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Issue 4 September 2016



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## New & outdated technologies

In the last decade, financial services has seen the near complete automation of the back office, the electronic management of order flow in OMS systems, the electronic management of trading in EMS systems, and even compliance and regulation software. In this month's edition, David Aferiat of Trade Ideas discusses the next wave in this progression – the use of machine applications to the front office (p.13).

Our analysis piece looks at the growing opportunity costs of running outdated technology. Mike Maltby, head of Market Strategy, Eagle Investment Systems, argues that legacy systems will become too much to bear for an asset management industry in transition (p.15).

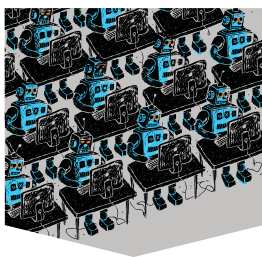
In addition, Bryan Dori and Katarina Hauben of Archer look at how to improve firm performance through technology. They say that it is more critical than ever that investment managers shed their misperceptions and honestly assess opportunities for operational improvement (p.14).

Finally, Guy Warren of ITRS Group discusses data lakes and data streams. He says that the availability of these new ways of storing and managing data has created a need for smarter, faster data storage and analytics tools to keep up with the scale and speed of the data (p.18).

Please don't hesitate to get in touch with any questions or suggestions on: [a.lyudvig@pageantmedia.com](mailto:a.lyudvig@pageantmedia.com)

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## Fund Updates

## Ativo sees major benefits from new IT systems

Ativo Capital Management, a SEC registered investment advisor with more than \$1.5bn of assets under management, has heavily invested into their back and front office systems, in order to sustain growth and go forward with a legacy transformation.

Ativo is already seeing major benefits from the new systems, according to Adan Galvan, senior portfolio manager and head trader at Ativo. "We want to make sure we have modern technology that allows us to take advantage," he said.

At the end of last year, the fund manager brought on four new vendors to handle the transition into a more robust infrastructure: Advent for the back office; Eze Castle for the front office; Axioma and FactSet for risk management and factoring.

For instance, Galvan said that one of the big goals in switching to Advent and to Eze was to reduce some of the complexities with regard to a number of vendors as well as to streamline the entire process of reconciliation and trading.

"We've outsourced some of the data management that used to be in-house. The benefits are immense. The outsourcing part of it allows us to save a fair amount of man power and hours of gathering data from multiple sources. It allows us to focus our energies at the problem areas rather than the data gathering process," he told *Fund Technology*.

From an operational perspective, Patrick Cunningham, Operations Manager at Ativo, said: "As we're able to gain new clients and increase the assets under management, we are able to utilize and leverage technology and automation in a more efficient manner that we could with personnel."

Ram Gandikota, senior portfolio manager and research director, added that technology is a very big component for Ativo to function smoothly.

"Being systematic and being quantitative, we depend very heavily upon data. Along with that, we need to have right systems to scale our operations on the trading side, on the accounting side, on the management side, as well as the portfolio management side. In addition, on the research side, we have to be able to process all this information on a daily basis," he said.

According to Gandikota, a lot of the tools that Ativo had in-house were built using legacy systems like C++ and old database technology: "We are constantly innovating and constantly investing heavily on the IT side."

Gandikota added that the firm is trying to stay ahead of the technology curve and is trying to improve everything from the back office to the front office and to constantly leverage new software.

"The next big investment for us is to pick up more data. There is so much more data that is



*Adan Galvan,*  
Senior portfolio  
manager and  
head trader,  
Ativo

now available like custom feed, custom data and packages," he said.

## FinTech

## Xenomorph gets HSBC funding

Xenomorph, a provider of data management technology to banks, investment managers and insurance companies, has announced a significant new funding agreement from HSBC.

James Patterson, HSBC's Area Director for Business Banking in the City of London, said: "It was critical that Xenomorph had access to reliable financing. Our team was able to provide this support with a flexible package and it is hugely rewarding to see the business already winning new clients."

"The funding comes from our commitment to lend £2.5bn to SMEs this year and Xenomorph is a brilliant example of how this can be used to support the booming London fintech sector," he said.

The funding has enabled the business to accelerate global go-to-market plans for its TimeScape EDM+ financial analytics and data management platform.

TimeScape EDM+ is designed to manage the complete lifecycle of financial data across integration, derivation, storage, validation, cleansing, audit, analysis and distribution.



**That investment is now reaping significant dividends and benefits for our clients and for us"**

**Brian Sentance, Xenomorph**

With HSBC's support, the company is now in a position to market the new software across the globe and has already achieved successful contract wins.

Brian Sentance, CEO at Xenomorph, said it has taken a significant amount of time and business and technical expertise to successfully launch TimeScape EDM+.

"That investment is now reaping significant dividends and benefits for our clients and for us. Data management remains a crucial function for all capital markets firms – especially in light of the regulations our clients and the market need to address," he said.

"TimeScape EDM+ supports trading, investment and risk management operations through its flexible and high-performance architecture, it also comprehensively addresses regulatory-driven initiatives such as the Basel Committee's Fundamental Review of the Trading Book (FRTB) and BCBS 239. HSBC's



support proves to be a great help and accelerator as it has allowed us to continue to invest in the success of the company," he added.

## Trading

# ISDA and IHS Markit launch ISDA Amend 2.0

The International Swaps and Derivatives Association (ISDA) and IHS Markit have announced the launch of ISDA Amend 2.0, a free service for buy-side firms that allows users of Counterparty Manager to amend multiple ISDA Master Agreements and share regulatory representations.

ISDA Amend 2.0 includes new functionality to allow market participants to implement the new margining requirements for non-cleared derivatives, as well as the ability to inform counterparties about elections they have made under the ISDA Resolution Stay Jurisdictional Modular Protocol (ISDA JMP).

"The sheer volume of documents, coupled with the disparate deadlines for posting initial and variation margin on uncleared derivatives, presents a huge challenge for global financial institutions," said Darren Thomas, managing director and head of Counterparty Manager at IHS Markit.

"ISDA Amend 2.0 has been designed to manage the complexity of these multijurisdictional regulations. The service will leverage data provided through previous ISDA Amend protocols with full connectivity to IHS Markit's end-to-end collateral repapering solution to digitize, negotiate and amend collateral agreements on Counterparty Manager," he said.

Initially launched in August 2012, ISDA Amend is a service for over 7,500 buy-side firms and corporates, representing over 60,000 legal entities that are currently subscribed to the service.

"ISDA and IHS Markit have collaborated on ISDA Amend for over five years, and it has proved hugely successful in helping market participants gather and share data required by the Dodd-Frank Act and European Market Infrastructure Regulation," said Katherine Darras, ISDA's general counsel.

"ISDA Amend 2.0 broadens that offering, and will help firms implement the non-cleared derivatives margin rules, as well as help market participants provide information to their counterparties and make elections related to their adherence to jurisdictional modules under the ISDA Resolution Stay Jurisdictional Modular Protocol," she said.

Jurisdictions around the world are implementing regulatory margin requirements for non-cleared derivatives transactions based on the framework published by the Basel Committee on Banking Supervision and the International Organization of Securities Commissions.

The ISDA Regulatory Margin Self-Disclosure Letter on ISDA Amend is intended to assist market participants with the exchange of the necessary informa-



**Above**  
ISDA Amend 2.0 has been designed to manage the complexity of multi-jurisdictional regulations

tion to determine if, and when, their trading relationship will become subject to regulatory margin requirements for non-cleared derivatives in Canada, the European Union, Japan, Switzerland and the US.

The letter will be expanded to cover additional jurisdictions that may be subject to the margin requirements in due course.

In addition, the ISDA 2016 Variation Margin Protocol, which will be available on ISDA Amend in October 2016, is designed to help market participants comply with new rules on margin for non-cleared swaps, by providing a scalable solution to amend derivatives contract documentation with multiple counterparties.

The Protocol addresses documentation changes necessary to comply with the variation margin requirements that will apply to a large number of market participants in various jurisdictions from March 2017.

The ISDA JMP on ISDA Amend allows market participants to quickly and efficiently inform their counterparties about the elections they have made when adhering to the jurisdictional modules of the Protocol.

This includes the capacity in which they have adhered (ie, as an entity subject to applicable regulations, as a counterparty to these entities, or both), the counterparties they have amended financial agreements with, and the underlying funds they have adhered on behalf of.

The JMP enables market participants to comply with new regulations aimed at ensuring the cross-border enforceability of stays on contractual termination rights.

The ISDA JMP will have separate jurisdictional modules, each designed to closely reflect the requirements in a particular jurisdiction.

Each jurisdictional module will contain the operative provisions necessary for adhering parties to comply with applicable requirements.

The ISDA JMP on ISDA Amend initially covers the

UK (PRA Rule) Jurisdictional Module to the ISDA JMP, which enables firms to comply with UK Prudential Regulation Authority requirements.

Functionality for other jurisdictional modules will be launched in due course.



*Mark Hemsley,*  
CEO, Bats  
Europe

## Exchanges & ATSs

# Bats LIS announced

Bats Europe has agreed to license BIDS Trading, the largest block trading ATS by volume in the US, to launch Bats LIS, a new block trading service for the European equity market.

Mark Hemsley, CEO of Bats Europe, said: "We've listened to the buy-side community in Europe and understand their unique challenges in trading large blocks of stock and we believe that our new LIS service will help them better execute their large in scale trading activity."

"A complement to our existing order book offerings, Bats LIS provides the buy-side with a Mifid II compliant platform that offers IOI protection tools and full control over their IOI until execution to protect against information leakage," he said.

Bats LIS (Large in Scale), which is subject to regulatory approval, is a large in scale indication of interest (IOI) negotiation and execution platform that will allow market participants to negotiate large blocks in European equities without revealing their intentions to the wider market.

Bats LIS will leverage BIDS' software, BIDS Trader, and buy-side channel distribution, combined with Bats' infrastructure required for trade execution, clearing and settlement.

Buy-side traders interested in utilizing Bats LIS can do so in a manner in which they are accustomed to through their existing BIDS Trader GUI.

Direct participants of the Bats Europe Exchange can also connect to Bats LIS via their existing Bats physical connections.

Bats LIS is designed to provide buy-side traders with protection against information leakage surrounding their IOIs through several unique features.

First, Bats LIS provides a designated broker model which allows buy-side traders to maintain their important relationships with their brokers.

It also brings together the block flow of both the buy and the sell-side, allowing for greater crossing opportunities.

In addition, IOI disclosure and interaction is controlled by the buy-side dealer via customizable trading tools, including minimum block size and counterparty score-carding and filtering based on past trading behavior.

Tim Mahoney, CEO of BIDS Trading, said: "Global clients want global solutions. Partnering with Bats Europe allows each of us to bring our core strengths together to provide another piece of the global block trading market to our mutual clients in an efficient manner."

"Maintaining the important relationships between the buy-side and their brokers and successfully integrating the flows of each on one platform have been the keys to BIDS' success in the US. Partnering with Bats Europe allows us to extend those benefits under the umbrella of the largest recognized investment exchange in Europe," he said.

Under Mifid II, which is scheduled to come into effect on January 3, 2018, large in scale trading will benefit from one of the waivers enabling market participants to negotiate trades without the need for pre-trade transparency, thus protecting firms wishing to conduct business in large blocks from unfavorable market movements based on information made available in the market.

Bats Europe currently has a suite of order book offerings designed to support standard and larger-size trades and Bats LIS will round-out Bats Europe's service offering by providing customers with a solution to trade large in scale trades.

Subject to regulatory approval, Bats Europe will commence a phased go-live for Bats LIS by the end of the year. Bats LIS will have a competitive pricing model, which will be transparent and publicly available. Pricing details will be shared closer to launch date.

All securities admitted to trading on Bats Europe will be available for trading on Bats LIS, representing 5,500 securities across 15 major European markets.

Bats Europe is wholly owned by Bats Global Markets, a global financial markets operator.

## FinTech

# SimCorp Dimension 6.0 released

SimCorp, a provider of investment management solutions and services for the global financial services industry, has released version 6.0 of its integrated investment management solution, SimCorp Dimension.

The new release introduces a number of new modules and enhancements across front, middle and back office.



**Operating in a complex world with tough competition, investment managers need up-to-date, integrated solutions to operate efficiently and gain a competitive edge"**

**Marc Schröter, SimCorp Product Management**

A new module, 'General Reconciliation – Static Data' adds to the recently launched Reconciliation Manager, which was introduced with Release 5.9 as a central hub for all reconciliation processes with full integration to the system's IBoR (Investment Book of Record).

The new module facilitates the reconciliation of static data, for example the maturity date of a bond or the expected dividend on an equity, against data reported by a third party.

Within the performance area, new functionality has been added to SimCorp's Factor-based FIPA (fixed-income performance attribution) solution.

The solution enables you to monitor the results of decisions made on different levels of an investment process and has now been strengthened with better instrument coverage, support for exposure-based performance for derivatives, and the ability to view contribution to FIPA effects, all with the aim of providing more analytical insight.

Other highlights in the release include numerous enhancements within compliance, portfolio management and trading, including new functionality for FX hedging and simulation, and improved OTC simulation workflows.

In addition, new version includes Private Debt module that adopts a completely new and flexible structure for efficient front-to-back handling of syndicated bank loans traded in the secondary market as well as bilateral or direct loans with advanced commitment-based agreements.

SimCorp maintained interface to Omgeo's OASYS US Domestic trade allocation and acceptance service that communicates trade and allocation details between investment managers and broker/dealers.

SimCorp Dimension 6.0 also includes IFRS 9 support – new functionality in the Investment Accounting Manager, which completes the set-up needed for full support of IFRS 9, phase 1.

Mark Schröter, SVP and head of SimCorp Product Management, said: "Operating in a complex world with tough competition, regulatory burdens, and increasing amounts of data, investment managers need up-to-date, integrated solutions to operate efficiently and gain a competitive edge. Release 6.0 of SimCorp Dimension shows our commitment to providing exactly this in one single dynamic system."

## Trading

# Liquidnet unlocks hidden corporate bond liquidity

Liquidnet, a global institutional trading network, has launched Fixed Income Targeted Invitations, a tool to seek latent liquidity across its critical mass of institutional participants, for the US and EMEA.

Targeted Invitations allow qualifying members of Liquidnet's Fixed Income Dark Pool to anonymously send invitations to trade to a select number of partici-



**Above**  
Liquidnet  
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EMEA

pants who recently had the opposite side of the sender's order.

In addition, the functionality gives traders the option to seek opposite liquidity in multiple bonds of the same issuer simultaneously with minimum effort.

The result is a new source of previously unavailable hidden or dormant liquidity for buy-side traders.

"Targeted Invitations for our equities dark pool was a global success, reaching \$1.7bn traded in just nine months. But the credit markets have an even greater need for this type of innovation," said Seth Merrin, founder and CEO of Liquidnet.

"Technology is the best solution for traders restricted by the inadequate liquidity that hinders their ability to capture and preserve alpha," he said.

This enhancement follows a June 2016 TABB Group report that found asset managers are increasingly adopting all-to-all and dark protocols in fixed income, especially in less liquid issues.

These findings led TABB Group to estimate that over the next 3-5 years, as much as 5-10% of US and European corporate bond volume could be executed using dark protocols.

Constantinos Antoniadis, global head of Fixed Income at Liquidnet, said: "It's clear that corporate bond traders are often confronted with a trade-off between accessing scarce liquidity and information leakage."

"Targeted Invitations ensure that traders directly, yet anonymously, interact only with other buy-side firms that previously had the other side of their order. And it achieves this in a very targeted and protected manner," he said.

"The new functionality, which was designed with input from several asset managers in our Member community, is seamlessly incorporated into the Liquidnet dark pool workflow. As of today, the Liquidnet Fixed Income dark pool is in use by more than 430 traders in the US and EMEA."

The Targeted Invitations functionality is currently available for all of Liquidnet's US-based fixed income

clients and is being steadily rolled out to its European client base over the coming weeks.

As of July, 2016, Liquidnet's Fixed Income Member community consists of 196 firms.

### People moves

## DTCC appoints Lisa A. Pollina to its Board of Directors

The Depository Trust & Clearing Corporation (DTCC), a post-trade market infrastructure for the global financial services industry, has added Lisa A. Pollina, former Vice Chairman for RBC Capital Markets, a division of the Royal Bank of Canada, to its Board of Directors.

Pollina has joined the Board's Audit Committee, Finance/Capital Committee & Risk Committee. She joins the DTCC Board of Directors following her role as Vice Chairman for RBC Capital Markets.

Previously, she was the senior advisor to the CEO for RBC International on strategic corporate development actions globally, employing over 18,000 and serving clients in more than 100 countries.

Before RBC, Pollina was the Global Financial Institutions Executive at Bank of America with responsibility for a global corporate banking division serving clients in Asia, EMEA, Latin America, Canada and the US.

Pollina is an Appointee to the Federal Reserve Bank of the US's Working Group on Global Markets and has served multiple financial industry organizations including as a member of the Financial Services Roundtable in Washington DC serving as Vice Chair of the Lending and Leasing Policy Committee for the US.

She currently also serves on the Boards of Two Harbors Investment Corporation, where she is Chair of the Risk Committee, and that of Oliver Wyman.

"We are proud to have Lisa join the DTCC Board as its newest member," said Robert Druskin, chairman of DTCC's Board of Directors.

"Lisa brings a unique and important perspective based on her deep experience in financial services as well strong leadership capabilities. She will be an important voice in working with us to shape the strategic direction of the firm as we continue to help the industry navigate through a challenging economic and regulatory environment," he said.

The Board provides direction and oversight for DTCC in the interests of its diverse, global stakeholders, while promoting safety and stability across the financial markets.

It is composed of 20 directors: 12 are representatives of clearing agency participants, four are non-participant directors, two are designated by DTCC's Series A and Series B preferred shareholders, and two are DTCC's Chairman of the Board and its President and CEO.



### Exchanges & ATs

## ICE sells Creditex's US hybrid voice broking business to Tullett Prebon

Intercontinental Exchange (ICE) has agreed to sell certain US voice brokerage operations of Creditex to Tullett Prebon, one of the world's leading interdealer brokers.

ICE will retain the electronically traded markets and systems, post-trade connectivity platforms and intellectual property of Creditex, which serves the global credit default swaps (CDS) market.

The terms of the transaction were not disclosed and the transaction is subject to FINRA approval.

"After developing the solutions to enable the CDS market to become increasingly standardized, electronic and cleared, we are organizing our global credit derivatives operations around the areas best aligned with our strengths across clearing, data and technology," said Krishan Singh, President of ICE Swap Trade.

**Tullett Prebon is a strategic buyer and leading operator of brokered OTC markets that will enable the team to transition seamlessly"**

**Krishan Singh, ICE Swap Trade**

"Tullett Prebon is a strategic buyer and leading operator of brokered OTC markets that will enable the team to transition seamlessly while providing continuity of service to our voice brokerage customers. We are excited about continuing to grow Creditex's innovative electronic trading and related technologies, along with our CDS clearing offerings in response to customer requirements," he said.

With offices in 24 countries, Tullett Prebon operates voice, hybrid, electronic, volume matching, algorithmic matching and risk mitigation platforms.

The acquisition adds to Tullett Prebon's deep pool of broking expertise, ahead of its anticipated acquisition of the ICAP global hybrid voice broking and information business later this year.

John Phizackerley, CEO of Tullett Prebon, said: "This is another great deal for Tullett Prebon and demonstrates that we continue to take advantage of the profound changes in the industry to pursue attractive opportunities."

"For complex products where pricing does not lend itself to automation, clients find value in having ex-



**Lisa A. Pollina,**  
Board of  
Directors,  
DTCC



pert brokers, supported by technology, available to discuss trading ideas and provide insights on the market environment and sentiment. The acquisition of this high quality CDS team is an important addition to our business and is consistent with our strategic aim to grow in specialist areas," he said.

## Trading

# FIX announces post-trade guidelines

FIX Trading Community, the non-profit, industry-driven standards body, has released new guidelines for the use of FIX in post-trade processing for multi asset classes and a common post-trade framework.

Dave Tolman, Principal Services Analyst, Itiviti, co-chair of Global Post Trade Working Group, said: "The focus of the Global Post-Trade Working Group is to improve buy-side post-trade processing."

"With the release of these guidelines and the use of FIX, they will benefit from lower implementation and maintenance costs, improved ease of use, greater flexibility and, ultimately, lower risk," he said.

The FIX Global Post-Trade Working Group has been focusing its efforts on how best to resolve the inefficiencies in post-trade workflow for a number of years.

Following on from its work with cash equities, the working group assessed a number of different asset classes and how variations in workflow can create issues.

Frequent trade breaks and slow resolution times can have a commercial impact as well as have adverse effects on client relationships.

By publishing a standardized and detailed set of guidelines for futures, equity swaps and FX equity options, FIX is addressing these issues by providing a common workflow with minimal differences across asset classes, thereby allowing connection to one or more third parties and/or intermediaries with the same protocol.

With these guidelines, market participants will be able to reduce risk and have the ability to leverage off their current FIX infrastructure in place for trading and, by doing so, minimize implementation time and costs.

Scott Atwell, manager FIX Trading and Connectivity, American Century Investments, said: "As a result of the industry collaboration via the FIX Global Post-Trade Working Group, American Century Investments is receiving FIX 4.4 Confirms for approximately 90% of all of our non-US equity confirmations, and the benefits include efficiency gains, improved straight-through processing, and quicker identification of issues, all of which provide significant risk reduction and cost savings. It is great to see the group's efforts extending those benefits and standardization to additional asset classes."

## Data

# CLS, Quandl to distribute aggregated FX trade reports

CLS Group, a provider of risk mitigation and operational services for the global FX market, and Quandl, a data platform for economic and financial data, have made standardized and aggregated FX trade reports available via subscription.

David Puth, CEO of CLS, said: "This is the first time we have made this level of aggregate data readily available to the market. It is a key source of trade information will allow a broad range of users to get a clear picture of FX market activity across major currency pairs and products."

"I am pleased to be working with Quandl, which has a distinct offering for delivering key financial data to the market," he said.

Data will be made available for subscription in the form of three separate reports, showing activity by hour, day or month.



**With the volume and coverage from CLS now available, we are delivering a dataset that changes the game in the quantitative analysis of an entire asset class"**

**Tammer Kamel, Quandl**

These reports will contain trade volume in terms of both the number of trades and the total value in USD. The data will be aggregated by trade instrument (spot, swap and outright forward) and currency pair.

Quandl brings together millions of financial and economic datasets from hundreds of data publishers onto a single data platform. The data is then made available in a variety of formats including Quandl's website, application program interfaces, and dozens of analysis tools, saving analysts time, effort and money acquiring financial and economic data.

Tammer Kamel, founder and CEO of Quandl, said: "We are delighted to be able to offer CLS's data on Quandl. These datasets address a large gap for quantitative and technical FX traders, who have never had access to such a comprehensive picture of trading volume for the global FX market."

"With the volume and coverage from CLS now available via Quandl's API and platform, we are delivering a dataset that changes the game in the quantitative analysis of an entire asset class."

## FinTech

## Trillium unveils Surveyor 2.0

Trillium, a proprietary trading and trading technology company, has released an enhanced version of its compliance product Surveyor.

Launched last year, Surveyor is the first and only product to detect market manipulation by comparing trading orders and executions against full depth-of-book market data.

Barry Schwarz, Trillium CEO, said: "We are making it easier for firms to review their order and trade activity with more detail and in less time. The new release is a must-see for compliance professionals who want the best tools available."

Surveyor 2.0 adds the following new major features: an auto-generated natural language story panel which explains why an event was flagged and how to interpret the accompanying graphical data; a position curve graphically plotting each account's long or short position alongside its trading activity; an all-new front end user interface designed by software architects Moment Design; and a powerful order data archive which allows users to query their entire library of quote and print data, with more than 20 filters to assist in generating and exporting data reports for internal or external regulatory inquiries.

Surveyor 2.0 is offered as a cloud-based or deployed solution. A free version of the software, which provides quote-by-quote historical order book data, is available as an iPhone App or through a desktop internet browser.

"Surveyor drastically reduces the man-hours that our clients spend on trade surveillance," said Trillium CCO and general counsel Michael Friedman.

"The new features in this version are the result of nearly a year of further design and engineering work, incorporating client feedback and the latest enforcement precedents to create an even better tool for our clients," he added.

## Exchanges &amp; ATSS

## NEO Exchange implements OneTickCloud

Aequitas NEO Exchange has implemented OneTickCloud, a data and advanced analytics service based on OneMarketData's flagship platform, OneTick.

"OneTick's comprehensive analytics product was an obvious solution for us to gain visibility into market microstructure and allow us to analyze data and demonstrate the value we bring to the Canadian markets," said Karl Ottywill, COO at



**Above**  
Aequitas NEO Exchange has implemented OneTickCloud, a data and advanced analytics service based on OneMarketData's flagship platform, OneTick

Aequitas NEO Exchange.

"OneMarketData's reliability, market reputation and ability to meet our requirements made it an easy decision to partner with them," he said.

OneTickCloud is a securely-hosted managed data and analytics service supporting global equities and futures tick history, reference data, and adjustment factors.

It provides on-demand analytics for creating custom datasets using OneMarketData's market-leading enterprise data management software.

Combined with the underlying technology of OneTick's high-performance analytics platform, the cloud allows customers to download the data they need and instantly deliver customized calculations on an ad-hoc basis.

Further, it eliminates the need to deploy local hardware and maintain expensive infrastructure, allowing customers to focus on application development while significantly reducing their total cost of ownership.

"We are excited to provide OneTick data and analytics services to the NEO Exchange. We are supporting their efforts to enhance transparency in the Canadian marketplace and helping them demonstrate the positive impact their solutions have on quality of execution for long-term investors," said Ross Dubin, global head of sales at OneMarketData.

## People Moves

## Metamako appoints Covington as CEO

Metamako, a provider of deterministic network devices, has expanded its team and appointed Kevin Covington as its first ever CEO, based in London.

With a long career in the fintech industry,

Covington has many years' experience of growing and developing financial technology companies.

He was one of the creators of the concept of co-location and in his previous position as CEO of ITRS Group he was instrumental in negotiating the sale of the company to one of the largest technology private equity firms in the world.

Covington has been previously working with Metamako in an advisory role, helping the business transition from a start-up to a rapidly-growing enterprise.

Commenting on his appointment, Covington, said: "Not only are we adding to our list of clients at an astonishing rate, we have also gone way beyond our original target market of predominantly HFT clients, to include sell-side firms, telcos and exchanges such as the ASX. We expect to double the size of the business this year, so it's a phenomenal time for taking on the CEO mantle."

Since the company's launch at the end of 2013, Metamako's presence worldwide has been increasing quickly and steadily.

Last year, Metamako moved its headquarters and development into the Sydney-based Stone & Chalk fintech hub.

In addition, 2015 was a busy year for forging links: a partnership with Westcon for global supply chain services and a collaboration with MACOM and its high-performance semi-conductors for Metamako's next generation of switches.

Dave Snowdon, founder and CTO of Metamako, said: "Metamako has come along in leaps and bounds since Charles Thomas, Scott Newham and I set it up in 2013. With more than 60 clients around the world, it's now reached a size which requires the expertise and experience of someone of Kevin's stature to help manage the growth and take the company to the next stage."

"Kevin has been working with us as an advisor since the end of 2014, but it's now the right time for him to take on a more formal, extended role. Kevin has already made a huge contribution to the business and we are all very much looking forward to working together on scaling the business towards ever-greater successes," he said.

Metamako develops the world's fastest network



*Kevin Covington,*  
CEO,  
Metamako

devices, with the goal of simplifying networks, reducing latency, improving determinism and increasing flexibility.

To date, the firm has brought the following high-performance devices to market: MetaConnect 16, MetaConnect 48, MetaMux 32, MetaApp 32 and MetaMux 48.

In addition, Metamako has released the MetaMux and MetaWatch applications to run on the Metamako platform.

## Trading / Data

# ITG Smart Market Indicator launched

ITG, an independent broker and financial technology provider, has launched ITG Smart Market Indicator Forecast App, an application that helps traders anticipate market volumes, spreads and volatility.

The app forecasts future market conditions for multiple time horizons based on both historical average values and recently observed volume profiles, enabling traders to improve trade scheduling and set more accurate algorithm price limits.

"The ITG Smart Market Indicator helps traders make better informed decisions regarding the difficulty of trading on a given day, including the size of an order that can realistically be completed and the relative difficulty of trading the individual names in a portfolio," said Ian Domowitz, MD and head of Analytics at ITG.

ITG Smart Market Indicator is available on the ITG Analytics Incubator, along with several other liquidity cost and volatility index mobile applications including the ITG Equity Trading Cost Index and the ITG FX Trading Cost Index.

All indexes and applications are available to the institutional trading community, free of charge, via a responsive web site to promote transparency in the equity and FX trading communities.

ITG Analytics Incubator also offers the full suite of ITG Peer Analysis reports, based on one of the industry's largest databases of transaction data.

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## FinTech

## Redi announces next generation of ROCC

Redi Global Technologies has announced the launch of the next generation of its fully web-based platform, ROCC (REDI Over Cloud Computing).

Powered by PowWow Mobile, this new version of ROCC is run out of Amazon Web Services' (AWS) data centers in Virginia (primary) and Oregon (backup).

In addition, ROCC users are now able to leverage REDI's full suite of middle office tools through the platform, as well as the advanced new trading and analytics products from REDI and third-party partners that are set to be introduced over the coming months.

The PowWow platform is also powering the recently launched REDI Mobile, which allows REDIPlus users to access the platform from the convenience of their iPad.

Mark Etherington, CTO of REDI, said: "ROCC is an attractive option for clients seeking the ease, flexibility and cost-effectiveness that a web-based platform provides. With these new features that are available through it and its presence in the industry-standard AWS datacenters, we think its appeal for our user base will only increase."

"We have had great success partnering with industry-leading technology firms to help us introduce tactical-level innovation while our development staff focuses on more strategic projects. PowWow has been an excellent partner for two of these projects, both of which provide real value to our users," he added.

With Redi, users can execute everything from simple single stock trades to complex strategies across markets and time zones and manage risk throughout the trade lifecycle.

The fintech provider's network includes nearly 175 execution brokers to route equities, futures or options orders globally, as well as dozens of integrated prime and clearing brokers through its expanding suite of middle office tools.

## People Moves

## Cordium appoints Morgan as group CEO

Cordium, a provider of governance, risk and compliance services, has appointed Doug Morgan as group chief executive, effective immediately.

Morgan assumes the leadership of Cordium's Executive Team and will initially be based in the US before relocating full-time to the UK in Q3.

He brings a wealth of experience to the role, having enjoyed a successful career in financial services and technology spanning over 20 years.



**Doug Morgan,**  
Chief executive,  
Cordium

He joins Cordium from SunGard, where he had global responsibility for the company's business in the asset management back office servicing and accounting space, consisting of solutions for investment accounting, mutual fund shareholder reporting, investor servicing, and financial reporting.

In the course of his career, he has worked in roles spanning the breadth of the asset management industry, from global custodians and traditional asset managers through to hedge funds, funds of funds and private equity firms.

Morgan earned his undergraduate degree at Yale and holds an MBA from the Wharton School of the University of Pennsylvania.

Roger Siddle, Cordium's non-executive chairman, said: "Over recent years Cordium has seen significant growth and this new management structure equips us perfectly for the next phase."

"Doug's experience and skills are exactly aligned with our ambitions: to continue to develop our unique combination of software and consulting services, while maintaining our reputation for excellent client service and growing our global capabilities. We look forward to a new era of success with Doug at the helm," he said.

## Trading

## Tullett Prebon & GMEX to develop trading solution for FX Options

Tullett Prebon, a global interdealer broker, has partnered with GMEX Group to develop a hybrid voice and electronic trading platform for FX Options.

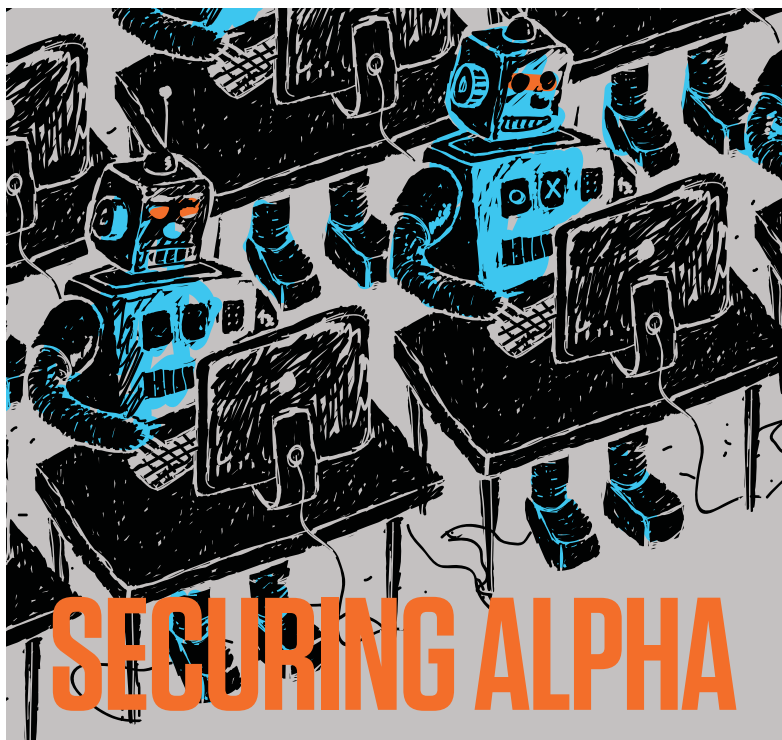
David Perkins, MD, Electronic Broking at Tullett Prebon, said: "This latest initiative highlights our intent to deliver premier electronic and hybrid solutions that empower our voice brokers and aid market liquidity whilst enhancing and simplifying our customers' workflow."

The new FX Options trading solution will enhance Tullett Prebon's offering to its clients, integrating GMEX's request for quote (RFQ) technology with Tullett Prebon's existing central limit order book (CLOB) capability.

GMEX Technologies (GMEX Tech), supported by its development partner Forum Trading Solutions, will provide its trading system and market surveillance solutions, backed by resilient technology, for the FX Options trading platform. GMEX Tech, a wholly-owned subsidiary of GMEX Group, is a provider of multi-asset exchange and post trade technology.

Hirander Misra, CEO of GMEX Group and chairman of Forum Trading Solutions, said: "This agile and reliable platform will help Tullett Prebon meet the business challenges of the new regulatory landscape through fintech innovation by ensuring voice and electronic operations work seamlessly together."





Simple robo advising won't secure alpha, but artificial intelligence will

By David Aferiat, co-founder and managing partner, Trade Ideas

In the last decade, financial services has seen the near complete automation of the back office, the electronic management of order flow in OMS systems, the electronic management of trading in EMS systems, and even compliance and regulation software.

The next wave in this progression will be in the use of machine applications to the front office. Specifically, technologies now available can generate ideas on a portfolio or stock basis, which will generate alpha. The beneficiaries will be investors from self-directed investors to complex global derivative traders on either the buy or sell-side. These capabilities will assist in better decision making, but will never eliminate human judgment, skill, intuition, and the ability to take risk.

This progression of idea generation to the front office would not have been possible but for the "first wave" of big data. In its first iteration, big data was largely query and perspective based – ask a question, get an answer. The new "second wave" iteration moves to artificial intelligence by taking massive data sets (regardless of source such as market, social media, news, technical history, etc.) and supercomputing across multiple algorithms to result in specific insights and actionable ideas.

The first wave accounts for the current trend in robo advisement, which is the automation of index benchmarked portfolio management and trading. The second wave moves to a fundamental shift in the front office – the use of artificial intelligence in trading.

The difference is effectively between robo advising and alpha advising.

### Machines and the performance equation

High-frequency traders (HFTs) and Ph.D. prop firms were the first movers towards mathematically based performance. These models were essentially momentum based, lacking in true idea generation and taking advantage of micro price movements. The effect on traditional institutional trading was devastating – to the point where large buy-side shops such as mutual funds were even reluctant to enter markets for fear of picked off by HFT software. What the waves of machine developments in financial trading demonstrate is that three trends in machine based trading are beginning to right the ship in the direction of investors.

First, portfolio managers and traders (both buy and sell-side) are challenged with information rich markets that are far more complex than even 10 years ago. While decisions are still human based – the amount of information and the criteria used to make those decisions is different in scale and kind. Bollinger bands and oscillators simply aren't enough. Added to this is the complication of each particular manager's investment thesis, strategy, and style. Decision quality and customization of ideas in a sea of information can only be addressed with more sophisticated artificial intelligence.

Second, it is estimated that robo advising will experience as much as a 2,500% increase to \$489bn AUM in 2020 compared to the current \$18.7bn. This massive increase begs the question: to what type of robo advisement will these assets be attached?

This question directly relates to the third trend: robo advisement firms currently reside in either the first "query" wave articulated above or the more advanced "idea" wave towards which the industry is rapidly moving. Robo advisement firms in the first wave largely look to a passive, index automated, portfolio "set it and forget it" model.

To secure true alpha, the machine trading needs to be able to generate ideas and be correlated to the second wave in robo advisement – artificial intelligence. This advisement is stock specific and pursues active investing.

The decision for portfolio managers is not whether there will be robo advising. The decision is: what type of model; whether outsourced or built in-house; and on what timetable? First movers in second wave machine AI will be at a competitive advantage. Others will be faced with "moving forward to the past". ●



David Aferiat  
Co-founder  
and managing  
partner,  
Trade Ideas

David brings more than 15 years of experience in trading, consulting, software, utilities, capital markets, and consumer product industries. Work at Trade-Ideas taps his experience in business development, customer acquisition and retention, corporate strategy as well as energy trading and marketing. David holds dual Bachelor of Arts degrees in Economics and French from the University of Texas at Austin and a Masters of Business Administration degree from the Cox School of Business at Southern Methodist University.

# Improving firm performance through technology



For investment managers, “performance” is most often synonymous with investment performance. But true firm performance is comprised of a variety of elements beyond that and includes operational efficiency, client service, and new business development, among others

By Bryan Dori, president and CEO, and Katarina Hauben, COO, Archer

In the past, investment performance alone may have been enough to sustain business, but today the most profitable managers take a more holistic view of firm performance, inspecting all elements of their business under a microscope to improve efficiency and effectiveness. In this environment, operational performance is coming to the forefront not only for its functionality – how effectively a manager’s core capabilities are supported by operations work that is transparent to its front office – but also because it can be a true business value driver considering significant advances that have been made in the financial technology arena.

Technology is pervasive in our modern world and it has had a tremendous impact on efficiency in our personal and professional lives. This can certainly be seen in investment management: trade execution that used to require personal connections and negotiations can now be accomplished by an algorithm; trade services and custodian communications that used to take days now takes mere minutes; client reporting that used to eat up hours of the day is now often created at the push of a button and read on a smartphone.

However, at the core of many investment management operations is a web of antiquated technology that has not participated in the “efficiency revolution” that technology advancements have provided in other areas. While there are many newer technology applications and systems on the market that are intuitive, nimble, and cost-effective, their adoption has been slow with delays often caused by perception alone. Four common misconceptions that create barriers to technology improvement are:

1. Existing technology that supports operations is too complex to replace
2. The volume and format of stored data inhibits easily adopting new technology
3. The cost in time and money to convert to new technology is too high
4. “Our operations have been working fine; why should I fix what isn’t broken?”

## Spotlight on operational shortcomings

The current environment of market volatility, increasing complexity and expanded regulatory scrutiny is

putting a spotlight on operational shortcomings. It is more critical than ever that investment managers shed their misconceptions and honestly assess opportunities for operational improvement. When considering adopting and onboarding new technology, operations professionals should evaluate the following areas:

- **Perspective:** Making the best decision about upgrading begins with knowing exactly what you have in place (current state) and what your firm’s strategic goals are (future state). Identify the current pain points in your support infrastructure and any tactical hurdles to growth. Understanding and evaluating the value of your component processes will help create a forward-looking strategy for improvement.
- **Advantage:** Once you understand why you need to change, you have to evaluate which systems and process upgrades have the greatest impact. Evaluate available products against your strategic goals. Will new investments be easily supported? Will process pain points and tactical hurdles to growth be removed? And finally, will everything scale to fit your growth and reduce overall firm costs, providing a competitive advantage with price while preserving margins?
- **Agility:** One of the greatest barriers to change is the potential disruption caused by implementation and adoption. New systems, processes and support must accommodate your firm’s unique timeline and have the ability to pivot in the face of unexpected disruptions. Seamless transition, wholesale adoption and smooth implementation are key components to delivering a quick return on investment for any technology upgrade.

Enterprise solutions are now available as web-delivered technology, elevating the efficiency of operational performance. With barriers to efficiency removed, investment managers are challenged to identify which changes will make the greatest impact and – more importantly – how to evaluate when the time is right for meaningful change. Those who have considered the areas of Perspective, Advantage, and Agility are impacting their firm performance and surpassing others who are hesitant to change, adapt and grow. ●

# Legacy systems: unearthing the opportunity costs



**The growing opportunity costs of running outdated technology will become too much for an asset management industry in transition**

**By Mike Maltby, head of marketing strategy, Eagle Investment Systems**

It is no wonder that well over half of the 140 leading asset management companies surveyed by TSAM New York in June plan to replace at least some of their existing technology in the next 12 months. At a time when meeting increasingly complex market and compliance demands is generating ever-greater volumes of data, the limitations of these older, legacy platforms – many of which require significant manual processes – are becoming all too apparent. Asset managers can no longer put off the inevitable. While replacing a platform can present a substantial task, most recognize that with every passing year, operating legacy systems can exact a heavy toll on an organization in the form of opportunity costs, which are becoming more pronounced as the investing landscape rapidly evolves.

Of course, no firm will take the decision to modernize their IT infrastructure lightly. Most operations executives would only expect to be involved in a system replacement once or twice in their careers, as these projects are resource and capital intensive and require an acclimation period in which business users and supporting teams develop new muscle memory. This disruption, coupled with the necessary capital investment—as asset managers have faced tremendous margin pressure in the aftermath of the global financial crisis—is why there has been a tendency to maintain, upgrade, or even create workarounds for legacy systems in order to solve recurring issues.

Legacy systems are defined as platforms that can no longer keep pace with growing data volumes or business complexity and growth. The key element of a legacy system is that the technology is rapidly becoming obsolete as the vendor either fails to re-invest or makes a strategic decision to slowly sunset the technology through attrition as clients move on to other options. But for asset managers, the clock is ticking. As many are now discovering, patching up an in-house system, or relying on a platform running obsolete technology, can prove to be a false economy.

## Challenge for many firms

The opportunity costs of operating legacy systems should not be underestimated as such platforms have become a common obstacle to establishing operations in new jurisdictions and asset classes.

Because outdated portfolio management and accounting systems cannot provide the scalability and flexibility required to quickly respond to new business opportunities, a lack of technological agility is translating into stalled or delayed strategic response at the organizational level. In line with this, nearly half, or 44%, of asset managers surveyed by TSAM said that they were replacing technology systems to incorporate new business strategies and processes.

The fund management industry is evolving rapidly and “alternative” investments are now the norm. Witness the rapid evolution of smart beta offerings. Recent research from Bernstein highlights that the cost of buying smart beta has been “halving” every year for asset owners and that the category has grown its AUM to between \$500bn and \$1trn over the past five years and within equities alone. Yet, the pace of technological change at many firms has not kept up with this evolution. Institutional investors, who increasingly favor multi-asset strategies, are choosing managers who are able to make quick tactical decisions across a range of asset classes. Those using automated processes and an investment book of record (IBOR) solution that is able to centralize positions quickly and accurately will have a significant advantage.

Currently, it is clear that legacy systems pose a challenge for many firms, and that the next couple of years promise to be an era of major operational and technological change. Nearly two-thirds of the TSAM respondents are replacing technology to improve their agility, as well as their efficiency. Additionally, over half of them are looking to invest in new technologies to help support their business growth.

In a competitive environment with mounting regulatory pressures, there is a growing recognition among asset managers that both their businesses and clients are going to demand greater capabilities and integrated solutions. As those cutting edge capabilities start making a difference in their operations and enable them to streamline their business, it is becoming clear that the costs of implementing a new data-centric platform, with an open architecture that can accommodate best-of-breed technology and innovation, will pale in comparison to the opportunity costs of operating a legacy system. ●

# Summary of fee changes at exchanges

Week commencing 15 August 2016

Disclaimer: Most fee changes are effective upon filing. WSL notes fee highlights here, but additional changes may be made post publication. Please visit exchange websites for the latest fee changes.

NAME OF EXCHANGE	SUMMARY OF CHANGE	NEW FEE	CHANGED FROM	EFFECTIVE DATE	EXPLANATION
<b>Bats BYX Exchange</b>	Amends its fee schedule to modify the billing policy for the logical port fees		\$500 per port per month	August 1	The Exchange proposes to clarify within its fee schedule how monthly fees for logical ports may be pro-rated. As proposed, new requests will be pro-rated for the first month of service. Cancellation requests are billed in full month increments as firms are required to pay for the service for the remainder of the month, unless the session is terminated within the first month of service.
<b>BOX Options Exchange</b>	Raises the fees assessed for Public Customers that make or take liquidity against all account types in in both Penny and Non-Penny Classes	\$0.05	\$0.00	Immediately	
	Amends the fee assessed to Professional Customers and Broker Dealers that take liquidity from Public Customers	\$0.45	\$0.50	Immediately	
	Amends the fees assessed to Professional Customers and Broker Dealers that take liquidity from Professional Customers/Broker Dealers and Market Makers	\$0.45 / \$0.44	\$0.40	Immediately	
	Amends the fees assessed to Professional Customers and Broker Dealers making liquidity against Professional Customers and Broker Dealers and Market Makers in Penny Pilot Classes	\$0.05	\$0.25	Immediately	
	For Non-Penny Pilot Classes, reduces the fees assessed for Professional Customers and Broker Dealers making liquidity against Non-Public Customers	\$0.05	\$0.35	Immediately	
	Amends the fees assessed to Professional Customers and Broker Dealers taking liquidity from Public Customers	\$0.85	\$1.07	Immediately	
	Amends the fees assessed to Professional Customers/Broker Dealers taking liquidity from Professional Customers/Broker Dealers and Market Makers in Non-Penny Pilot Classes	\$0.60	\$0.40 / \$0.44	Immediately	
<b>Nasdaq OMX BX</b>	Adds a SPY Options Tier Schedule		\$0.00 rebate in the Select Symbols Options Tier 1 Schedule now applicable to SPY Options; \$0.25 rebate in the Select Symbols Options Tier 2 Schedule now applicable to SPY Options; \$0.37 rebate in the Select Symbols Options Tier 3 Schedule now applicable to SPY Options	Immediately	The Exchange is adopting a separate SPY Options Tier Schedule because it believes that it will provide even greater incentives for execution of SPY Options contracts on the BX Options Market



NAME OF EXCHANGE	SUMMARY OF CHANGE	NEW FEE	CHANGED FROM	EFFECTIVE DATE	EXPLANATION
<b>Nasdaq PHLX</b>	Limits the overall costs to Participants for connecting to the Exchange	Caps the total monthly fee a participant may be assessed at \$30,000	\$0.0017 per share	Immediately	The Exchange believes that the proposed fee cap will make PSX a more attractive venue for Participants, and help PSX both retain and attract new Participants. The proposed fee cap will apply to all Access Services fees assessed under the rule, in aggregate and per Participant. Thus, a Participant may meet the \$30,000 per month fee cap with any combination of subscriptions provided under the rule
	Amends the Simple Order Customer Fee for Removing Liquidity in SPY	\$0.45 per contract	\$0.30 per contract	Immediately	
	Amends the Specialist and Market Maker Simple Order Rebates for Adding Liquidity		Specialists and Market Makers have the opportunity to earn rebates that range from \$0.15 to \$0.30 per contract, depending on the amount of Specialist and Market Maker Simple Order contracts that are electronically executed per day in a month in SPY on Phlx	Immediately	
	Adds two more Specialist and Market Maker Simple Order Rebates for Adding Liquidity tiers		N/A	Immediately	The Exchange believes that adding these two new rebate tiers will encourage Specialists and Market Makers to add more electronically executed Simple Order liquidity in SPY on Phlx to obtain the higher rebates
<b>Nasdaq Stock</b>	Amends rebates provided to the Lead Market Maker (LMM)		The Exchange currently provides rebates and reduced fees if an LMM meets the minimum criteria of a tier.	Sept. 1	The proposed changes would only apply to credits in transactions in securities priced \$1.00 or more. The fee would apply only to shares executed in excess of 750,000 ADV during the billing month.
	Revises certain fees for executions at the close		N/A	Sept. 1	
	Adds additional Tape C ETP incentives		Adds additional Tape C ETP incentives		The Exchange is also providing a DLP that qualifies under the Additional Tape C ETP Incentive criteria yet has fewer than 10 ETPs assigned to them the ability to qualify for a \$0.0001 per share executed rebate in Tape C ETPs that meet the criteria of Rule 7014(f)(1)(A) if it increases the number of ETPs for which it is a DLP by 100%. A DLP is only eligible for the first 100% increase and will not receive additional \$0.0001 per share executed rebates for subsequent 100% increases to the number of assigned ETPs.
<b>MIAX</b>	Amends marketing fees on certain transactions		\$0.12 per contract posted liquidity marketing fee to all market makers	Immediately	\$0.50 per contract transaction for options overlying DIA, FB, GDX, SLV, USO, UVXY, and VXX executed by non-MIAX market makers as currently applies to options overlying EEM, GDL, IWM, QQQ and SPY executed by non-MIAX market makers
	Amends the continuing education fee for all registrations, which relates to test center delivery of the regulatory element of CE	\$0.00	\$100	Immediately	The proposed is in conjunction with FINRA's transition to CE Online and its phase out of test center delivery of the CE Regulatory Element.

# Data lakes vs data streams

Data lakes and data streams are two of the hottest data buzzwords du jour and as likely as any pair to spark an argument between data scientists or CTOs backing one or the other. But which really is better?



*By Guy Warren, CEO, ITRS Group*

A data lake is still a fairly new concept that refers to the storage of a large amount of unstructured and semi-structured data. It addresses the need to store data in a more agile method compared to traditional databases and data warehouses, where rigid data structure and definition is required. The data is usually indexed so that it is searchable, either as text or by a tag which forms part of the schema. Each new stream of data can come with no schema, or its own schema, and still be added to the data lake for future processing.

Why is this useful? Because the buy-side is dealing with more data than ever before in various formats, speeds and sizes. This is largely down to a shift away from simply buying research from the sell-side to performing it in house – a response to a highly competitive environment where proprietary data and trading strategies are hugely secretive. The result is huge amounts of extra data from various sources to be stored, analysed and reported to meet increasing regulatory demands.

To realise the data's full value, it must be stored in such a way that people can dive into the lake and pull out what they need there and then, without having to define the data dictionary and relational structure in advance. As a result, lakes are much more flexible than traditional storage for asset managers constantly looking for ways to capture and analyse their data, and even pour it back into the lake to create new data sources from their results.

## In comparison to data stream

A data stream on the other hand, is an even newer concept in the general data science world. In contrast to deep storage, it is a result of the increasing requirement to process and perform real-time analysis on streaming data. Highly scalable real-time analysis is a challenge that very few technologies out there can truly deliver on yet. The value of the data stream (versus the lake) is the speed and continuous nature of the analysis, without having to store the data first. Data is analysed 'in motion'.

The data stream can then also be stored. This gives the ability to add further context or compare the real-time data against your historical data to provide a view of what has changed – and perhaps even why (which depending on your solution, may impact responsiveness). For an asset manager, this can mean the difference between a quarterly or half-yearly adjusted trading strategy and a dynamic one, able to take advantage of changing market conditions in real-time. Combining the historical data lake with the current market stream allows the manager to instantly understand changing trends in historical context. Add in some machine learning algos and you have the makings of an automated, dynamic trading strategy.

## Data storage

The availability of these new ways of storing and managing data has created a need for smarter, faster data storage and analytics tools to keep up with the scale and speed of the data. There is also a much broader set of users out there who want to be able to ask questions of their data themselves, perhaps to aid their decision making and drive their trading strategy in real-time rather than weekly or quarterly. And they don't want to rely on or wait for someone else, such as a dedicated business analyst, to do the analysis for them. This increased ability and accessibility is creating whole new sets of users and completely new use cases, as well as transforming old ones.

So: which is better, a data lake or a data stream? The answer is both. Buy-side businesses need to be able to process and analyse data at increasingly large volumes and speed, and from across a growing number of sources. The data arrives in a stream, but they also need the ability to both access and analyse the data easily and quickly from a lake. Historically, the problem has been that standard tooling doesn't easily allow for mixing these two paradigms. Fortunately for the buy-side, the move to bring research and analysis in-house coincides neatly with the emergence of new tooling that promises just that. ●



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