out short-term loans on those receivables to manage their cash flows. But this is a largely manual, paper-intensive process that involves multiple parties. Because it is so complex, it can be a costly endeavor. (See *Trade Finance as an Asset Class* on next page.)

Mercuri says banks will often look to solve these problems with standalone, proprietary systems, but that these

SPOTLIGHT: JP Morgan Partnership

At the beginning of May, JP Morgan and Microsoft signed a memorandum of understanding (MoU) to form a strategic partnership to accelerate the adoption of enterprise blockchain. As a result, the Quorum platform, which is built on the Ethereum blockchain ledger, will be the first distributed ledger available through Azure Blockchain Service, thus allowing JP Morgan and Microsoft customers to build and scale blockchain networks in the cloud.

"Customers will be able to vastly simplify Quorum network deployment and operations, integrate with a portfolio of blockchain app development tools, take advantage of built-in governance and an open and flexible design that reduces the burden of managing blockchain infrastructure, and empower developers to focus on application logic and smart contracts," Mercuri says. "The partnership will

enable enterprise businesses across all industries to shift their focus from infrastructure management to application development, ultimately driving transformative business value."

He adds that the bank will also offer "a set of differentiated tools and services" specific to building with Quorum, which will be integrated with Azure Blockchain Service.

JP Morgan is just the first domino for Microsoft, though, as it will look to include additional ledgers in the near future.

"While this partnership will drive preference to Quorum, Microsoft will remain platform-agnostic and plans to expand Azure Blockchain Service in the coming months to include additional ledgers and add new capabilities for ledger interaction and token creation," Mercuri says.

workarounds can result in limited visibility into their corporate clients' trade processes, payables and receivables. "Not surprisingly, they struggle to achieve scale in their operations," he says. "The complexity also limits the market as the costs and toil impact thousands of small and medium import/export businesses that can't do business with either the multinational corporations or trade banks because of the overhead."

He says when designing a network to connect the entire trade ecosystem, firms will try to create a centralized "Mega Ledger" for a single view of assets, liabilities and open-account equity. However, there are a series of problems with an open-account "Mega Ledger." First, who owns a trade ledger in a multi-bank, multi-corporation world? Second, what is the mechanism of trust for the array of banks and corporations? Third, how can firms mitigate the risk of a single point of failure? And fourth, what happens to

the "Mega Ledger" during trade wars, like the one that is currently unfolding between the US and China?

"By distributing control yet providing consensus to deliver a single source of truth, a blockchain-based trade finance network could enable each counterparty visibility into the actual status of the credit instruments while simultaneously avoiding the problems of the 'Mega Ledger,'" Mercuri says.

Bond Issuance and Reinsurance

Another area that is gaining the attention of the blockchain community is that of bond issuance. Mercuri says using blockchain applications to create tokenized, digital-asset versions of bonds or other debt instruments enables real-time bidding, settlement and registration.

It will help regulators because they will have a direct view of the issuance and these enhancements could bring in secondary-market trading functionality and coupon-payment tracking.

"Bond issuance on a blockchain application could introduce process efficiency and automation by reducing the number of parties needed and providing subscribers with real-time visibility," he says. "This, in turn, may lead to reduced reconciliation because the parties have a common view into a single registrar with the same view of the transactions, a copy of which is stored on each instance of the distributed ledger."

In a similar vein, reinsurance policy lifecycle management is another area that could be improved by blockchain technology. A key administrative challenge for insurers is providing reinsurance for clients that have large high-value assets, Mercuri says. Currently, brokers and direct insurers collect data from asset owners to model the risk exposure and annual loss expectancy.

He says this data is then fed through that primary insurer's actuarial models and that any residual risk is packaged for a bidding process by the reinsurance market that's most closely aligned with the asset class, such as property, marine, cyber, and so on. From there, the bidding reinsurance companies will then ask for the asset owner's data. That process that was undertaken by the direct insurer and asset owner, he says, is then replicated at the back end for the reinsurers.

"The opportunities for erroneous transmission of risk data are very high," Mercuri says. "At the same time, it is very difficult for all parties involved—asset owner, brokers, direct insurers and reinsurers—to understand the state of the process from data gathering to direct insurer modeling to quote preparation to final approval of policies in place. Blockchain could provide a unified view of the status of these policies." **wt**

Trade Finance as an Asset Class

The sell side has been looking to promote trade finance as an asset class worthy of competing against equities and options—thus far with limited success. For the asset class to take off, it needs to build out the necessary data and technology infrastructure in a heavily paper-based industry.

Trade finance is traditionally not traded as a security, but it is an attractive investment because of its short tenor and low default rate. However, unlike other securities, trade finance is reliant on paper because different jurisdictions don't accept digital copies of contracts or bills of

lading—and it's hard to change old habits without the help of regulatory fiat.

Francesco Filia, CEO and chief investment officer at Fasanara Capital, says the lack of technology and data infrastructure makes trade finance an inefficient and opaque market.

"Trade finance needs the right technology, which can provide greater transparency on the underlying assets at the line-item level so investors can conduct effective accounting and reporting that is compliant with regulations like Basel IV," Filia says. "Technology itself can play a bigger role because it can digitize the underlying instruments. This means trading is much easier than bilateral, one-to-one negotiations."

To help bring down some of these barriers, several banks—including HSBC, ANZ, Deutsche Bank, Standard Chartered, Crédit Agricole, ING and Lloyds—have formed a consortium along with vendor TradeTeq to create the Trade Finance Distribution Initiative, which seeks to standardize trade finance and develop a platform to trade it as an asset.

Additionally, blockchain consortium R3 is working on a distributed-ledger platform that creates a shared database of documents. And on an individual level, shipping giant Maersk created its own trade finance platform for goods traveling on its vessels.

There is still a lot of work to be done, though, before this idea will take off as a reality that entices the buy side.

The Blockchain Shakedown

While there are still many people who believe that blockchain will prove to be a bigger revolution than the internet, the hype is clearly dying down. [Josephine Gallagher](#) speaks with experts in Europe and Asia to see where there are still hurdles that need to be overcome—or if they can be overcome.

Blockchain: The industry was promised a panacea—what has been delivered so far is aspirin. While there have been small implementations to date, there are many in the industry who are underwhelmed by this purported revolution.

“I think blockchain by itself is just another technology,” says Huayi Dong, global head of electronic trading solutions at Daiwa Capital Markets. “It has been overhyped with a lot of people saying it is going to change and revolutionize the world.”

Blockchain—used in this story as a catch-all term for distributed-ledger technology (DLT)—is not snake oil. To Dong’s point, it is a technology and it can be valuable—in the right instances. But the hype around this technology has far outstripped its reality.

While capital markets firms have spent the last four to five years experimenting with this subset of DLT for a myriad of fixes, actual large-scale, real-world rollouts have been few and far between. Granted, a number of internal applications have found some success at banks—most notably in the trade finance world—these have been focused on improving internal processes, but not on solving industry-wide problems.

The so-called promises of blockchain-powered markets have shown little substance to date, particularly as the maturity, cost, and trust in the technology continues to stand in the way—causing some to shelve early

projects, with others failing to meet go-live deadlines, as *WatersTechnology* has covered in the past.

Two of the more ambitious examples of development include the Australian Securities Exchange’s (ASX’s) blockchain-based clearing and settlement equities system and the Depository Trust and Clearing Corp.’s (DTCC’s) blockchain-powered Trade Information Warehouse for settling credit derivatives. While these projects are progressing, they have each repeatedly been delayed due to the need for further development and client testing.

As a result, the skeptics are growing in number. For this story,

WatersTechnology spoke with several industry experts from banks, exchanges, clearing firms, and technology providers to see where there's still hope for blockchain, and where the naysayers are getting louder.

Herding Cattle

Trust is essential for the success of any large-scale project. That proves truer when it involves the commitment and inclusion of counterparties and institutional clients spanning the industry on a multi-party network. Reflecting on his experience with post-trade projects, Roger Storm, head of central counterparty clearing, risk, and policy at SIX, describes this concept as “a cattle-herding challenge.”

In other words, one of the major roadblocks to blockchain adoption is garnering the support for the technology and onboarding clients to a new and unfamiliar system—especially for something that might be challenging (and costly) at the outset, but that can have long-term benefits. In the beginning stages, this means achieving the minimum viable ecosystem to get the project rolling, in order to explore the technology's capabilities, conduct testing and tackle performance problems head-on.

Without a community to nurture its growth—whether that's employees or groups inside a bank, or larger industry initiatives involving a swath of firms—it is hard to get the ball rolling. This may help to explain the hype—and need for hype—that is pervasive in the blockchain space.

“Any new technology, for it to become ubiquitous, needs to cross the threshold where the network effect kind of becomes self-fulfilling,” says John Whelan, head of digital investment banking at Santander. “This idea of ‘virality’—for example, the telephone is only useful if everyone else has a telephone.”

Added to that is the cost of switching over to a new system. Many industry experts spoken to for this piece are unconvinced of its abilities to perform as well as existing technologies that are cheaper to run. Some alternative database models or shared ledgers include

“There have been certain small examples, but not in a broader basis that the industry can benefit from.”
Head of derivatives trading at a tier-one bank

data replication systems, where data is copied from a central location and distributed in seconds to the other user locations. Other examples, depending on the use case, include hashgraphs, an alternative type of distributed-ledger technology that claims to be more scalable than blockchain.

Cliff Richards, executive general manager of post-trade services at ASX, who is heading up the exchange's Clearing House Electronic Subregister System (Chess) replacement, explains that ASX's decision to choose a blockchain-based platform, which was built by Digital Asset, over other technologies involved the “quality of trust” it offers for extended use cases beyond just clearing and settlement, such as for syndicated loans.

He says that as a result of the technology, counterparty clients will have the option to make frictionless data transfers for syndicated loans on the blockchain without interaction from a trusted central authority. The central party will be present only in operating the technology and governing the rule book, while not having access to all the data.

“Part of the reason for choosing the blockchain is to have the ability to have both centralized high-trust use cases through to lower-trust use cases—that was part of the driver,” Richards says.

But making the case for the technology and convincing counterparty firms to migrate to a new system is an onerous task for any firm. Chess has been bolted into the clearing and settlement systems at brokerages and custodians in the region for a quarter century. To migrate, the journey will

involve unravelling the data stored in legacy systems, entering a world of standards for messaging such as ISO 20022, and then shifting that onto a new blockchain platform.

When the move was originally proposed, there were plenty of firms that asked, “Why?” Since then, it's been a test of winning hearts and minds. That can be tough when there's a certain fear of the unknown.

“I have empathy for our clients because in some ways this is a big change and in some ways, this is not,” Richards adds. “They do have optionality, but I would be remiss not to say that it was a challenge. But the technical and change challenges are actually not the biggest obstacles; the biggest obstacles remain their uncertainty about all the future benefits.”

He says the firm is working to overcome these hurdles through the provision of information forums and engagement consultations to its clients on all aspects of the changeover.

As a way of avoiding market disruption, ASX is also offering clients the option to remain on its existing Chess platform. In April, the clearing and settlement firm announced the go-live of its Customer Development Environment (CDE), where users can test three connectivity options including DLT node access, and ISO 20022 global messaging standard via AMQP and Swift. (The exchange is offering free blockchain settlement starting in the first-half of 2021 for the first three years to lure early adopters, which was first reported by *WatersTechnology's* sibling publication *Risk.net*.)

Although offering the option to stay on the old platform is necessary to prevent complete disruption to the Australian cash and equities market, it may, in fact, discourage firms from switching at all, says Daiwa's Dong.

“You can have many other ways of doing the same thing. So with Chess, the great thing is that [client firms] are still allowed to use the old system and are not forced to jump on to the new Chess [blockchain system]. But what do you think the adoption rates are going to be?” he says.



Richard Leung
 Hong Kong
 Exchanges and
 Clearing



Blockchain Models

Digging a little deeper into the structure of the technology, it is important to understand some of the reservations around the types of models that exist today. The most widely known is the consensus models, where every individual stakeholder in the network has to verify the content published on the distributed ledger at each node, creating a single version of the truth.

However, the core concern with this, which has planted seeds of doubt in the minds of some participants, is its ability to scale and process enterprise-level transactions. Although some breakthroughs have been made to improve the throughput and latency of blockchain over



Roger Storm
SIX

the last 18 months, Richard Leung, CTO at Hong Kong Exchanges and Clearing (HKEX), explains that existing use cases still have a long way to go before they have the capacity to withstand modern-day transaction volumes.

In an interview with *WatersTechnology* earlier this year, Stacey Cunningham, president of the New York Stock Exchange (NYSE), had this to say about using a blockchain-based system to underpin the exchange's new Pillar trading platform: "Blockchain technology does not support the scale of processing and time of processing that you need in the equity markets if you're talking about matching trades. There might be some functions within the equity market that

can consider leveraging components of blockchain technology, but if you're talking about the largest exchange in the world, blockchain is not ready to process that."

While there is no question that the technology still has a way to go to overcome its volume and latency obstacles, proponents hope that more mature versions of blockchain will be able to eliminate the need for reconciliation, which will help ease latency and costs in other areas of the trading lifecycle.

Other characterizations of blockchain are non-permissioned-based chains (or public blockchains, accessible by anyone) or permissioned-based chains (private blockchains, accessible through an approval process).



Private blockchains are often run by a consortium of firms that opt into the network.

However, in recent years, some say the lines between blockchain ecosystems and permission-based chains have blurred as central counterparties such as exchanges, clearing or financial institutions operate the network—defeating the purpose of a decentralized system, from which blockchain originated over a decade ago.

“This is not how the original blockchain concept was intended to be used, because the consensus capability in blockchain is not being utilized really,” explains HKEX’s Leung. “And in this scenario, if you need something to keep a record, you don’t need blockchain; you can simply use a

database for this. So you have to always question whether the rollout and use of blockchain are appropriate.”

As blockchain models continue to evolve, another element of the discussion that has garnered attention is the governance of private platforms, as it may be that enterprise-level blockchains still have to incorporate centralized characteristics, particularly in such a highly regulated industry.

“Something I think is truly not talked about enough is the governance,” said Ben Spiegelman, corporate development lead at Symbiont, speaking during a panel discussion on DLT production at Synchronize Europe on June 19. “So when you are in a permissioned network, someone has to decide who are those new institutions joining that network; if they are bad, who is removing them; and who is going to own that governance. I think that is a big question posed for enterprise blockchains now and in the future.”

Tech Risks

When it comes to the challenges regarding blockchain, people tend to list an array of concerns, such as slow throughput, issues with scalability, the cost of running the technology, attracting industry participants, cybersecurity concerns, and the development of quantum computing, which could threaten the very existence of today’s blockchain networks in the not-too-distant future. Other concerns include fault tolerance or system resiliency. And many questions still remain over how to handle technical glitches or malfunctions on a network that is dependent on producing a single source of truth to every participant.

“Let’s say there are 10 nodes in a [blockchain] community and you are doing an upgrade over the weekend,” Leung explains. “Nine out of 10 [nodes] were successful and only your node was not successful on your premises. What do you do? Do you downgrade all nine of them back to the original version, or do you shut down on Monday for a week of processing? These are the maintenance or technical issues that you have to

deal with when it comes to that kind of [permissions-based] blockchain model.”

In this case, where a node fails to update to a new version of the platform, it would become incompatible with the rest of the nodes on the network. These are remaining questions for the central authority running the technology on how they would overcome the potential risk of disruption.

Another aspect of blockchain that isn’t often considered is its compatibility with processing or clearing long-dated instruments that potentially require several months to clear. Blockchain platforms, on the other hand, are expected to be able to process transactions instantly or on a T+0 basis.

“On the derivatives side, for example, if you are buying an option, the typical tenor of a stock option may be three months, so the instrument comes with a natural time lag—that is the nature of the instrument,” says SIX’s Storm. “So as long as instruments have that time lag, there will be a need for [central] clearing services.”

Fear of the Dark

What we know is this: Certain iterations of blockchains have proven valuable to individual institutions and specialized pockets of the industry, such as for trade finance, bank-to-bank transactions, internal databases or smaller market sector use cases. But the industry has yet to witness the technology come through on its mission to power and revolutionize markets.

“There have been certain small examples, but not on a broader basis that the industry can benefit from. It is more in terms of tactical fixes here and there between counterparties as opposed to market structure use cases such as a clearinghouse or otherwise,” says a head of derivatives trading at a tier-one bank.

According to many experts spoken to for this piece, as it stands today, blockchain is best used for non-critical applications. In terms of successful large-scale adoptions that require multi-party involvement, it’s a matter of wait and see, for now at least. **wt**



Cliff Richards
Australian
Securities
Exchange

The KYC Headache Worsens



The onboarding process has always been a slog, even before the advent of know-your-customer and anti-money laundering requirements, which are only becoming more complex for a variety of reasons, not least of which is that there's no standardization across jurisdictions, or even among regulators in the same market. But slowdowns in the onboarding process mean loss of money and increased reputational risk—and potentially hefty fines if it's done poorly. Technology can help, but there is still a long way to go. By [Rebecca Natale](#), with additional reporting by [Anthony Malakian](#)

Like a dinner party when the clock strikes midnight, the know-your-customer (KYC) space is thinning out. First Bloomberg decided to exit the space and wind down its KYC business—in its entirety—and then Refinitiv scrapped its KYC-as-a-service offering (though it is still fully invested with its other KYC products). There's a reason for these decisions: KYC is hard, there are a lot of players in the space and the profit margins can be thin.



But banks and buy-side firms are still desperate for help.

Here's how a compliance executive at an asset manager with more than \$750 billion under management put it: "One of the things I'm being asked for right now from one dealer is the middle names of board of directors of two of our clients. I'm like, 'You have to be kidding me—you trade all over the world, in all different types of instruments with these two clients, and for this particular type of trade you're

asking for middle names?' So now I have to go out to a pension client and say, 'I need the middle names of your board of directors.' It's ridiculous."

To be fair, that's an extreme example, but it lays out the hindrances involved when it comes to the onboarding process for trade agreements. The manager says that on average, it takes four to six weeks to run KYC onboarding for an International Swaps and Derivatives Association (Isda) agreement, and six to eight weeks for a futures agreement.

“

"No one in senior management wants to talk about this stuff, and everyone gets annoyed by it, but the bottom line is that we're all bitching and moaning, but you have to get this stuff done."

Operations professional at a tier-one bank



Brittany Garland
IHS

The main challenges can be boiled down to continually shifting regulations, little transparency between sides during the process, and technology's struggle to play catch-up. This is why there are still plenty of vendors staying in the market and looking to pick up clients as others leave the space, including IHS Markit, Dow Jones, LexisNexis and Bureau van Dijk, among many others. Even with the tools that are populating the space, it still requires a lot of manual effort and time.

"When you have thousands of clients like we do, that can be painful—it's a constant, ongoing cycle," the compliance executive says.

As a result, firms tend to just take the "easy" route and throw bodies at the problem, rather than look at the challenge more holistically, says an operations professional at a tier-one bank.

"No one in senior management wants to talk about this stuff, and everyone gets annoyed by it, but the bottom line is that we're all bitching and moaning, but you have to get this stuff done," the operations professional says. "The main problem is that they answer [the onboarding challenge] by just throwing bodies at it rather than looking at it from a root cause analysis standpoint and saying, 'What can we bring in? What technology can help with this?'"

Money Left on the Table

Pain can intensify when requirements vary from dealer to dealer about what they want in KYC as well as anti-money laundering (AML), though there are differences. Some of them can be satiated with articles of incorporation, a W-9, a Common Standard Reporting (CSR) form and a resolution that states the client can trade a swap or a foreign

exchange (FX) instrument, especially for more regulated entities like US mutual funds. But some dealers ask for unique pieces of data, posing some reputational risk for managers, and leaving clients frustrated and asking, “Why didn’t you give us this before?” Not only does it slow an already snail-paced process down; it’s also “embarrassing,” says the asset manager source.

“I’ll make it simple: This one client, you’re onboarding to 10 Isda agreements and three futures agreements, and also to another 10 master securities forward transaction agreements. So you’re having these conversations—now multiply those 23 conversations by say, 10 or even 20, because you’re usually onboarding multiple accounts,” the asset manager says.

On top of that, firms can know for months in advance that a new client is coming in, and the whole time that client is sending in a slew of documents to try and beat the curve, but until they sign an investment management agreement (IMA), it’s more or less yelling into the void.

“That’s part of the documentation we would have to provide to a dealer that shows we have authority,” says the source. “Until that IMA is signed, we can’t onboard them because we have no authority.”

The dilemma forces them to sometimes call in favors, an action not favored by either the asset manager or the dealer. Absent a signed IMA, the onboarding process can’t begin, and money is being left on the table.

“If you can’t bring in a client, that is loss of revenue right off the bat,” the asset manager says. “If you’re bringing in \$100 million on July 1, and we say that we need two more weeks, that’s loss of revenue. Also, it’s really a loss of a client relationship and client confidence. We really, really don’t like to do that at all costs.”

Get ‘em In, Get ‘em Going

That’s where the vendors come in. The asset manager’s firm has signed on with IHS Markit, which, in May, released its Onboarding Accelerator tool as an add-on to its web-based platform, Counterparty Manager. It is API-

“Most banks in the world are still a very long distance from a unified view of a customer.”
Daniel Wager, LexisNexis



Dan Wager
LexisNexis

enabled so users can log in with their Counterparty username and password, and be able to connect to any of their internal data or workflows. The dashboard setup of the Accelerator allows both sides of the deal to monitor in real time the status of documents. On the flip side, a client can also see where, when and if a snag in the process occurs—though usually, it’s a given that one will occur.

In order to jumpstart onboarding between clients and broker-dealers, says Brittany Garland, director of product management at IHS Markit, clients would have to submit an amendment letter to umbrella trading agreements already in place between the asset manager and the bank, and in turn, negotiate a new legal agreement every single time.

This happened on a weekly, if not daily, basis, she adds. That’s when IHS Markit decided to centralize its approach, and allow a new account to be added to an existing trading agreement, and from there, adopt the legal terms set forth in the umbrella trading document.

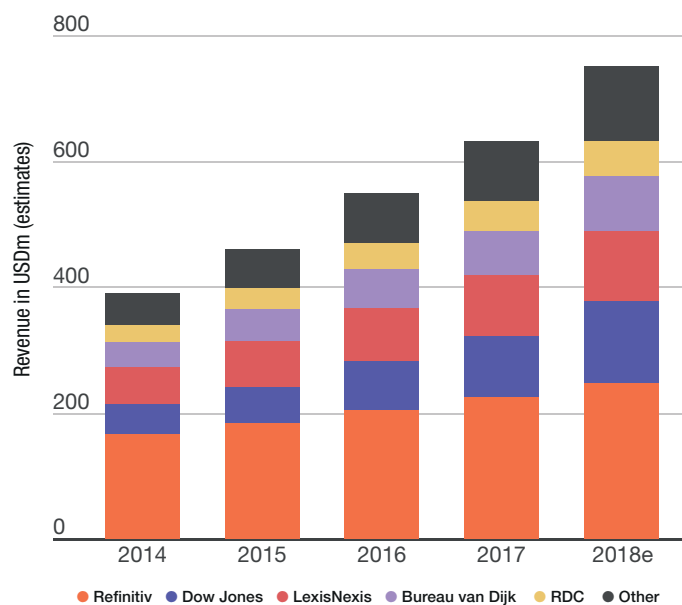
“We thought if we provide the ability for this amendment letter to be sent across to the banks, we can tie in all of the pieces that we’ve built out,” Garland says. “So when the bank comes in to complete that amendment letter, they’re going to kick off their KYC process.” From there, further checks can start turning the wheels—credit due diligence, tax validation, regulatory obligations, operational setup—before sending back the legal amendment letter to the investment manager.

The asset manager says they find particular use in the Request for Amendment (RFA) tool by shortening turnaround times for broker-dealers that are using the tool with them.

“We’ve kind of used that turnaround time as leverage to twist their arm to get them on the tool—we’re not saying we’re not going to do business with

KYC/AML Data & Information Spend by Vendor

Spend on KYC/AML is growing year-by-year, according to Burton-Taylor research.



Source: Burton-Taylor International Consulting

you, we still want to use you as a dealer and a trading counterparty, but if you get on the tool, you are certainly going to get business faster,” the asset manager says.

With the same goals in mind—that is, shortening the timeframe it takes to open an account while reducing the amount of manual labor involved—other vendors have different methods to end the madness.

‘Some Dimwit Auditor’

Having spent a couple decades as a federal agent, and through leading large task forces in New York monitoring money laundering and human and narcotic trafficking, Daniel Wager has found himself at home in the KYC space as vice president of financial crime compliance at LexisNexis Risk Solutions. He says the point of the process is simple: “Who cares about knowing your customer to be intrusive and invade your privacy? That’s not the point. It’s to differentiate between the good people and the bad ones, and to speed the good ones in, keep the bad ones out and prosecute that.”

But that’s not how all the players see it. The barriers to solving KYC’s onboarding problems are numerous. First, regulators don’t want to set a standard that constitutes full compliance. In fairness, it makes sense.

“No regulators will go on the hook and say, ‘If you do this and this, and check these boxes, you’re done. You have no exposure or liability,’” Wager says. “You, because of your geography, [and you’re a] big bank, have a different requirement than [this other bank] because of its geography, and the bank ... only does US-dollar payments and settlements.”

The source at the tier-one bank agrees with Wager’s portrayal of the regulators, and takes it a step further.

The different regulators approach KYC “on an almost on a case-by-case basis. They might go to some random broker-dealer and say, ‘You’re not doing this right and you need to get this form,’ and then that broker is chasing after that form because some dimwit auditor came in and said, ‘Oh, maybe you should be getting this for your audit as well.’ ... It’s very arbitrary, in

my opinion, because you don’t know what the rules are.”

Lack of regulatory standards is what ultimately led to the downfall of the 2014 Markit–Genpact deal, an effort by Citi, Deutsche Bank, HBSC and Morgan Stanley to standardize KYC data for financial institutions, says Wager, who signed onto the deal when he was at HSBC. The same challenge contributed, in part, to Singapore halting its attempt to produce the first government-backed KYC utility in the world last year.

“The cost of getting these things wrong is simply too high. And the cost of correcting it, if you look at what big banks are spending on remediation activities these days, is enormous.”

Guy Harrison, Dow Jones

Second, commercial interests are at play. Banks are reluctant to share anything with their competitors, let alone information that might highlight good prospects. It’s one thing to centralize the process of sharing corporates’ documents being asked for by multiple banks, he says, but it’s a whole other ballgame to ask that banks dump their client information into an easily accessible environment that reveals who has how much wealth at play.

“So the goal of compliance efficiency often runs headlong into client possessiveness and commercial interest,” Wager says.

Third, and perhaps most deeply rooted, is that banks have yet to form a utility within themselves, first.

“Most banks in the world are still a very long distance from a unified view of a customer,” Wager says, adding that a typical large bank can have up to one or two dozen different systems-of-record across its product and service lines. It takes an inordinate amount of time at a single bank to log into, for example, 16 systems and determine where its relationship with a person sits, not to mention having to do the same for several other clients in a single day.

“Is this the same person who’s had the student account with us for years the same one that just opened an investment account with a different address?” Wager says. “They didn’t include a middle name, but the date of birth is the same. Let’s just verify that. That’s the disunity that occurs inside every major bank, day in and day out. So how are you going to achieve a single view of an entity among banks that themselves don’t even know how many relationships they have with those?”

The bank source—whose group does not use LexisNexis, but is unsure if other segments of the bank use the vendor—agrees with Wager’s assessment: “You can do a trade that is allocated to one to, maybe, dozens of accounts. Each of those accounts needs documentation from a broker level. Why is it that our bank doesn’t just have that information in some custodial way, sort of the way that everybody has their standing settlement instruction (SSI) alert in the Depository Trust and Clearing Corp.’s (DTCC’s) Omgeo?”

Even on the buy side, this is a problem. The compliance executive at the asset manager has been trying to convince senior executives to invest in building an internal, uniform, shared platform for KYC that would bring together this information across the organization, but as always, there are more pressing IT issues that need to be addressed first.

“I think it would really benefit us immensely if we did have an in-house tool, firm-wide, that people are using. Unfortunately, we don’t—I can’t seem to gain the right ownership within the firm. It would be so cool if we could do this automated by sharing from tool to tool, or from [our firm] to a dealer directly, but we don’t have that right now,” the compliance executive says. “I would say that it’s eventually going to come to the point where managers like us are going to have to do it because the challenges in the different jurisdictions of what is needed—they’re so different across jurisdictions—that eventually we’re going to have to have a standard and have this stuff available.”

So for the time being, it will be the vendors looking to fill the gap, potentially by using new technologies.



Guy Harrison
Dow Jones



Making a Prediction

Guy Harrison, general manager of risk and compliance at Dow Jones, has been in the space long enough to know the last would-be rescue was workflow, where vendors are using new technologies to create a “faster mousetrap” and coordinate between banks’ internal teams and customers. But now the tide is shifting, as banks and vendors alike turn to artificial intelligence (AI) and machine-learning (ML) models to harvest information. However, those techniques leave, or maybe create, one more hurdle to jump.

“Once you detangle that information, how do you identify the risk and draw out the relevant pieces you need for onboarding?” Harrison says. “We’re

seeing a lot of these AI and ML companies pop up. We have over 200 partners that we work with on a regular basis at Dow Jones Risk and Compliance, and I think a lot of them, frankly, are failing to live up to the hype.”

Harrison sees the parade of AI as more of an enabler at this point because the problem, for him, is in the data. If they’re not processing high-quality data, that generates false positives or negatives, and that generates losses.

“The cost of getting these things wrong is simply too high,” Harrison says. “And the cost of correcting it, if you look at what big banks are spending on remediation activities these days, is enormous.”

But there is hope that as machine learning matures—and these techniques are already making advancements in other areas of the capital markets, such as for surveillance, risk modeling, customer-relationship management and portfolio optimization—these algos can better help firms be proactive in the KYC process, says Bill Hauserman, senior director of compliance solutions at the Moody’s Analytics-owned Bureau van Dijk (BVD).

He says BVD is looking to build on a trend that is gaining in popularity in Europe right now: predictive analytics. Spurred by the notion of control leverage—the idea that the cause of financial and other crimes go beyond



who directly owns how much stock, but rather who might own the entity who owns the stocks—predictive analytics on companies and the people who run them could be KYC's saving grace.

Transcrime, the joint research center on transnational crime and partner of BVD, recently used predictive analysis to estimate the likelihood of certain companies to be sanctioned. "That's where the world is going—where it's not about the activity after; it's about the predictive modeling on the front-end," Hauserman says.

The problem is that invisible risks and digital traces can only be mined from unstructured information, Hauserman says. It's "the ultimate weapon," but

it's not here ... yet. The year 2024, Hauserman predicts, will start to see intelligence technology begin to hone its capabilities in the predictive realm.

"KYC is massive, and then you have all these [other things like] anti-bribery corruption, trade compliance, and all these other subsets of the due diligence spectrum, and each of those have that predictive nature," Hauserman says. "If you could, with onboarding, paint a profile of how likely a risk is to happen in your transaction side, which is where the actual crime happens—it doesn't [happen] just because they have a profile—then you'd be able to monitor transactions from those individuals in a much more efficient sequence."

Banks that have already begun to get a handle on this method have driven their false positives down from 90% to a fraction of that, Hauserman says. "That's how good the technology is, as long as you have the right data. That takes out probably 80% of the waste in KYC today." This can include, for example, asking for the middle names of an entire board of directors.

Although there are protocols and safeguards against financial crime in place, the hunt for more solutions is on, and the remaining players in the space will have to save up their stamina. As the asset manager puts it, "We're always chasing something, and it seems to be by default." [WT](#)

Warrants Issuers Battle Algo Predators in Hong Kong



The threat of high-frequency traders have forced banks to spend big on tech. Chris Davis reports.

It can take years and considerable sums of money to build a warrants business in Hong Kong. The investment can begin to unravel in a mere one-millionth of a second.

The derivative warrants market in Hong Kong, with its paper-thin spreads and zero stamp duty, has long been a target for high-frequency trading firms on the hunt for fleeting differences between the price of the structured product and its underlying stock. If an issuer's technology is not up to scratch in this market, the lost basis points can quickly add up to a perennial bleed on the revenues of the business.

"We are talking not just about milliseconds, but microseconds," says Kenny Chong, head of derivatives trading at Haitong International, a securities firm that issued its first warrant on the Hong Kong Stock Exchange in 2016. "In

that microsecond issuers can be easily picked off if their systems do not have low enough latency."

Latency is a system's lag in executing orders. Low latency can be achieved by locating a trade matching engine within the premises of the exchange, to minimize the physical distance that trades must travel, or by increasing the calculation speeds of in-house trading systems.

Both options are expensive. Yet the costs are not deterring a new group of banks from attempting to crack a market that grew by over a quarter in 2018 and sees more than HK\$15 billion (\$1.9 billion) per day in trade volumes. As *Risk.net* revealed in May, two US investment banks—Morgan Stanley

and Citigroup—and the Hong Kong arm of Guotai Junan International, are now readying to join the fray.

Market participants warn that new entrants will have to be resilient enough to absorb the high initial outlay on tech when the return on investment is by no means guaranteed. They cite the example of the post-financial crisis years, as an equities slump in Hong Kong caused warrants to fall out of favor with investors and forced some issuers, including Dresdner Bank and Standard Bank, to withdraw from the market.

"If you look back at the peak of the industry—in 2007—a lot of banks wanted to join," says Ivan Ho, head of warrants and callable bull and

bear contract (CBBC) sales at Credit Suisse. “There were over 20 issuers in the market. Almost all of the new entrants had shut down within two or three years.”

An equities derivatives head who worked for one of the many banks that exited the business in the past decade blames the collapse of that venture on the bank’s quoting platform. A failure to invest in latency meant the bank had to widen its spreads, but this left the business at risk of losing ground to rivals.

“They closed it when I was there because they weren’t spending enough on technology, and you have to be committed to spending that money,” the head says. “It was just a basket case.” The bank in question is not Dresdner or Standard Bank.

Need For Speed

Issuers say the sight of some banks making decent money in the warrants market, as many have over the past three years, is bound to attract the attention of other investment banks and securities houses.

The three likely new entrants will join a market currently occupied by 12 active issuers of derivatives warrants in Hong Kong. The largest issuer across warrants and CBBCs measured by turnover in 2018 was US investment bank JP Morgan, according to Bloomberg data. The next largest issuers include Hong Kong’s Haitong International, and European banks Credit Suisse and Societe Generale.

Bank-issued warrants, which can have a broad range of underlying securities, including single stocks and equity indexes, have become a mainstay of the retail investment market in Hong Kong over the past two decades, and represent nearly 15% of overall equities-related trading activity in the region.

Issuers add a premium to the intrinsic value of the warrant and, after hedging and slippage costs are accounted for, this represents the profit for the issuer. According to data provided by a current warrants issuer, the average annual profit for issuers in 2018 was HK\$206 million (\$26 million).

“Every issuer is getting faster and more sophisticated and that means the entry barrier for new issuers is not low in the warrants business here. They must have a sophisticated system, perfect connectivity, a perfect pricing system.”
Asia equity derivatives sales director

However, the prevalence of high-frequency trading firms seeking arbitrage opportunities means such profits are not realized easily. Derivative warrants are not usually held to maturity, but sold back to the issuer or market-maker beforehand. If an algo trader uses its latency advantage to pick off the trade, that would mean less profit for the issuer when the warrant is sold back.

The extent of day trading in the Hong Kong warrants market provides some idea of arbitrage activity. On May 20, for example, HK\$11 billion was traded in warrants on Hong Kong’s HKEX exchange. The value of warrants held overnight on that date, however, was HK\$72 million, or 0.65%.

“Over 99% of the trading volume is intraday, and [arbitrage] activities contribute to this,” says a European bank’s director of equity derivatives sales in Asia.

Arbitrage of warrants can take several forms. Sometimes arbitrageurs look to buy a warrant when a move in the underlying is yet to be reflected in the price of the instrument. Others, meanwhile, deploy algorithmic-driven proprietary pricing models to detect possible inconsistencies between pricing components of the instrument and the price of the warrant itself.

Both methods are made possible by the way in which derivative warrants are structured. Similar to an options contract, a warrant gives investors the right but not the obligation to buy or sell an underlying security such

as a stock at a preset price prior to a specified expiry date. For a call warrant, if the five-day moving average of the underlying is higher than the warrant’s exercise price, the product is automatically exercised at expiry. If it is equal to or lower than the exercise price, it will expire worthless.

The embedded optionality means the instrument’s fair value can be affected by a number of factors including changes in the price of the underlying, price volatility, and the time left to expiry. Arbitrageurs exploit momentary value differences in those components and the price of the warrant.

It is not clear how many high-frequency trading firms are actively arbitraging derivative warrants in Hong Kong, but two sources name Jump Trading and Tower Trading Group as two firms thought to be using these strategies. Jump Trading and Tower Trading Group did not respond to an emailed request for comment.

Issuers say one of the big attractions for such firms is the typical size of issuers’ bid/ask spreads. Exchange rules and taxation also play a role: All parties can trade on the same server through co-location, without speed bumps that slow down trade orders and erode the advantage of high-frequency traders. Also, derivative warrants in Hong Kong are exempt from stamp duty.

High-frequency traders always have a latency edge in the warrants market, issuers say. They point out that throughout any given trading day a typical issuer’s systems are posting quotes consistently across hundreds of products—a heavy lift, even for the most state-of-the-art platforms.

“Investors want a very tight spread. They think issuers must provide that for them but they don’t take into account the costs issuers need to pay for, and high-frequency traders, with all that in and out, can increase costs for issuers,” says Ho at Credit Suisse.

Derivative warrants in Hong Kong can trade at extremely thin spreads compared with other markets. For example, JP Morgan lists a call warrant on Chinese company Tencent on

HKEX, with an expiry of September 2 and exercise price of 380—about 14% above the current price of the stock on the exchange. The bid price is HK\$0.052 and the ask is HK\$0.054—so a spread of HK\$0.002.

Deutsche Bank's listed call warrant for Tencent on the Frankfurt Stock Exchange, with a similar exercise price and expiry, has a bid of €0.07 and ask of €0.09—a spread of €0.02, an order of magnitude larger.

Hit the Tech

To minimize the effect of arbitrageurs, issuers need to invest continually in technology: hosting services, including co-location with HKEX markets; the development of a market-making platform providing automatic and semi-automatic quoting; and the maintenance of back-up systems.

An executive of a technology company that provides warrants trading software says the total expenditure on marketing, technology and other expenses for a new entrant often runs into the tens of millions.

“Investors want a very tight spread. They think issuers must provide that for them but they don't take into account the costs issuers need to pay for, and high-frequency traders, with all that in and out, can increase costs for issuers.”
Ivan Ho, Credit Suisse

“The issue with arbitrage is that it can be very costly—but it can be controlled with the right technology,” says Sylvain Thieulent, CEO of Horizon Software, in Paris.

The director of Asia equity derivatives sales agrees about the high cost of entry, pointing out that prospective issuers need to match, if not better, the speed and latency of existing issuers.

“Every issuer is getting faster and more sophisticated and that means

the entry barrier for new issuers is not low in the warrants business here,” the director says. “They must have a sophisticated system, perfect connectivity, a perfect pricing system.”

A listed products sales head at an equity bank in Hong Kong says investment in fast and sophisticated market-making systems can lessen but not eliminate the threat of arbitrage.

“You have to invest in technology,” the head says. “It's not that we can totally protect from algos but at the very least we can maintain a good service to clients and the algos will come in and you just have to try to balance that.”

The extent to which a new entrant in the market can afford the initial outlay may depend on how the technology is used across the bank, says the sales director. If the cost falls on the warrants desk alone, the profitability of the business will be under heightened pressure.

“In a bigger house, the system can be used and shared by other teams like parts of equity and fixed income and that means the cost can be absorbed by other departments, giving those banks an economy of scale that is more affordable,” the director says. “For a relatively smaller house, you build a whole new system and the cost has to be absorbed only by the warrants team. That is quite tough.”

Timing It Right

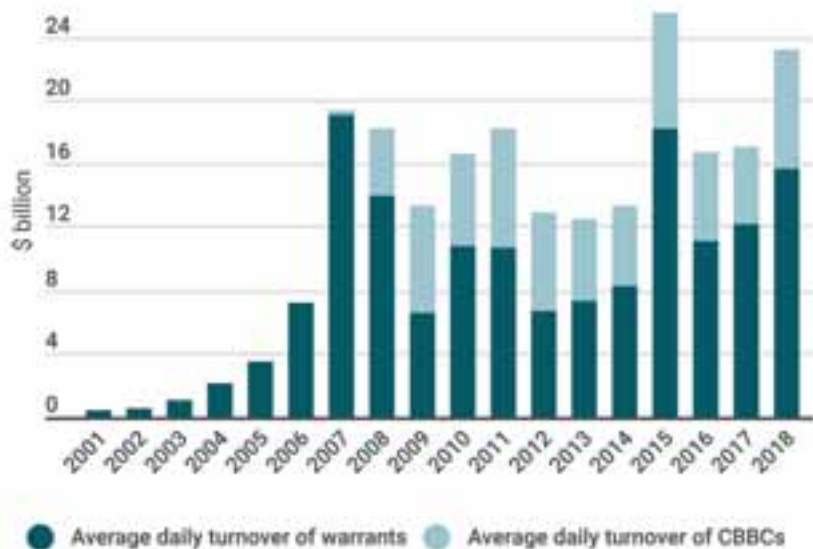
Issuers say it is crucial for new entrants to time their move on the market correctly, so that the millions of dollars of investment in technology can be recouped as quickly as possible.

Entering at a time when the stock market is booming can help the issuer to hit the ground running, they say, while entering at a time when markets are range-bound could spell trouble.

“Market conditions are important,” says Keith Chan, head of cross-asset listed distribution at Societe Generale in Hong Kong. “If there is a bull market then interest and flows will be much bigger and that is your chance to showcase your ability. If the market is very quiet, very range-bound, that might also have an impact.”

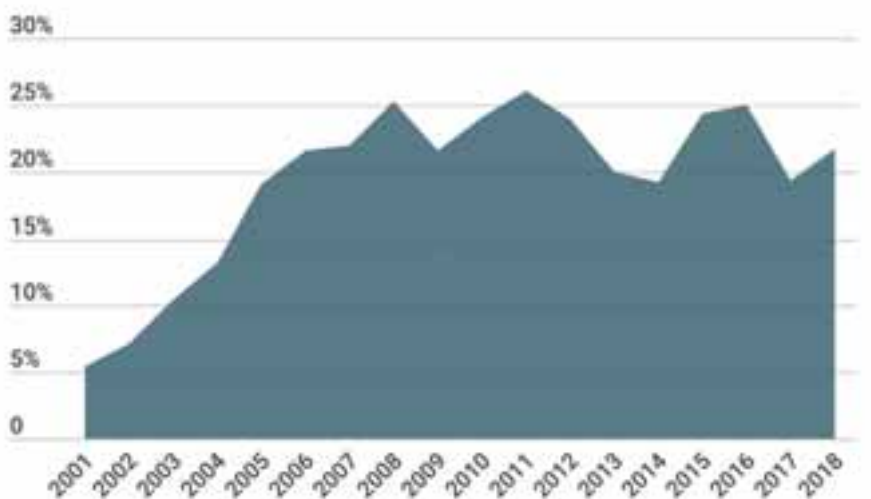
Investment volumes and new issuance in the warrants market in 2018 have

1. Volume of warrants and CBBCs



Source: HKEX, SFC

2. Volume of warrants and CBBCs (as percentage of overall equities trading)



Source: HKEX, SFC

given confidence to the three firms planning to become warrants issuers in the near future. The overall volume of derivative warrants and CBBCs—another type of listed structured product popular with Hong Kong's retail investors—has increased, as has the number of issues. Last year saw 11,794 warrants issuances, up from 7,989 in 2017, while CBBC issuance rose to 26,678 products from 13,225 over the same period, according to HKEX data.

The poor performance of Hong Kong-listed stocks last year, a trend that has continued into the first quarter of 2019, complicates the picture, however. Amid escalating trade tensions between the US and China, the Hang Seng Index dropped by 13% over the course of 2018, its worst performance in seven years.

“For stocks to perform strongly they must have some very good financial figures not just in one quarter but sustainable—that is what investors want,” Credit Suisse's Ho says. “If these factors are not occurring, then it is very difficult for the issuer to make money.”

Ho adds that it was the global sell-off in equities markets in 2007 and 2008 that led to a shrinking of the number of issuers in the Hong Kong warrants market. When stocks enter bear market territory and volatility is high, warrant investment flows quickly dry up.

In a whipsaw market, the consumption of vega—that is to say the instrument's sensitivity to changes in implied volatility—very often outweighs the delta benefit for investors, and reduces the leverage offered by the instrument. This means investors find it hard to profit even if they are right on market direction. Investment in call warrants, which offer the chance to buy the market, is also greater than investment in put warrants, which offer the opposite position. So, overall, warrant sales usually suffer in a bear market.

That loss in revenue could be compensated for by CBBCs, which unlike warrants, have a trading price that is not affected by movements in implied volatility.

Even so, investors still prefer to buy bull products than bear products, Ho says, so issuers would not be entirely immune to the effects of a prolonged bear market in equities.

There is speculation that at least one of the banks planning to enter the market—Morgan Stanley—is hesitating on the timing of its first issuance given the current market sentiment.

“Morgan Stanley is pretty much ready [to issue], but the market is not looking very promising at the moment,” an executive who works at a bank issuing Hong Kong-listed warrants said in May.

The Long Game

As well as choosing an opportune moment to launch into the market, new issuers must be wary of setting spreads that are so tight as to leave themselves open to arbitrageurs or so wide as to deter clients, sources warn. It is a delicate dilemma.

Ho says most successful issuers in the market—even those with adequate technology in place—“spend a lot of time and effort on striking a good balance” between quoting spreads that are attractive to investors while at the same time unattractive to arbs.

The combined efforts, from investing in technology, to surviving the ups and downs of the equity market, to establishing a deep level trust with the investor base, requires a long-term plan, issuers agree. “I think it is a really long-term investment,” says Societe Generale's Chan. “But once you've built that trust in your franchise it can be very solid.”

Offering his advice to the three possible new entrants, Horizon Software's Thieullent says the firms should not expect overnight success.

“The first year will typically be a year where the retail market is discovering you, the second year will be the breakthrough year and then the third year will be the year where you are starting to get established in the market,” he says. “So it is one year of quite strong investment, but over three years an issuer should be profitable.” [WT](#)

Outsourcing Takes to the Front Office

Fee compression and regulations limiting capital have forced some asset managers and hedge funds to rethink what is core to their business, including the trading desk. Enter the outsourced trading desk. By Emilia David



The pace of technological advancement this past decade has been staggering. From machine learning to distributed ledgers to cloud adoption to augmented reality to the advent of quantum computing, there's no true way of knowing what the trading floor of the future will look like. Maybe it will resemble a scene out of the movie *Minority Report*, with traders swiping at the air to find information and execute trades. Or, it might appear like something closer to the exchange trading floors of the present, with computers whirring and a handful of humans making sure nothing goes terribly wrong.

If it is the latter scenario, then the outsourced trading desks of today represent the first steps in that evolution.

Despite being around for about two decades, outsourced trading desks have become popular over the past few years as asset managers—who are struggling to find alpha as investors switch from active to passive strategies—find themselves needing to cut costs. And as larger funds seek to outsource, the trend might be here to stay.

Many smaller firms are outsourcing their trading desks, and as they grow, some will decide to stick with the model.

“The first thing we asked ourselves is how many assets do we manage, what kind of instruments do we trade and how often do we trade,” says an

executive at an asset manager that today has over \$5 billion in assets under management (AUM). “We looked at that and determined how many traders we might need if we do this ourselves and what could be the salary and bonus for that person we hire. We wanted to have a centralized flow of our orders, sure, but at that time we just didn’t want to absorb the headcount.”

The source, who asked for anonymity because of the negative connotations associated with the word “outsourcing,” says that as the firm grew, it decided to stay with an outsourced trading desk—in this case, Jones Trading—as it saw the benefits of working with one, such

as being able to tap into the expertise of the vendor, which was able to provide more color around its brokers and was able to determine the best ones through which to route flow. It is also able to get good deal allocations when it comes to initial public offerings because of its provider's relationship with the investment banks, the source says.

Back to Front

Outsourcing usually deals with more process-heavy tasks like reconciliation, but it is extended to anything companies feel are not core to their work. Gary Paulin, head of institutional brokerage, EMEA and Asia-Pacific at Northern Trust Capital Markets, says outsourced trading is a natural progression of other outsourcing trends in the past decade in the back and middle offices.

"Big outsourcing trends follow a pattern that occurs at the end of bull markets where you see years where costs go up but no one really noticed. Then when that ends, firms have to double down on core processes to cut costs," Paulin says. "Some companies have concluded that trade processes can be non-core to them, so they can be outsourced."

Northern Trust started its own outsourced trading desk offering just last year, one of the larger financial organizations setting up the service. The most recent entrant to the space is Wells Fargo, which announced its own service in mid-June. Other brokers are also actively thinking of offering the service, including the newly launched INTL FCStone prime brokerage.

At its simplest, outsourced trading desks are extensions of asset managers—both traditional and alternative—that do business by trading and executing orders on behalf of their clients. The funds direct their outsourced trading desk service, usually offered by a brokerage, to trade a certain volume of securities, and it is the desk that chooses where and how to route the trade. Acting as the execution partner, a trader from an outsourced trading firm has the capability to route trades. Outsourced traders use their own order and execution management systems



"I wouldn't be surprised if in 10 years, 90% of the market is outsourced."

Jeff LeVeon, Jones Trading

(OEMSs) and route orders to brokers in their community.

Some outsourced trading desks offer more services to clients that can range from managing trades and commissions, to sourcing research requests and consulting on technology selection, integration, and support for OEMS platforms.

Asset managers that look to outsourced trading desks have varied reasons for doing so, but the biggest driver of today's current trend is a story heard over and over again: cost cutting. Paulin and others note that regulations and competition drive many asset managers to reconsider what they deem essential to their firm.

Firms have to look closely at their activities and what they spend money on. Outsourced trading desk service provider Jones Trading estimates in a report that an internal trading desk for a \$250 million AUM fund could cost around \$590,000 per year. A larger firm with around \$1 billion AUM may need to shell out \$1.18 million yearly for an internal trading desk.

Technology costs alone—the license to run trading software and other pre- and post-trade platforms—are already 15% to 20% of this cost. By moving to an outsourced trading model, however, it is estimated that trading costs for a \$50 million AUM fund will go down to around \$150,000 a year, and a \$1 billion firm will spend \$1.05 million annually.

Peter Weiler, co-CEO at brokerage firm Abel Noser Holdings, says asset managers that want to stick to active investing will want to have the freedom to look at market signals and create strategies much in the same way finan-



cial institutions have largely moved operations that are not core to the business out to third-parties.

"The trend really is that there is active management fee compression, assets under management are going lower, and there's the move more toward passive. I think if you can go to a trusted partner that has all the pieces—the execution platform, commission management, trade analytics, etc.—in place, it can be an attractive option keeping in mind that one size doesn't fit all," Weiler says.

Trading-as-a-Service

With the rise of passive investing in the US, active managers have tried to compete by bringing down fees charged to clients. Lower fees drive down the capital an asset manager may have to keep running their own desks, especially as costs are high.

In Europe, the revised Markets in Financial Instruments Directive (Mifid II) drove much of the interest in outsourced trading as commissions and payments became unbundled. European traders traditionally handed the payment processes to brokers, but with Mifid II and the unbundling of fees from services like trading, this function has been taken away. This has forced companies to look at how they handle trading and fees.

In either case, many asset managers decide to focus on creating strategies and looking for signals, rather than the



Aaron Hantman
Tourmaline
Partners



actual act of trading. Many of these firms have concluded that trading is not a core function. But asset managers do have concerns over the prospect of moving an important—if not core—function of the business, particularly around the protection of their information, Paulin says.

“If a function adds value, then it’s probably not going to be outsourced. Take quant funds: They’re mostly data scientists rather than relationship traders, so their focus is on the analysis. They may not see trading as a function that adds value for them, so they’re more willing to outsource that,” he says. “Hedge funds are sometimes resistant to the idea of outsourced trading, because they view trading as a core function. They get insight on flow, liquidity and macro events that may impact market timing. But for those funds that don’t



Gary Paulin
Northern Trust

trade so much, which rely more on analysis than market timing, it doesn’t make sense to have a full-time trading desk. They might be better off outsourcing and swap a fixed [cost] for a variable cost. Think of outsourced trading as ‘trading-as-a-service.’”

Funds may be concerned, however, about the security of their order flows. Some are comfortable with their orders being routed into internal trading systems, but many are not and would prefer orders be routed away from internal dark pools. These firms fear there might be conflicts of interest and their order flows might get contaminated. Security around these orders is also of particular concern as some funds may want to prevent others from knowing how much they have to trade.

And sometimes it’s the other way around. The asset manager executive

says the biggest concern was that the firm wanted other traders to know the orders were coming from them. They worked with their provider to have the ability to tag trades that orders were being traded on their behalf. As with any outsourced relationship, compromises have to be made and the asset manager has to be willing to have slightly less control over their orders.

“I really trust [Jones Trading]; they’ve been really great partners. If I wanted to set up a trading desk where I am, I’d have to hire at least two people and absorb that headcount. But if we’re just trading equities, our book is not that complicated. I don’t foresee any time in the near future that we’re going to hire in-house traders,” the asset manager says.

There is also a fair amount of pressure on the service provider. As outsourced



desks mainly deal with executing orders on behalf of clients, proving best execution is key. Aaron Hantman, CEO of outsourced trading provider Tourmaline Partners, says outsourcers have to prove they follow best execution on behalf of their clients and do not at all use their investments for internal dark pools.

“A big concern for asset managers is the ability to maintain a level of control at the client level. You solve for that by creating bespoke trading solutions for each client so that they realize they are able to shape the outsourced service the way they want. Much of their influence is on workflow and operational factors, less so than on trading itself,” Hantman says. “Another concern is protection of information, and we ensure that first by being unconflicted and unbiased,

by not being tied to a greater entity. Information is further protected in the way you handle order flow. We don’t advertise flow or shop it out to other clients.”

Tipping Point

As technology costs rise, the ability to spread those costs to outsourcers becomes crucial for asset managers. Andy Volz, Jones Trading managing director and head of prime services, says that 10 years ago, OMSs were unwieldy and had to remain on premises. But with the cloud, OMSs and EMSs can now be deployed anywhere. The optionality the cloud offers, as well as more sophisticated trading tools and post-trade platforms, mean funds have more options for how they enter the market, and it can be switched on and off, as needed.

But it’s not just on the trading side that technology has improved. Advances in analytics allow more firms to hone their strategies to find alpha without having to take time away to execute trades. And as the low-fee environment is likely here to stay, outsourced trading may have hit a tipping point where it becomes a viable option to many types of funds.

Northern Trust’s Paulin says outsourced trading is not just temporary, but will continue as a viable option for years to come.

“The biggest reason, though, why I say we’re at a tipping point is that we’re seeing a change in the size of funds that look to outsourced trading. It used to be funds that were sub-\$10 billion looking at the service, but now we’re talking to firms with multiples of that,” Paulin says.

Smaller asset managers gravitate toward outsourced trading as they are more affected by the need to cut costs. Larger firms have also begun to look at where they can save some money or be more efficient, and increasingly this means tapping an outsourced trading desk service to do so. Outsourcing providers like Jones Trading, Abel Noser, Tourmaline and others report they are pitching their services to funds whose AUM can reach north of \$100 billion.

And it is not just the size of the funds, but also the types of funds looking to outsource and different assets being traded. Jeff LeVeen, head of outsourced trading at Jones Trading, notes the next five years of growth for outsourced trading will likely come from pensions, family offices and endowments. The company has also seen strong interest in possibly opening up outsourced trading for asset classes like fixed income, futures and derivatives as these become more electronically traded. Outsourced trading works best in terms of electronic trading, particularly of equities and equity derivatives.

“I think outsourced trading is the fastest growing element of the sell-side execution business,” LeVeen says. “I think there are cost savings of hundreds of percent. I wouldn’t be surprised if in 10 years, 90% of the market is outsourced.” **wt**



Andy Volz
Jones Trading

Hunting for Alpha on the Net

The immense growth of online data is driving an increasing number of asset managers to deploy web-scraping tools to find unique investment insights. Hamad Ali explores the benefits and challenges of this en vogue skillset.

Web-scraped data for investment purposes accounts for as much as 5% of online traffic—but operational, legal and technological barriers remain for investment firms looking to fully tap this vast resource.

This figure comes from a report by Opimas, published earlier this year, which also estimates that spending on web scraping for investment purposes will exceed \$1.8 billion by 2020.

Since the early days of the World Wide Web, its potential as a source of investment data has been obvious. Everything from social media trends to retail prices to job postings are available online. And this potential will only grow now as investors are increasingly looking for alternative data to help them stay ahead of the pack.

“What people don’t realize is web data is the largest publicly available dataset in the world,

and it doubles in size every year,” says Vinicius Vacanti, CEO of YipitData, whose clients include hedge funds and mutual funds. When YipitData started five years ago, it had three employees. It now employs 100 people, thanks to a seemingly insatiable thirst for new and unique datasets.

Collecting this data is getting more complicated as websites set up barriers to prevent machines from crawling their data, and firms worry about ambiguity and the lack of standards around the legality of using public data for commercial purposes.

How It’s Done

Nonetheless, YipitData belongs to a small universe of specialists that have sprung

up to meet the growing investor appetite for this type of information. Another is Thinknum, which was founded in 2014 and aims to collect web data and sell it in a structured format to investors.

Thinknum founders Justin Zhen and Gregory Ugwi met while studying at Princeton University. After they graduated, Zhen landed at a hedge fund and Ugwi became a strategist at Goldman Sachs. Zhen was looking for information available on social media—specifically, Twitter—while Ugwi was interested in real estate data. However, both realized they were facing the same issue: how to access, and make sense of, public web data. Many of their contacts and colleagues were having the same problems.



“I think eventually you will start to see a few of the very technology savvy hedge funds find ways to identify meaningful trading signals based on what is and isn’t said.”
Josh Sutton, Agorai

“We thought that we should build a company that organizes public web-data trails and makes them usable for investors,” Zhen says.

Thinknum works like a business search engine, Zhen says. While traditional search engines collect everything online, Thinknum gathers specific information related to business activity. What data is collected depends on what the bot is programmed to pick up.

Thinknum uses crawlers—bots that scour websites looking for information—similar to what Google does. It then organizes and structures the underlying data to make it more easily digestible. Thinknum offers 30 different datasets on its platform, including job listings, car inventory, store locations, LinkedIn profiles, Twitter followers, restaurant menu pricing, and government contracts.

A user can view information such as who the firm is trying to hire every day, their job title, type of job, and the location of the job. “I can see how many jobs the company has every single day; if I actually overlay the stock price, I can see that this data is predictive,” Zhen says. “When the company hires, the stock price goes up about six weeks later. When the company stops hiring, the stock price goes down about six weeks later.”

Zhen likens the service to a Bloomberg terminal in that an investor could build their own, but wouldn’t bother when they could just subscribe to a better, ready-made service. “There is no reason why a fund would scrape 400,000 companies across 30 datasets,” he says.

DIY Scrapping

However, many asset managers do have in-house web-scraping operations. Nick Jain, founder of Citizen Asset Management, has been scraping data himself, rather than using a third-party provider. The kind of web data that interests him is site traffic, browsing history, API calls, and social media analysis.

“I am actually not a technologist or programmer by background, [but] I think it took me five or six hours to go from knowing no code to being able to write code that can scrape data that I want,” he says.

Jain has an MBA from Harvard, as well as a background in mathematics and theoretical physics. While not a technologist by trade, he does have the practical foundation to expand his skillset. For a large number of asset management firms, though, building a team with the skills necessary to exact value from such a massive universe of data might not be cost-effective. Not only do firms need to hire experts, but if they want to do this on their own, web scraping on a large scale requires hundreds of gigabytes of data and a mass of servers. Even Jain has to rely on third parties to help provide the infrastructure.

“If I wanted to scrape that sort of data, I have the coding skills to do so, but I don’t have the server farms that I would need to go do that,” says Jain. “I can rent them from Amazon or [another vendor], but that is the one limiting factor.”

There is another option for funds that don’t want to outsource this capability, but also don’t have the resources to do it all in-house.

YipitData launched a product called ReadyPipe, which is delivered via a software-as-a-service model. This allows users to scrape data themselves without worrying about the infrastructure and databases required.

“We are starting to see investors try to collect their own web data by hiring an engineer or a technical data analyst to their team, which is why we developed ReadyPipe,” says Vacanti.

Others in the space, like Sequentum, collect the data, but then hand it to clients who want it raw so they can generate their own specialized reports.

“As long as it’s in a machine-readable format, then [clients] are happy,” says Sarah McKenna, the vendor’s CEO. Sequentum can perform some transformation of the data, such as changing date and time formats, or converting currency to US dollars. Occasionally, smaller clients without engineering expertise will request some sentiment analysis or text analytics.

Differing Returns

But the fact remains that no matter what help or solutions are out there, the data itself needs to be relevant to a fund’s particular investment strategy, and sometimes the effort and expense involved outweigh the benefits.

Neil Bond, head of trading at Ardevora Asset Management, says his firm did some work with web-scraped data a couple of years ago but ended up dropping the project. It took a lot of work and did not add much value to the firm’s alpha generation.

“We were looking for keywords in trading updates that were followed by unexpected outperformance or underperformance in results,” says Bond. “For example, if a CEO used the word ‘absolutely’ several times in a trading update, we could expect disappointing results. We no longer do this.”

Social media can be a mess of unstructured, low-quality datasets. You have to know how to make it useful, says Citizen’s Jain.

“Some quant funds, more on the high-frequency side, monitor Twitter sentiment data to trade stocks on a minute-by-minute or hour-by-hour basis,” Jain says. “They notice Twitter sentiment



Justin Zhen
Thinknum



Vinicius Vacanti
YipitData



is positive, so they go buy Microsoft stock, or vice versa. That is a relatively well-understood space and there are lots of quant funds doing that.”

Using Twitter data for longer-term investing is more challenging and there are fewer firms able to do that—indeed, there is a lot of skepticism about whether it can be done at all, says Jain.

“I personally have figured out a few useful cases to do it, so I think it works,” he says. “But I don’t know whether it works generally.”

Thinknum’s Zhen says it is important to look beyond just one dataset to get a holistic view about a company. “Let’s say their Twitter followers are going up. But if their job listings are also going up, the product is becoming more expensive,” says Zhen. “If people are saying good things about management inter-

“
“There are massive compliance issues. Some people abide by the rules very clearly, and some people don’t.”
Nick Jain, Citizen Asset Management

nally, all these things are good signs for the company. You want to paint a very complete picture about each company that you are looking at.”

Josh Sutton, CEO of artificial intelligence technology vendor Agorai, says that looking at how usage of a certain phrase increases or decreases in frequency can be interesting.

“I think eventually you will start to see a few of the very technology-savvy hedge funds find ways to identify mean-

ingful trading signals based on what is and isn’t said,” says Sutton. “I think from a natural language understanding point of view, we are still a ways away from that. I do think there is a window that is continually moving, which is the ability to trade off web-scraped data in a quant-driven type of model.”

Regulatory and Privacy Hurdles

Another hindrance to wider adoption of these techniques is concern about ending up in court.

“There are massive compliance issues,” says Jain. “Some people abide by the rules very clearly, and some people don’t.”

Jain says he works with little web-scraped data because so much of it is not compliant with rules and regulations.

“Most third-party providers that I looked at, I just didn’t trust their compli-



ance procedures. I think their goal was to scrape as much data and sell it, without respecting the terms and conditions of the place they were subscribing with. I just didn't want that to ever be an issue for me," he says.

Anyone collecting this type of data for investment purposes must read the small print on the website. Many websites have a standard clause that their information cannot be used for commercial purposes.

A few years ago, Jonathan Streeter, a lawyer at Dechert LLP, began to notice a significant increase in queries about the legality of alternative data for investment strategies. "I think activity in the space picked up considerably about three or four years ago and a lot more investment managers got interested in it at that time," he says.

Sequentum's McKenna says when her firm contracts with funds, it has specific compliance concerns to make sure it is not subject to insider trading accusations. It always aims to follow Captcha tests—Turing tests that ask users to check all the boxes that contain photos of storefronts, cars or street lines in them before they are allowed to access a site.

"As long as we are getting data that is public, it is not behind fake accounts, not behind logins, it is readily available to basically anybody who is cruising the web, then that is not considered insider trading," says McKenna.

She says the firm calculates the average daily volume of traffic on the site and limits its visits to as low as 1%.

"When the analysts say, 'I want all the data, every hour,' then we explain to

them the goal is to get them reliable, high-quality data on a constant basis," she says. "If we do a denial-of-service attack against the site, we are basically going to have to stop pulling data altogether."

While any data in the public domain could potentially be useful for investment purposes, it is usually not that simple. The quantity of data needed to glean meaningful insight can be huge. The information on websites is also constantly changing; there are always newer and better tools to prevent users from scraping information. Even when scraping is successful, the data tends to be unstructured, with each website having its own schema and internal database.

But the fact remains that for buy-side firms struggling to find alpha, the greatest source of data is the internet—and there is no slowing this trend down. [WT](#)



Sarah McKenna
Sequentum

The Cloud Breach Blame Game



As cloud computing becomes an ever-more critical component of any modern financial technology infrastructure, and cloud deals are coming under increased regulatory scrutiny, [Joanna Wright](#) finds out that firms will be unable to pass the buck for data losses.

Way back in 2007, the network of Heartland Payments Systems was hacked. Over the following months, the New Jersey credit and debit card processing business admitted that the perpetrators had gained access to data on more than 100 million cards. Until the Equifax hack in 2017, it was the biggest data breach of all time.

After the hack, Heartland founder and CEO Robert Carr went on the offensive, putting the blame on the compliance auditors, who had previously given the company a clean bill of health. Neither Carr, nor any other senior managers, lost their jobs. By blaming a third party, he successfully shirked responsibility for the massive loss of client information. More than a decade later, the results would likely have been different.

This kind of buck-passing is becoming inconceivable, says Jennifer Bayuk, an independent

information security expert. And as regulators increasingly turn their attention specifically to cloud security, she predicts that a company's executive management will be held more accountable.

"Carr got away with it 10 years ago. I don't think people are getting away with that anymore," says Bayuk, who has held cybersecurity and operational risk management roles at JP Morgan, Citi, and Bear Stearns.

While Carr got to keep his job, Rick Smith, who was CEO of Equifax at the time of the hack, was forced into early retirement—albeit, with hefty stock compensation.

It's becoming clearer that regulators will not allow financial firms to duck ultimate responsibility for security,

and are turning their attention to the cloud. The US Securities and Exchange Commission (SEC), for example, sent out a risk alert in late May saying its examiners had identified risks with the storage of customer records by broker-dealers and investment advisers in the cloud, and noted that firms do not always use the available security features offered by providers.

Cloud Complexity

Certainly, cloud adoption in fintech has proceeded slower than anticipated because of concerns around security. And no wonder—cloud deployment is complex and multi-faceted.

Firstly, there is complexity around how large banks and asset managers use

cloud, with multi-cloud environments, contracted to several providers in different geographies. They will have private and public clouds, and a universe of third parties who may have access to sensitive data, all with their own connections to their own providers.

Even smaller firms, which could have just one provider or none, could find themselves in the cloud by accident, as it were, by virtue of using a software-as-a-service vendor that is running on top of AWS or Azure, or because they use middle-office systems like Workday or Salesforce, says Mark Nicholson, who leads the financial services cyber risk services practice at Deloitte.

“The nature of relationships gets fairly complicated and you have to make sure you understand where you are in that chain, how many degrees away from the actual cloud provider you are,” he says. “Each of your vendors has different responsibilities to you depending on where in the relationship they are.”

So the question becomes: Where along these interlinked chains does responsibility lie? The big cloud providers would argue that they do have certain responsibilities—but only to an extent. Providers like AWS encode a shared responsibility model into their contracts, where accountability is divided between them and the end user.

Kieran Norton, a principal in the cyber risk services practice at Deloitte, says financial firms don’t always understand this shared responsibility model. If you think about the responsibility as a layered structure, with the highest level being governance and the running of compliance programs, then the cloud provider is only responsible at the bottom end, depending on whether it be software- or infrastructure-as-a-service.

“They are responsible for physical security, maybe infrastructure security,” Norton says. “But then as you move up in the platform and application, the enterprise is increasingly responsible. A lot of risk comes when you don’t understand that shared responsibility model and you see things as being covered by a provider that are not.”

This relationship is often explained like this: The providers are responsible

“Because everyone’s assets that they are managing with their computers are completely different, and the mechanism they use to allow their authorized users to access those assets are completely different, one single generic checklist is never going to cover your very specific application that you built internally or are managing in the cloud.”

Jennifer Bayuk, independent information security expert

for security of the cloud, while the customer is responsible for security in the cloud. For customers, that means they must take ownership of the configuration and management of security controls for their operating system and applications, and of encryption of data in transit and at rest.

Cloud providers are also not fully liable for most of the cost of data breaches, according to Byron Collie, technology fellow and second line cybersecurity risk in operational risk at Goldman Sachs, who spoke at the OpRisk North America conference in New York in June.

“Guess what? Cloud vendors have very limited liability when you look at their contracts. The standard is how much you have paid them in the prior 12 months—that’s it. So however much you have paid Amazon, Google, or Azure is how much they will pay out for liability if you have an event that affects you,” said Collie, adding that it is therefore important to make sure your cloud environment is properly insured against cyber attack.

However, cloud insurance is still in its infancy, and payouts are unlikely to cover anything like the full cost of breaches.

To add another wrinkle: Firms whose data is in the cloud also have a responsibility to other firms in that environment, says Deloitte’s Nicholson. “Something that has been overlooked but is starting to come into focus is the



shared liability,” he says, referring to not just the liability that cloud provider has to its client firm, but also the liability that the client itself carries. “They might be doing something within the cloud that could impact on the broader cloud environment and be subject to liability from the cloud provider or other third and fourth parties that are using it,” Nicholson adds.

Misconfiguration Threat

Threat actors in the cloud could be “advanced persistent threats”—also known as nation states; they could be hackers looking to steal money or data; they are often opportunists looking for any weak spot they can exploit. But most often, cloud security issues are caused by the users themselves: an unpatched server or unsecured Simple Storage Service (S3) bucket.

Teresa Walsh, global head of intelligence at the Financial Service Information Sharing and Analysis Center (FS-ISAC), told *The Wall Street Journal*’s Cyber Executive Forum, held in London in June, that while most people imagine hackers bombarding cloud environments with attacks, “if you look at a lot of the issues that people have had over the past few years, it’s usually down to human error, through bad configurations, or a lack of understanding about what they are dealing with.”

The beauty of cloud technology is its agility: System administrators can spin up



instances of an application to the cloud easily. But these have to be configured, often with code written by the admins. And what if that code is buggy? “It is not typically part of the assessment of a cloud environment to go and look at code that creates these instances,” Bayuk says.

Cloud providers have robust security features, but if they update these, the admin has to go in and change the scripts they used to create the instances.

A common issue for system administrators was that AWS’s S3 buckets used to be open to the public by default, while many users assumed that they were private by default. “You don’t know when using these technologies what the default parameters are unless you test them or if you actively try to find out. And if you found out once and put security on it, but then this feature was extended to do something else, you may need to revisit that entire configuration,” says Bayuk.

A cottage industry sprang up among hackers looking for open buckets to exploit, and some high-profile companies, including Verizon and Dow Jones, had sensitive data exposed. AWS has since introduced security features such as Block Public Access to help users address the issue, and experts say these will be effective if implemented properly.

However, when providers add upgrades or new security features like these, it takes time to figure out how to implement them. Each change is accompanied by “tons of documentation,” says Bayuk, and it can be difficult to complete the upgrade before vendors stop supporting the prior version.

“To take advantage of some of the features of these cloud services, you have to do a lot of work understanding how they have created a security feature that then you need to use. I am a programmer and a systems engineer, and it takes me hours of going through

documentation to figure this out. Unless you have an Amazon engineer sitting next to you—which we cannot afford—explaining how it works and best practice in using the service, it becomes extremely difficult to figure it out quickly,” she says.

At a couple of hundred pages, the Amazon S3 bucket guide is “not exactly Ikea instructions,” quipped FS-Isac’s Walsh at the *WSJ* event in London. “You need to know what you are doing and how much you can actually do, in terms of configuring and monitoring for issues. That’s where contract issues come into play: Have you set yourself up for failure, or do you have a partnership with your cloud provider to make it as secure as possible?”

Keeping Up with the Regulations

There is a bewildering amount of standards, rules and regulations out there, with large areas of overlap and no harmonization. Their application to firms will of course vary, depending on the complexity of the firm and what they are using cloud for, where in the world data is stored, and what third parties and customers the firm deals with. Parsing and reconciling the rules and standards at state and national level and in territories abroad keeps compliance departments very busy.

These rules aren’t going away. The EU’s General Data Protection Regulation (GDPR) and California’s Consumer Privacy Act have broken new ground for the protection of personal data, with other states and countries around the world poised to pass their own legislation. The New York State Department of Financial Services has passed cybersecurity requirements. There are the Federal Financial Institutions Examinations Council (FFIEC) standards and the National Institute of Standards and Technology (NIST) cybersecurity framework. Firms must take these all into account.

Goldman Sachs, for example, “must ensure it conducts assessments against the FFIEC cybersecurity assessment tool, the NIST framework, and the industry-developed hybrid financial-sector cyber protocol,” said Collie at the OpRisk conference.

Then there are the operational risk standards—BCBS 195 and Basel III—plus cyber risk rules and regulations as well, he said. “What we do is we have a broader operational risk management program construct, with educational and business policies and standards; risk control frameworks; assessment frameworks; and a monitoring, analysis and governance construct,” Collie said. “Most of the regulation and directions really focus on the assessment piece at the moment.”

While this all might be confusing for compliance departments and technologists alike, one thing is clear: regulators are much less tolerant of blaming third parties, as Heartland’s Richard Carr did. The Office of the Comptroller of the Currency (OCC), which has some of the strictest requirements around security management, says in guidance for banks managing third-party relationships that it “expects a bank to practice effective risk management, regardless of whether the bank performs the activity internally or through a third party. A bank’s use of third parties does not diminish the responsibility of its board of directors and senior management to ensure that the activity is performed in a safe and sound manner and in compliance with applicable laws.”

In the UK, the Financial Conduct Authority has told *WatersTechnology* that the buck stops with firms and that the cloud providers shared responsibility model is fine, but it’s not enough.

Nausicaa Delfas, executive director at the regulator, recently told *WatersTechnology* that regulators consider cloud to be another form of outsourcing, and that the regulated firm remains responsible for the security of the data.

Authorities are also increasingly concerned about the potential systemic risks of cloud—if AWS experiences an outage, what would happen if many too-big-to-fail banks are using them for critical functions? The emergence of more cloud providers and solutions has spread the risk around, but smaller vendors may still be relying on the same providers. The Bank of England’s *Future of Finance* report released on June 20 says

that AWS and Microsoft account for nearly half of all revenues from public cloud infrastructure.

Concentration risk should form part of the consideration of vendor relationships, said Lee Rubin, counsel at global law firm Pillsbury Winthrop Shaw Pittman.

“So while we are expanding our outsourcing strategy, ultimately the concentration risk below that might still be there. This is particularly important for financial services firms, which are highly regulated and need to ensure that if a provider goes down, the bank isn’t going to fall over,” said Rubin, who spoke on the same panel as Walsh at the London conference.

“Banks have to know their full subcontractor chain and do risk assessments on that, rather than just relying on their prime contractors to satisfy regulatory obligations,” said Rubin.

Starting with Standards

This landscape of complex vendor relationships and overlapping rules can be overwhelming, but experts say firms can start by looking at what standards are there to provide guidance.

“Guess what? Cloud vendors have very limited liability when you look at their contracts. The standard is how much you have paid them in the prior 12 months—that’s it.”

Byron Collie, Goldman Sachs

Rubin said that while risk assessments and understanding the supply chain are important, standardization inspires confidence in customers that a partner understands the firm’s environment and has taken steps to mitigate risk.

“An example of this that we have seen is ISO 20718,” Rubin says. “This is two or three years old now, but at the time it was looked on as an industry standard for how vendors can handle and process data—a very hot topic with GDPR and everything. But more importantly, it can give a foothold for regulated industries



Mark Nicholson
Deloitte

to get comfortable with how information in the cloud is secured.”

Standards can be built into contracts to ensure the vendor obtains the compliance standard on day one, and to act as benchmarks when it comes time to renew the contract, he added.

However, an overreliance on standards provides a false sense of security, warns Bayuk. They are certainly useful as a starting point, but should be considered as guidelines, not as a definitive list of boxes to check for compliance.

“Regulators and standards bodies try to list controls that will minimize risk to an acceptable level in a generic way that could apply to everyone. But because everyone’s assets that they are managing with their computers are completely different, and the mechanism they use to allow their authorized users to access those assets are completely different, one single generic checklist is never going to cover your very specific application that you built internally or are managing in the cloud.”

Financial firms will take their own approaches to how they structure their third-party risk management process according to their size, activities and risk profile. The OCC notes in its guidance, for instance, that some banks disperse accountability along business lines, while others centralize management under departments like compliance or security.

But, the guidance says, however a bank structures this process, the board is responsible. Regulators will be placing more emphasis on operational resilience—assuming that a business will get hacked and must mitigate this impact with a focus on its systems—and placing more responsibility with senior management. Managing cloud resilience is complex: A firm must understand the cloud vendor, its third parties—and any third parties used by its third-party partners, otherwise known as fourth-party partners—the criticality of its applications and all the regulatory requirements.

Ultimately, to do it effectively, a firm needs governance, assessment and monitoring wrapped up in a clear strategy. And that strategy can no longer be passing the buck. **wt**

The Problem with Patents

As hardware ticker plant vendor Exegy sets its sights on a rival's competing use of FPGA technologies, Max recalls some hit-and-miss patent cases from the past two decades.



St. Louis-based hardware ticker plant and feed handler vendor Exegy is no stranger to lawsuits: No sooner had it launched the industry's first hardware ticker plant and announced plans to merge with HyperFeed Technologies in 2006, than the deal fell through and HyperFeed sued, claiming that Exegy misrepresented its intentions and tried to change the agreement.

That was 13 years ago—ancient history, by modern standards, though I still remember it like yesterday. Another old story that I remember well is that of the Wagner Patent—a patent covering electronic futures trading acquired by electronic bond trading platform eSpeed, which it then used to sue many others across the industry whose business involved electronic futures trading, from exchanges like CME and the New York Mercantile Exchange to execution software vendors like Trading Technologies. In its Q1 2003 revenues, eSpeed collected \$2.1 million in “fees from unrelated parties,” largely as a result of the patent, and said that it expected to raise \$40 million from royalties over time.

Why am I suddenly thinking about the Wagner Patent? Because Exegy is back in court—but this time as plaintiff, suing market data vendor Activ Financial for infringement, citing “unauthorized use of patented technology” to protect Exegy’s “significant investment in innovative technology.”

Exegy’s bone of contention is the use of specialist microprocessors called Field-Programmable Gate Arrays

(FPGAs) for processing of high-speed market data. The process of using these to speed up tasks previously performed in software is known as “hardware acceleration”—hardware can perform simple, repetitive tasks faster and more efficiently than software, which is better for tasks that require more flexibility and “thought.” Exegy has been using FPGAs as a core component of its hardware ticker plant since 2006—as has Activ in its MPU appliance since 2007.

Exegy’s suit lists 17 patents that the vendor believes Activ has infringed—all of which were issued after both vendors began using FPGA technologies, and three of which were issued within the last 12 months. In total, the US Patent and Trademark Office has issued 90 patents to Exegy. Activ, meanwhile, holds 31 patents, 12 of which specifically relate to FPGA devices. Exegy does not assert that Activ has stolen its technology, or deliberately copied anything; only that—at least, it would appear—by pursuing its own FPGA developments, the vendor has infringed its patents.

Other vendors that have developed hardware-accelerated solutions for high-speed data processing include NovaSparks, Enyxx, Celoxica, xCelor (now owned by Metamako), Solarflare, and Fixnetix, all of which use FPGAs to build solutions ranging from hardware appliance ticker plants and feed handlers, to network adapters and high-speed pre-trade risk checks. It’s not known whether any of these competitors have been approached by Exegy citing patent violations, though an initial search did not reveal any other lawsuits.

Exegy initially declined to comment and did not respond to specific questions by press time. Activ also declined to comment.

On the one hand, Exegy’s desire to protect its hard-earned intellectual property is completely understandable—and no doubt its customers who have invested in its technology also want to protect the advantage they perceive from using it. And let me be clear: I like the Exegy folks. But it will be equally understandable if other elements of the industry see a lawsuit that doesn’t cite examples of deliberate and malicious theft as an attempt to stifle competition, or—as in the case of the Wagner Patent—to collect royalties from others engaged in the same activities.

The problem with lawsuits is that they don’t just stifle competition; they also stifle innovation, because the industry becomes wary of adopting any new technology that might attract the attention of so-called “patent trolls,” firms that file or acquire patents for the sole purpose of suing others to make money from others’ “infringements.” Exactly a decade ago, a company called IXO/Realtime Data forced the industry to drop the FIX/FAST data compression standard like a scalding hot potato after suing every bank, broker, exchange and vendor known to be using it.

If an unknown entity could scare the industry into abandoning its money-saving compression efforts, who knows what damages Exegy may be able to extract, and by doing so force rivals to use less-efficient, alternative technologies instead of FPGAs. [wt](#)

Fighting the Bad Robots



Artificially intelligent algorithms are not infallible—in fact, as Jo explains, it's quite the opposite.

In her new book, *Invisible Women*, Carolina Criado Perez devastatingly breaks down hundreds of studies to show how sex-disaggregated data is utterly failing women. Because data is collected largely on men's experiences—and with those experience's assumed to be the default—women become the aberration.

Perez says this “data gap” on women's daily existence costs them in time, money, and even their lives, as they are left out of consideration in everything from urban planning, to the arts and sciences, and medicine. She includes an anecdote about how one Swedish town realized it was prioritizing men's needs when plowing snow, and began to plow for women instead, which led to a decrease in snow-related injuries and ultimately saved the town money.

Perez says in the opening chapters that this data gap is not malicious—it's mostly unwitting. But nonetheless, it has huge costs for society.

I thought about *Invisible Women* a lot last week while I was at OpRisk North America, a conference run by *Risk.net*. The topic of ethics in artificial intelligence dominated many of the panels and keynotes, and of course, like Perez's framing of how gender inequality is baked into our society, AI ethics is fundamentally a problem of data bias.

Bigoted AI has grabbed headlines in the mainstream press for some years. There are worries that facial recognition software will target—or fail to recognize—certain races; that black people will be flagged as more likely to commit crimes, even if they are individually

law-abiding, because algorithms have been taught that prison populations are mostly black; or that certain areas will be deemed poor choices for credit, thereby perpetuating redlining.

The damage that biased algos could wreak on financial markets has not been articulated as clearly, but, if OpRisk North America was anything to go by, finance is starting to grapple with the ethics of emerging technologies.

Parental Guidance

John Bottega, executive director of the Enterprise Data Management (EDM) Council, gave a presentation at the event headlined “Data Ethics in AI/ML.”

“Data is always a social phenomenon, and feeding a perfectly good algorithm biased data will make the algorithm biased.”

Bottega asked: “How do you hold a machine ethically responsible for its decisions? ... The regulators have really started to scratch the surface on this. And as we are more dependent on AI and ML, who is responsible for the outcomes of these bots and these engines? It goes back to the information that goes into these robots.”

Anyone training a bot is responsible for its ethics, as a parent is responsible for the ethics of a child, he added.

Bottega pointed to examples of banks and regulators that are looking into the subject. Some, like ING, have set up ethics steering committees. The Monetary Authority of Singapore has

produced a paper on principles for ethics in AI. And the EDM Council itself has a working group looking at data ethics.

He gave some ideas from a data management standpoint on how financial firms should look within their own organizations and form collaborations between the chief data officer and chief information security officer on this issue; they should encourage ethical behavior, understand the downstream effects of the data, know where it comes from and what it's going to be used for, and conduct ethical reviews.

“We are all rushing to the front of the line to do machine learning and AI without knowing the implications associated with it,” he said.

I think the issue is about more than just poor data management, though. To really tackle ethics in AI, we are going to have to change the way we think about technology completely. Collectively, we tend to assume that data—and science and technology in general—are inherently neutral, objective and reflective of truth to a greater or lesser degree. But experts are starting to say that these assumptions need to dissolve.

As the Rand Corporation put it in a report: “A better understanding of attitudes toward, and interactions with, algorithms is essential precisely because of the aura of objectivity and infallibility today's culture ascribes to algorithms.”

Data is always a social phenomenon, and feeding a perfectly good algorithm biased data will make the algorithm biased. Understanding this will go a long way to making sure the AI we use is more accurate. [wt](#)

What Is Your Problem?



The call of artificial intelligence and machine learning is alluring. However, Wei-Shen says they can be tough to deal with, especially when shooting at invisible targets.

The applicability of artificial intelligence (AI) and machine learning (ML) techniques in the financial space can be vague—they hold the promise of a panacea for some, but the results are often that of a sugar pill. We have seen it applied in the surveillance industry; used to draw out false positives in anti-money laundering processes; in scouring through social media on the lookout for signals and trends that could perhaps give asset managers an extra edge; and even in trying to predict and minimize outages in IT systems.

AI and ML are not new to the list of buzzwords in the financial world. These terms are now often flashed and spoken about as if they are the latest toy every child should have or the most sought-after fashion item everyone is raving about.

However, before jumping blindly into using AI and ML techniques, it's first important to distinguish the difference between the two. Put very simply, AI is the simulation of human intelligence by machines. ML, on the other hand, is a subset of AI, which uses statistical methods to help machines learn from experience.

Many conversations about how best to leverage AI and ML assume that the person on the other end already understands that difference, as well as its implications. And don't even get me started on deep learning. But while it is trendy to be seen as exploring various AI and ML methods, do you even know what you are doing?

Once the difference between the

two is understood and well established within the firm, it's on to the next step: what problem is there that could potentially be solved using AI or ML? Knowing what problem needs solving is something that panelists at the Asia Pacific Financial Information Conference, held on June 12 in Hong Kong, agreed should be determined early on.

Elvie Lahournère, digital and innovation director for Asia-Pacific at Natixis Bank, said her firm is not using AI just for the sake of it.

Where Does it Hurt?

"If there is no pain point, then there is no need to develop a solution, and hence no need for the use of AI," Lahournère said. "Instead of asking, 'How am I using AI?' I would just tell you what

data, whether it be between the different communications with its employees, or with its customers. "It's very difficult for us to see it and it's difficult for us to action this data. What we're developing with our data scientist team is a 'friendly' way of being able to first visualize it, and, secondly, give a recommendation of who to go to if you want to, let's say, build something inside the company, or who to go to if you want to reach out to a certain company," she said.

Meanwhile, Kerr Hatrick, executive director and quantitative strategist at Morgan Stanley Asia, who also spoke on the panel, explained that the bank is figuring out how to use ML techniques to suggest which algorithms to use to trade equities under certain market conditions.

"We are also interested in looking at the problem of whether last night's stock price, which jumped up, is going to continue, or whether it's going to fade away in the morning. We're looking at the problem of whether there are too many people saying the same thing in the market, and we're looking to use machine learning techniques to identify that," he said.

The bank is exploring a few other areas in which ML could help it be more efficient and effective to its clients.

Let's face it: AI and ML are not a solve-all for every problem or potential problem out there. However, they certainly can help, especially once the problem to be solved is identified. At the end of the day, they are both just another tool in the toolkit—so choose wisely. **wt**

“
AI and ML are not a solve-all for every problem or potential problem out there.... At the end of the day, they are both just another tool in the toolkit—so choose wisely.

solution we're trying to develop and what pain point we're trying to kill. And it so happens that AI is—or might be—one of the solutions we are using; but if it doesn't need AI then we won't use it.... This is something we need to be careful with, otherwise we are promising something that will never happen."

She added that Natixis identified two projects dealing with data as pain points. The bank has a lot of internal

Human Capital



Cboe Nabs Inzirillo for US Equities

Chicago-based exchange operator Cboe Global Markets has named US equities trading vet Adam Inzirillo head of US equities in New York. Inzirillo will oversee product development and strategies for growing Cboe's US equities business globally.

Inzirillo was poached from Bank of America Merrill Lynch (BAML), where he spent nearly 10 years, and served as head of order routing and execution products. Additionally, he acted as a director of the Members Exchange and played a critical role in BAML's investment.

His previous roles include head of broker-dealer business development at UBS Asset Management, and memberships in the Cboe Equities Advisory Committee, Nasdaq Quality of Markets, IEX Quality of Markets, and Level ATS Board.

Nations to Advise on Predata's Nation Indexes

Predictive analytics platform Predata has added to its advisory board Scott



Nigel Brooks



Vincent Harrison

Nations, president and chief investment officer at NationsShares, the exchange-traded funds arm of Nation Indexes, a developer of volatility and option-strategy indexes.

Nations will help to expand Predata's offerings among the buy side and sell side. He joins Predata's finance advisory board along with other industry figures, including Kyle Bass, Neal Brady, Ashby Monk and Emmanuel Derman.

Symphony Hires Global Head of Account Management

Craig Butterworth has joined messaging platform provider Symphony as global head of account management. He will play an integral role in the company's digital transformation projects and work closely with clients and shareholders.

He was previously at Nomura, before being let go in a major round of cuts at the bank's London location earlier this year. During his five-year tenure at Nomura, Butterworth held the title of global head of client ecosystem, leveraging technology, market structure and regulatory change to improve franchise profitability.

Lee Confirmed as SEC Commissioner

The US Senate has confirmed the appointment of Democrat Allison Lee to the Securities Exchange Commission (SEC), replacing the seat previously held by Kara Stein. Lee fills the last open seat on the five-member commission.

Most recently, she was a corporate governance consultant at Congress Park Consulting. Prior to that, she served as counsel to Stein, who left the agency in January. From 2015 to 2018, she also worked as an enforce-

ment attorney in the SEC's Complex Financial Instruments Unit.

HKEX Names Brooks Head of Infrastructure And Operations

Hong Kong Exchanges and Clearing (HKEX) has appointed Nigel Brooks as its head of infrastructure and operations. Along with leading initiatives in IT infrastructure and application systems, Brooks will manage information security and hosting services, and report to chief technology officer and deputy group chief information officer Richard Leung in Hong Kong.

Brooks joins HKEX following his most recent role as a strategic adviser on information technology at the Australian Securities Exchange.

Avelacom Appoints Global Sales Head to Drive Expansion

Avelacom, a provider of IT infrastructure and connectivity solutions for financial services, has promoted Vincent Harrison to head of global sales, a newly created role. Harrison joined the company in September as vice president of strategic accounts.

He will drive business growth and further develop the company's low-latency network across the Americas, EMEA and Asia-Pacific regions amid global expansion plans.

Harrison spent six years in his last role at Perseus Telecom (now GTT), first as vice president of strategic accounts then as senior sales director.

Sionic Chooses New CEO

Newly merged firms Catalyst Development and Sionic Advisors have announced Craig Sher as CEO while rebranding as a single global consulting firm for financial services called Sionic. The two companies



Scott Nations



joined forces in April. Cher will be based in London.

He served as CEO of Sionic Advisors for nearly five years. Before that, he was CEO of Stearclear USA, a mobile transportation and ridesharing app, in New York.

Additionally, former Catalyst CEO Andrew Middleton will become an executive director on the Sionic board, and will lead a portfolio of senior banking client relationships.

Pico Names Wheeler EMEA Chief Commercial Officer

Pico, a data, infrastructure and technology provider, has announced Emma Wheeler will join the company as chief commercial officer in the EMEA region. As a member of the global senior executive team, she will report to Pico CEO Jarrod Yuster and work alongside Michael Verkuil, global head of sales, and Marc Hineman, chief administrative officer.

Wheeler hails from Interactive Data, where she served as director of specialist sales in Europe. Prior to that, she navigated various roles at Thompson Reuters (now Refinitiv), including head of new business and lead specialists and head of specialist sales, banking and research.

Former Deutsche Bank Chief of Staff Joins Capco

Capco, a technology and management consultancy for financial services, has hired Olaf Clemens as a partner in its Frankfurt office. Clemens will oversee digital transformation projects and help to expand Capco's reach.

He has worked at Deutsche Bank for the past nine years in several roles, including chief of staff, reporting directly to former CEO John Cyan, executive assistant of the audit committee and risk committee, and specialist in corporate governance.

Prado Joins Finos Board

Global head of client, banking and digital channels technology across

SYMPHONY CSO JUMPS SHIP FOR HEALTH CARE INDUSTRY

Lawrence Miller, former chief security officer at Symphony Communication Services, has left the company to serve as chief technology officer at Signant Health, a technology and data provider for clinical researchers.

At Symphony, Miller led the security program, oversaw platform operations and directed the firm's regulatory and government

affairs. Prior to joining Symphony, he worked at BlackRock for more than a decade in both New York and San Francisco, where the development services team for the firm's asset management platform Aladdin reported to him.

He also worked closely on the creation of Symphony and was a board observer.

Prior to joining BlackRock, Miller led



Lawrence Miller

development for one of the electronic trading platforms at JP Morgan Chase.

He graduated from the University of Chicago with a bachelor's degree in physics.



Grant Wilson

the capital markets at Royal Bank of Canada (RBC), Kim Prado, is joining the Finos board of directors.

Prado has spent the past 13 years leading RBC's technology initiatives. Her previous roles include acting as a consultant on the government desk at Chase Securities and as an associate business analyst at Deutsche Bank.

Mosaic Smart Data Taps Finance Prof Cont for Data Science

Data management and analytics provider Mosaic Smart Data has hired Rana Cont, a professor of mathematical finance at Oxford University, as scientific adviser. He will help guide the vendor's research and development activities, work with its data science team to make new technologies available to customers, and run projects at Oxford University in collaboration with Mosaic.

At Mosaic, he reports to CEO and founder Matt Hodgson.

RFA Adds Two for European Client Relations

Richard Fleischmann and Associates (RFA), a provider of IT, financial cloud and cybersecurity services to the investment management industry, has announced two strategic hires to its European leadership team.

Jon Melville joins as head of client relations in Europe, where he will work with clients to ensure business goals and technology strategies remain

aligned and that partnership with RFA is transparent. Melville was most recently head of sales at Our IT Department, a London-based outsourced IT services firm.

Amar Shah joins to head client services in Europe. Shah has held C-suite roles in several alternative funds. Prior to joining RFA, he was head of IT strategy and transformation practice at consulting firm Holland Mountain.

Neptune Networks CEO to Step Down

After three years as CEO of the data and analytics provider Neptune Networks, Grant Wilson is leaving to focus on his role as a managing partner at Etrading Software, a London-based IT consultancy.

During Wilson's tenure, Neptune grew its client base to near 30 sell-side and 50 buy-side firms, with a combined \$26 trillion in assets under management.

REGIS-TR Taps Steimann as CEO

European trade repository REGIS-TR has named Thomas Steimann as CEO, subject to regulatory approval. He succeeds Elena Carnicero.

Steimann joins from Iberclear, the Spanish Central Securities Depository and subsidiary of Bolsas y Mercado Españoles, which operates Spain's stock markets. There, he advised on strategic projects in domestic and cross-border post-trade securities services. [WI](#)



Thomas Steimann

Adopt an Innovation Mindset

**Half of asset managers are
turning to emerging technology
to drive their growth strategies**

Learn more at [statestreet.com/ideas/
articles/routes-to-growth.html](https://statestreet.com/ideas/articles/routes-to-growth.html)

There is no representation or warranty as to the current accuracy, reliability or completeness of, nor liability for, decisions based on such information and it should not be relied on as such. The whole or any part of this work may not be reproduced, copied or transmitted or any of its contents disclosed to third parties without State Street's express written consent.
State Street Corporation, One Lincoln Street, Boston, MA 02111-2900

Based on results of the State Street 2019 Growth Readiness Study, which captured insights from more than 500 asset managers, asset owners and insurers

©2019 STATE STREET CORPORATION 2564855.1.1.EMEA.INST Expiration Date:6/19/20



Scale operations and increase revenues



Our customers tell us that they need to use transformative digital strategies to remain relevant in today's challenging financial landscape. Strategies that will allow them to improve operational control, reduce costs, build new revenue streams, mitigate risk and comply accurately with regulation.

To help you make the journey towards digital transformation, we provide a range of solutions for the transaction lifecycle. AI and Blockchain technologies are now embedded in all of our solutions, which are also available in a variety of deployment models.

Digital transformation. Reaching the summit just got a little easier.

info@smartstream-stp.com
smartstream-stp.com



CONTROLS



REGULATIONS



REVENUE



RISK