



# TRADETECH

## Special Edition

## Daily

THE OFFICIAL NEWSPAPER OF TRADETECH 2020



*"A diverse way of thinking: By linking diversity with inclusion the result can be innovation, through the freedom of ideas and the freedom of thought."*

### Goldman Sachs CEO b

The 20-year Goldman Sachs veteran banker appointed as chief executive officer at London Stock Exchange Group (LSEG) has received the backing of former boss, Lloyd Blankfein. David Schwimmer was most recently global head of market structure and global head of metals and mining in investment banking at Goldman Sachs. He began his career in the financial institution on market structure.

### Invesco's head of trading rules out outsourcing equities trading, saying 'nobody can do it better than us'

The head of trading at Invesco says outsourcing the asset manager's equities trading desk is out of the question, claiming "I don't think anybody can do it better than we could". During an Oxford-style debate on outsourcing execution services, David Miller lauded Invesco's in-house capabilities and systems when asked outright if the company would ever consider the concept. "I would say some of the trades we have are best of breed anyway," said Miller. "I don't think anybody can do it better than we could. "We've got the experience, the technological back-up as well, we've got the systems and the support, so, no." *Continues on page 8*

**LEGACY TECH ENLIGHTENMENT**  
HOW BUY-SIDE FIRMS CAN EMBRACE NEW TECHNOLOGIES TO OVERCOME THE LEGACY TECH CHALLENGE.

**AI ACE UP THE SLEEVE**  
ARTIFICIAL INTELLIGENCE HAS THE POTENTIAL TO BE AN ACE UP THE SLEEVE FOR BUY-SIDE FIRMS THAT APPROACH IT RIGHT.

**WHAT YOU NEED TO KNOW**  
- THE 'BAD' IN BIG DATA CAUSES CONCERN  
- BLOOMBERG LEADING THE OMS FENS SPACE, IN ALGO TRADING.

### Public auctions come

rules, periodic auctions are beneficial in terms of showing natural liquidity, reducing costs and achieving best execution. In January, responses from the market on the European Securities and Markets Authority's



# Euronext seals €4.3 billion deal with LSEG for Borsa Italiana

European exchange group Euronext has entered into a binding agreement with the London Stock Exchange Group (LSEG) to acquire Borsa Italiana for €4.3 billion. The transaction is conditional upon the European Commission's clearance decision for LSEG's

proposed acquisition of Refinitiv, the exchange operator said. The agreement follows news in September that Euronext was in exclusive talks with LSEG for the Borsa Italiana takeover, alongside CDP Equity - owned by sovereign wealth fund Cassa

Depositi e Prestiti - and Intesa Sanpaolo. David Schwimmer, CEO of LSEG, said in a statement on the deal with Euronext that LSEG continues to make good progress on the Refinitiv transaction. *Continues on page 4*

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# 20 years of TradeTech

## Editor's note:

While we may not be in Paris this year, I'd like to welcome you to this virtual TradeTech Europe event, which also happens to mark 20 years of the conference.

Those of you who have attended every TradeTech conference since its inception (yes, there are some of you!), will know that TradeTech has lived through some pretty major events. From market changes such as MiFID I & II, to the 2008 financial crisis and Brexit fallout, to name a few, it's been quite a couple of decades.

In this special edition of the TRADETech Daily newspaper, we outline some of those events (page 20) and, unsurprisingly, the coronavirus pandemic made the list.

While TradeTech has lived through some pretty dramatic times, this being one of them, it has never failed to lead the discussions for the equities trading landscape. The virtual debates scheduled for this year's conference promise to deliver that once again, despite the circumstances. On page 26, we outline some of the highlights of TradeTech 2020 that shouldn't be missed.

Elsewhere, to celebrate the event's anniversary, we also reached out to some of the industry's most well-known names and faces to provide us with their thoughts on the past couple of decades. You will find this special edition's editorial contributions from page 10 onwards.

While we don't see an end in sight to the disruption that has impacted us all so far this year, The TRADE's editorial team is looking forward to seeing you all once again, whenever, wherever and however that may be.



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## Trading venues

# Euronext seals €4.3 billion deal with LSEG for Borsa Italiana

THE ACQUISITION OF BORSA ITALIANA BY EURONEXT IS DEPENDENT ON THE LSEG GAINING APPROVAL FROM EUROPEAN AUTHORITIES FOR ITS BLOCKBUSTER TAKEOVER OF REFINITIV.

... continued from front page

"We believe the sale of the Borsa Italiana group will contribute significantly to addressing the EU's competition concerns," Scwimmer added. "The Borsa Italiana group has played an important part in LSEG's history. We are confident that it will continue to develop successfully and contribute to the Italian economy and to European capital markets under Euronext's ownership."

LSEG said in late July that it was considering offloading Borsa Italiana, including its Italian fixed income trading business MTS, as competition concerns had been raised by the European Commission about its proposed \$27 billion acquisition of Refinitiv.

The Commission raised concerns that the combination of LSEG's MTS platform and Refinitiv's Tradeweb will significantly increase their market share in electronic trading of European government bonds, which could reduce competition and make it more difficult for new

platforms to enter the space.

Similarly, the merger would create significant market power in the trading and clearing of OTC interest rate derivatives, the Commission added, and a preliminary investigation showed that clients rarely switch trading or clearing houses.

Finally, market data was highlighted by the Commission as another area of concern, specifically the combination of Refinitiv's desktop solutions and consolidated data feeds with LSEG's FTSE Russell index business. The authority said the transaction could see competitors shut out from accessing input data from both LSEG and Refinitiv.

Euronext battled Swiss markets operator SIX and German exchange group Deutsche Börse to acquire Borsa Italiana, after both separately confirmed in September that they had also made bids for the Milan-based stock exchange.

"Thanks to this transaction, Euronext will significantly diversify its revenue mix and

its geographical footprint by welcoming the market infrastructure of Italy, a G7 country, and the third-largest economy in Europe," said Euronext chief executive, Stéphane Boujnah.

"The combination of Euronext and the Borsa Italiana Group, with the strategic support of long-term investors such as CDP, delivers the ambition of building the leading pan-European market infrastructure, connecting local economies to global capital markets."

LSEG and Refinitiv agreed to terms of the \$27 billion mega-merger in August last year in what Scwimmer described as 'transformational' deal for the exchange operator.

The board at LSEG said the acquisition will "significantly enhance" the exchange's position in data and analytics, forming a global multi-asset capital markets business with high-growth FX and fixed income venues, via the FXall and Matching platforms and Tradeweb, in which Refinitiv is a majority shareholder.



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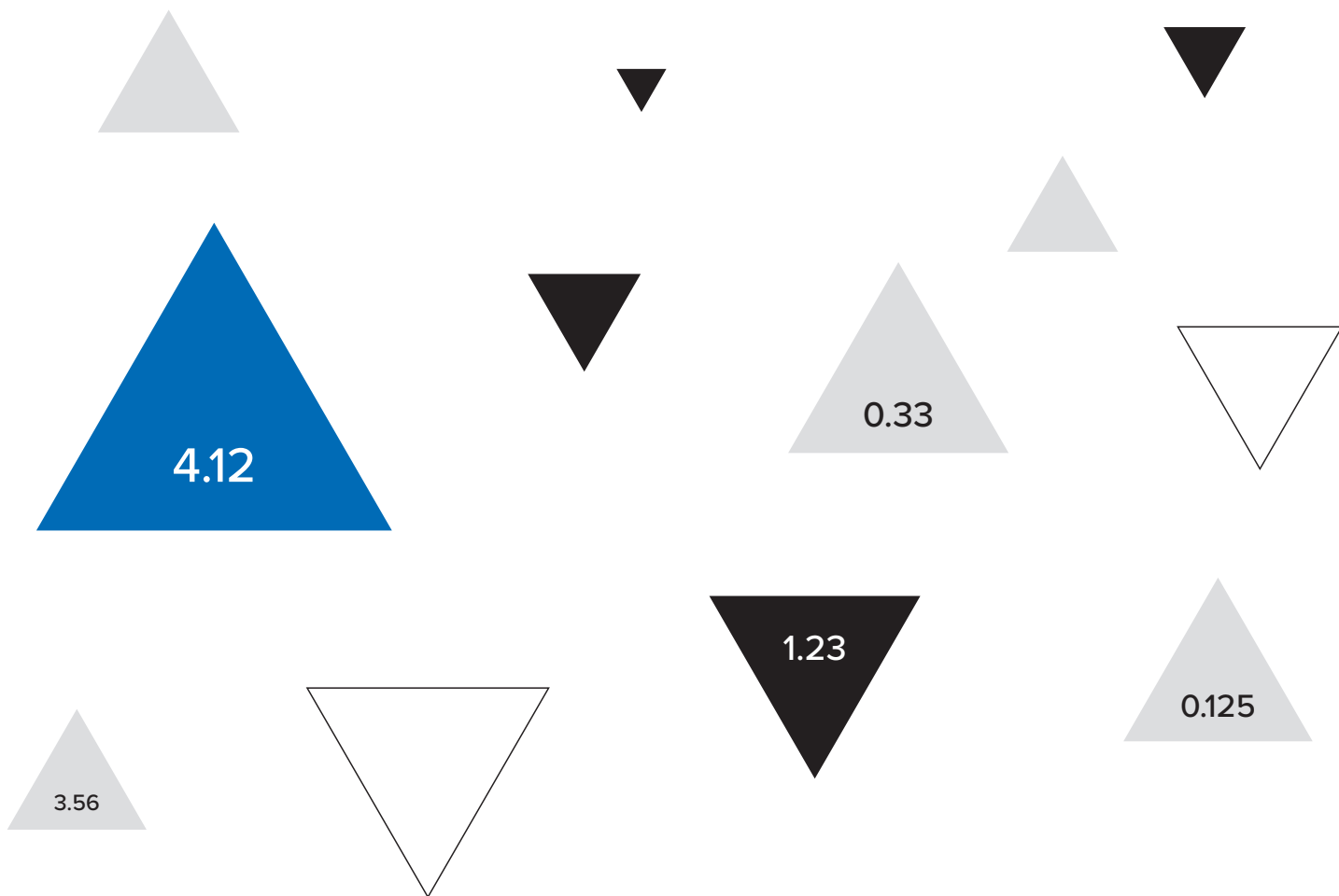
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## Equities



## August trading volumes in Europe plummet in quietest month of MiFID II era

August this year proved to be the quietest period for equities trading volumes in Europe since MiFID II was introduced in January 2018, statistics from data and analytics provider big xyt have revealed.

Monthly average daily volume traded (ADVT) plunged to €39 billion in August, the only month to sink below €40 billion in more than two years, a report from big xyt that included data from its Liquidity Cockpit tool showed.

July and August volumes were the lowest in the period from January 2018, big xyt said, and followed a record month of €96 billion ADVT in March amid increased market volatility during the COVID-19 crisis.

Meanwhile, trading costs are yet to normalise to pre-COVID 19 crisis levels after surging earlier this year. At the end of August, big xyt said spreads in UK's FTSE100 remained 48% higher than at the beginning of September 2019. Similarly, spreads in Germany's DE30 were still 11% higher and 16% up in the French CAC 40.

In April, market maker Virtu Financial revealed via a study that trading costs in the US had risen 42% in the first quarter compared to the quarter prior, with March trading costs increasing to a high of -63.7 bps. Trading costs

in the UK surged 76% during the period, 55.2% in Europe – excluding the UK, and 78% in Asia Pacific – excluding Japan.

By April, spreads for the US S&P 500 had decreased significantly from the highs in March. Market impact costs for a 500mm portfolio in the index began to drop after hitting 14.4 bps on 9 April, down from 19.95 bps in late March. Virtu added at the time that a 500mm portfolio in the UK's FTSE 100 remained the most expensive.

Elsewhere, big xyt said lit continuous order book trading has recaptured 1.5% market share so far this year to reach 44.8%, after losing 6% from 2018 to 2019 to other venues such as dark pools, systematic internalisers and closing auctions.

The migration of trading volumes towards closing auctions has also seemingly slowed after many years, following a 3% decline in market share since the fourth quarter in 2019.

"A surprising feature of 2020 is that despite very high levels of passive trading activity, including a record MSCI rebalance in May, the closing auctions lost market share to lit continuous trading, for the first time in several years," big xyt said in its report.

## Buy-side

## Number of traders on buy-side trading desk not impacted by technology, research suggests

RESEARCH FROM GREENWICH ASSOCIATES SHOWS THAT THE NUMBER OF TRADERS ON DESKS HAS CHANGED VERY LITTLE FROM 2018 TO 2019 DESPITE TECHNOLOGICAL ADVANCES.

Technology investments on the buy-side trading desk have not come at the expense of traders, a recent report from Greenwich Associates has suggested.

The research revealed that the number of traders on buy-side trading desks has remained essentially unchanged from 2018 to 2019 with eight on average in fixed income, slightly over seven in equities, and six in foreign exchange.

Head of research for the Greenwich Associates market structure and technology group, and author of the report, Kevin McPartland, stated that \$1.25 million was spent on fixed income technology by typical asset managers last year alone.

However, he added that the electronification of fixed income in recent years has increased the capacity of traders on the buy-side trading desk, rather than removed them from their role. Evidence from the research found no negative impact on the number of human traders despite technological advancements.

Elsewhere, the research suggested buy-side traders are seeing responsibilities expand into new areas and asset classes. It found that 47% of fixed income traders are now also trading derivatives, 26% are trading foreign exchange and 20% are trading exchange traded funds (ETFs).

For equity traders, Greenwich added, 60% of cash equity traders are also trading ETFs, 45% are trading derivatives, 35% trading in foreign exchange, and 21% trading fixed income instruments.

However, buy-side trading desk budgets remain tight and the average buy-side fixed income trading desk spends around 60% of the budget on trader compensation, with this increasing to almost 80% for smaller hedge funds.

"Today, firms can use tightly integrated enterprise trading technology that allows buy-side trading desks to trade more, achieve better executions, and do it at a lower cost," added McPartland.

## PEOPLE MOVES

The head of dealing at **Royal London Asset Management** is set to leave the company this month after almost three years and become global head of trading at **Ninety One**.

**Cathy Gibson** will take on the newly-created role in London at Ninety One, formerly known as **Investec Asset Management**, in the new year.

Swiss investment bank **UBS** has hired former head of electronic equities product for Europe at **Barclays** to lead its flagship cross-asset trading platform Neo. **Nej D'jeral** is set to leave Barclays after more than eight years.

Head of liquidity and managing director at proprietary trading firm **Tower Research Capital Europe** will leave after four years for a new role at agency broker Instinet. **Simon Dove** has been appointed head of liquidity strategy for EMEA at **Instinet** and will join the institution early next year.

**Hong Kong Exchanges & Clearing** has confirmed that its co-president and chief operating officer will succeed chief executive **Charles Li** in December following his decision to retire early. **Calvin Tai** will assume the role of interim chief executive while the search for a new permanent chief executive takes place.

## NEWS UPDATE

## Technology

## Schroders revamps transaction reporting processes with SteelEye

SteelEye CEO, Matt Smith, said the implementation with Schroders took just three months and was completed in July this year.

Global investment management giant Schroders has overhauled its MiFIR transaction reporting processes with SteelEye's compliance technology platform.

SteelEye chief executive, Matt Smith, revealed that the implementation of the SteelEye system at Schroders took three months and was completed in July. This included product demonstrations, due diligence, testing, legal discussions, and onboarding.

Schroders, which has over £500 billion in assets under management and operates across 34 locations, confirmed it selected SteelEye due to the firm's ability to support its tight implementation deadline.

"The SteelEye implementation has helped us to improve the level of control and accuracy we have around our MIFID II transaction reporting," said global head of operations at Schroders, Keith Frimpong. "We selected SteelEye because of the quality of their technology, the expertise demonstrated by their team, and their willingness to support our tight implementation timelines."

Smith added that the firm's technology sets it apart from the competition, with no need for new clients to change back-office, trading, or front-office trading systems.

"We can ingest their data from whatever platforms they are using, unifying it in one place where it can be natively used within SteelEye's RegTech suite," he said. "This enables clients to meet regulatory obligations whilst gaining unparalleled value from data that would otherwise be spread between different platforms."

SteelEye's platform looks to provide clients with full visibility of their MiFID II transaction reporting workflow through improved eligibility checks, analytics on rejection handling, data validation rules, transaction editing capabilities, audit trails, and automatic submission schedules.

"Our aim is to improve the quality of MiFID II data. Many firms have misreported or over and under-reported under MiFID II/EMIR due to the complexity of the regulations," SteelEye's Smith added. "By ensuring that the underlying data is accurate, firms will report more accurately which means that the widely available MiFID II data will be better."

## Buy-side

## Morgan Stanley to buy asset manager Eaton Vance in \$7 billion mega-deal

Upon closure of the Eaton Vance takeover, Morgan Stanley Investment Management will have \$1.2 trillion in assets under management.

Morgan Stanley is set to acquire Boston-based asset manager Eaton Vance in a major \$7 billion deal, marking the latest takeover for the US institution.

In a statement, Morgan Stanley confirmed it has entered into a definitive agreement to acquire Eaton Vance for an equity value of approximately \$7 billion.

The transaction is due to close in the second quarter next year, subject to closing conditions.

The deal will boost Morgan Stanley's investment business by more than \$500 million to form a combined entity with approximately \$1.2 trillion of assets under management.

Across both the investment management and wealth management segments, Morgan Stanley will oversee \$4.4 trillion of client assets and AuM upon closure of the deal.

"Eaton Vance is a perfect fit for Morgan Stanley," said James Gorman, CEO of Morgan Stanley. "This transaction further advances our strategic transformation by continuing to add more fee-based revenues to complement our world-class investment banking and institutional securities franchise."

The deal marks the latest for Morgan Stanley following its \$13 billion acquisition of retail broker and online trading platform E\*TRADE, which officially closed in early October.



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# Unprecedented change

Buy-side industry veteran and head trader for EMEA equities at Invesco, David Miller, explores the evolution of trading over the last 20 years.

Over the past 20 years, I have seen unprecedented degrees of change in the industry from faxed confirmations and single screens to low-latency electronic trading and the onset of artificial intelligence. Soon after I joined the buy-side, just after the millennium, we moved away from directed orders to suggested, and then finally preferred brokers, all leading to more autonomy of the buy-side trader and the evolution of the high volume, technology based multi-asset trading desks we see today.

The empowerment of the buy-side trader has been the single most significant part of the trading revolution that I have witnessed over the past two decades. Coupled with increasingly complex electronic trading strategies, with ever more sophisticated post- and pre-trade analysis, the trading desk has found itself more firmly segregated from - yet still complementary to - the investment process.

With more recent regulatory change shifting decision-making to institutional traders, they have now become price makers, rather than the price takers of the past. This in turn has required traditional market making to adapt. Risk management has evolved, coupled with the evolution of the CRB (central risk book) to provide greater opportunities to the trader of today. This has led to ever more sophisticated interactions with different market participants, whether electronic liquidity providers, crossing networks or flow from retail investors.

Markets have become more and more fragmented. The need to be able to trade

**“The empowerment of the trader has been the single most significant part of the trading revolution over the past two decades.”**

across asset classes has led to institutional traders becoming better educated in technology and data analysis. It's not surprising that we now see a proliferation of working groups, industry forums and conferences as we all endeavour to maintain the highest levels of knowledge and try to ensure we all have our say in shaping the future. Trading has become more scientific, but still there is a particular art involved in the execution of an order.

One aspect of the automation we now utilise is the ability to isolate and execute different types of flow. For example, low ADV (average daily volume) orders can be traded on an ultra-low touch basis and at lower execution rates, allowing the trader to better use their skills and time on the harder to trade orders.

Fragmentation is not new, it would be remiss of me not to go back to the mid-1990s and the evolution of one of the first order driven exchanges, Tradepoint, a

fully-regulated exchange that sought to introduce the concept of order-driven trading to a quote-driven, centuries old trading environment. Prior to that, I also remember a time where there were regional stock exchanges, Birmingham and Glasgow to name just two, with trading, often arbitraging in the same stocks between centres conducted by telephone, and fax, with ticker tapes publishing prices. This is very different to the low-latency, high-frequency messaging and trading of today. Today's trading desktop is a far cry from the simple workstation of the past, order management systems, execution management systems, messaging services and ever more sophisticated price discovery tools all vie for the trader's real estate.

One of the biggest drivers of change that I would identify has been the move to unbundle research payments out from trading commission, and latterly to the investment companies themselves paying hard for the research they consume.

Identifying trading costs, and the value, and therefore price paid, for written research has enabled a clear focus on the cost to the client of the entire investment process. Trading desks on both the buy-side and sell-side have become quantifiable profit, and loss centres in their own right.

The relationship between both sides of the trading equation, the institutional trader and the sales trader, has evolved to become far more of a partnership. This is hardly surprising given the proliferation of trading venues to which the buy-side has direct access making the search for intermediated liquidity more specialised and focused. This in turn has led to the inevitable restructuring of the process, not that we should write-off the traditional role of the stockbroker. Many funds invest in less liquid, smaller companies that trade in a more specialised manner, it's this important area of the market where the ability to source hard to find liquidity is crucial to an efficient market.

Aside from the evolution of the crossing networks, other new industries have also appeared, such as the ongoing analysis and interpretation of trade data coupled with the use of artificial intelligence to assist in trading decisions. The importance firms

**“Trading has become more scientific, but still there is a particular art involved in the execution of an order.”**



place on this data, whether it is provided externally or processed in-house, plays a major part of the future shape of the trading desk.

Finally, since writing this the world has changed almost beyond recognition. The onset of, and ensuing restrictions associated with COVID-19 have had a significant effect

on the working practices of the equity trading desk, and in fact the entire investment process as a whole. Despite early scepticism surrounding the ability to perform in the same way as we did when embedded in a busy trading desk, secure and robust technology has made the process virtually seamless. Regular use of Skype, Zoom, and

other messaging systems have ensured that communication, which is one of the key components of the trading process, has continued almost uninterrupted.

The buy-side trading desk of today has come a long way in the past 20 years, but the focus on getting the best available outcome for clients has never been more important. The destination remains the same, we're just all driving faster and more complicated cars!

Important information: Issued by Invesco Asset Management Limited, Perpetual Park, Perpetual Park Drive, Henley-on-Thames, Oxfordshire RG9 1HH, UK. Authorised and regulated by the Financial Conduct Authority.

**“Trading desks on both the buy-side and sell-side have become quantifiable profit, and loss centres in their own right.”**

# Technology- the forever force in trading

Former sales trader and industry veteran, Alexandra Foster, now director of insurance, wealth management and financial services at BT, outlines the impact of technology on trading processes.

**W**hen I began my career in the 1990s as a sales trader at one of the world's leading banks, the trading sphere was a very different place to what it is today. For one, the size of my computer and telephone system, as well as the space they occupied and how cumbersome they were to use would be inconceivable to the young trader starting out today.

But these past 20 years have been characterised by rapid change - change which has fundamentally altered the way the trading world operates. The emergence of electronic communication networks (ECNs) enabled the trading of financial products outside of traditional stock exchanges, giving way to a rapid rise in online trading. The complex event processing (CEP) engine, a system for processing real-time information developed in the 90s, found its way into the very heart of trading systems to help firms structure and contextualise available data to inform trading behaviour.

But the future of trading was altered forever with the data 'big bang'. As personal computers became more powerful and

prevalent, new data streams emerged, feeding the growing appetite of the evolving trading systems. This insatiable appetite for data continues to be the defining characteristic of the industry today. Low-latency and geographic proximity to relevant data feeds became the key differentiators in traders' performance, while technology continued to lower the cost of trading and barriers to entry, leading to increased competition. This was supported by regulatory bodies who have always championed competition as a positive development for the end-investor.

Over time, firms became ever more reliant on technology and global financial markets became increasingly interconnected. Against this backdrop, the 2010 flash crash does not look like an unlikely occurrence - yet it caught the market off-guard, wiping out close to \$1 trillion in stock market value. It may have been the first (but certainly not the last) incident of its type and scale, with others following in 2015, 2016 and more recently in 2019, leading many to conclude that technology and the trading practices it has paved the way for are to blame.

Yet, as we reflect upon the past 20 years and

look ahead to the new decade, it is important to think of technology as an enabler in trading. Much has been achieved already on that front. Automated execution systems and, more recently, the rise of artificial intelligence (AI) and machine learning (ML) have allowed traders to reinvent themselves as key decision makers and focus on activities where they can add most value, hugely benefitting the end-investor too.

What is more, technology can be a force for good. The self-learning characteristics is the very definition of AI/ML solutions. ML's ability to recognise patterns and learn from data, with the underlying system becoming more intelligent over time is something that is already widely used in trading. As the application of AI/ML continues to expand, we may see a decrease in the frequency of tech-led crises, such as the previously described flash crashes, significantly enhancing the robustness of the financial system.

As the role of technology in trading continues to expand, industry is faced with two key challenges that will need to be addressed in order to future-proof the marketplace.

One is technical. In order to ensure that maximum benefit is derived from new technologies without compromising the stability of the financial system, agreeing global standards as they pertain to new technology applications in trading is key. The industry has some experience in successfully agreeing and implementing such standards. For example, the FIX Protocol specification, originally created in 1992 to enable electronic communication of equity trading data between Fidelity Investments and Salomon Brothers, is still very much in use by both buy- and sell-side firms. It is widely regarded as the de facto messaging standard for pre-trade and trade communication in the global equity markets.

**“Algorithms are not coming for traders’ jobs. Trading is a complex science and when things get complicated, human intelligence cannot be replaced.”**



**“The insatiable appetite for data continues to be the defining characteristic of the industry today.”**

Another is emotional. The issue here is two-fold. As the trading systems become more and more automated, human traders are having to learn to trust that technology will not make errors while continuing to keep a watchful eye on automated processes.

Furthermore, it is important for traders to see that new algorithms aren't coming for the traders' jobs. Trading is a complex science and, as numerous studies prove, when things get complicated, human intelligence cannot be replaced. Unique insights based on human observations will continue to have an immense value. If anything, new technology tools will further augment the role of the trader, turning them into the 'super-traders' of the future, supported by best technology capabilities.

**“New technology tools will augment the role of the trader, turning them into the ‘super-traders’ of the future.”**

# The evolution of the trader

Pictet Asset Management's global head of fixed income trading, Carl James, takes a look at how traders have evolved since the Big Bang in 1986 and finds the ability to adapt remains as important now as it did then.

Looking back over the past 35 years, the Big Bang in London (October 1986) was essential in the evolution of trading and the industry as a whole. Broadly speaking, the Big Bang was about moving from fixed rate commissions, which massively opened up competition in the City, accelerating expansion of the industry and adoption of new working practices. The most fundamental change was moving from floor trading to screen-based trading.

Before the Big Bang, the industry was far smaller and essentially a clique. Post Big Bang, with the injection of investment through takeovers of traditional London City houses, by mostly US banks, expansion of the industry happened at a much faster pace.

Pre-Big Bang, almost everyone had a nickname on the trading floor and without doubt there were some real characters. Loud shirts with butcher stripes matched with braces and suits with colourful linings were a la mode. As we moved to screen-based trading, and the industry grew, it attracted a more and more diverse workforce. This meant less of the 'well connected', sometimes known as 'Tim nice but dim', and a few more barrow boys, whom seemed to all come from Essex! They were all able to reap the rewards of this fast-growing industry. This was the era of conspicuous consumption (1988) with

magnums of champagne, fast cars, expensive clothes, and the City did not want to be left out.

At a very broad level, 'Tim nice but dim' (who was always destined for a job in the City, because he knew someone who worked for someone else and he got the job that way) was successful through connecting with other people who had come from the same background. They usually gravitated towards sales and agency broking. The 'barrow boys' were more suited to market making. This played to their behavioural strengths of quick mental maths, competitiveness and high energy.

Pre-Big Bang, I don't remember regulation even being discussed. However, as the years/decades have rolled by, more and more regulation has been layered onto the industry, delivering some fundamental changes, such as the separation of the cost of research from execution. Today, the industry is a much greyer place as the regulation has become tighter. Some have argued that it has become too onerous, but ultimately the industry, and more importantly all clients, are in a better and safer place now compared to all of those years ago.

The early 1990's saw the emergence of trading technology; this was predicated on the trading having moved to screens from the floor. From 1995 onwards, I started to

explore the use of trading algorithms, which was a hugely different concept to picking up the phone to a broker/dealer and watching prices on a screen. I remember building a Parsing engine to use for program trading. At the time it seemed so sophisticated, and hi-tech. Looking back now, it was more akin to an egg box with a bit of cello tape – at best! It did, however, allow us to electronically send information instead of faxing a list of stocks to a broker.


Decades ago, traders were successful on the trading floor because they had a specific set of skills. They maybe had the skills to foretell who was a buyer or seller by observing body language or other cues whilst on the trading floor, or they were simply able to wade their way through a packed trading floor to find the price they needed.

Each and every trader had their specific skill for trading on the floor but post Big Bang and the shift to screen-based trading, it was clear we needed entirely different skillsets. The change happened, literally overnight. The last day of floor trading was a Friday and then on Monday we were in a new office trading via screens. I remember one trader phoning me exasperated because he had no idea what he was doing – staring blankly at a load of numbers on a screen. During that period, some traders simply couldn't adapt to the changes and left the sector altogether.

The speed of evolution across the industry has accelerated significantly. Technology has acted as an enormous catalyst for the types of trades that we execute, and how they are executed. Trading is far more quantitatively driven today, and largely revolves around the hunt and use of data. It is clear to me that the trajectory of the trading role is becoming less transactional in nature and driven by a more intellectual rigour.

Market participants have to be more open-minded about change and adaptation than before. With the evolution, the industry has become more focused on meritocracy. The skillsets now required are a world away from what was required, and, it is clear that a trader's ability to adapt remains as important today as all those years ago.

**“This was the era of conspicuous consumption with magnums of champagne, fast cars, expensive clothes, and the City did not want to be left out.”**



**“The change happened, literally overnight. The last day of floor trading was a Friday and then on Monday we were in a new office trading via screens.”**

# Reflections and expectations

Julia Streets, CEO of Streets Consulting, takes a look at how data and technology have impacted the industry over the past decade and highlights how emerging technologies could reimagine the trading desk in the years to come.

I first walked the TradeTech halls in 2006 with client Chi-X Europe at a time when most discussions about a European multilateral trading facility (MTF) were met with ‘an MT-what?’ and ‘kai-x? What’s that?’ Removing the European concentration rules paved the way for a lit and dark venue explosion: Chi-X, BATS and Turquoise. Then Baikal, Burgundy (remember those?) and hundreds more.

Best execution supercharged smart order routers hunting fragmented liquidity to feed hungry algorithms and quant models. Proximity hosting, ultra-low latency, even FPGA (field programmable gate array - yes, loads of us had to look it up) commanded a commercial premium as we shelled out for microsecond advantages, watching the crestfallen faces of capex/opex-heavy data centre owners at the very mention of cloud.

Who’d have thought then that today you can spin up an exchange matching engine in the cloud in a matter of hours? We’ve been mentors to FinTech lab start-ups for years now and used to advise against using the c-word in elevator pitches. Back then, it was on-premise or out the door. Cryptocurrencies - essentially Bitcoin - were designed by and for bank-hating mavericks and I don’t think the word tokenisation had been invented. Digital assets sounded far too risky and most ran for the hills at any mention of initial coin offerings. Blockchain? ‘No, it’ll never catch

**“How then do we tackle the common challenges and take advantage of the common opportunities? How about we share?”**

on’. As was patronised - I mean explained - to me on many occasions: “It’s a fad, it needs a use case and it’ll never fly”. Today, primary and secondary markets, settlement, custody, asset and securities servicing businesses, not to mention trade finance and payments, all race apace to create and protect single sources of immutable truth.

As we know only too well, much advantage is found in the data. Historical, proprietary, internal, external, alternative - even synthetic. It is all there for the taking, but what a mess it was. FIX Protocol had brought some industry standardisation, but the tags and flags, normalisation, harmonisation, concentration and consolidation - not to mention governance, privacy and identity - later GDPR - set challenges that legacy-laden, database-siloed organisations needed to tackle, and fast.

Data variety, veracity and volumes exploded. (And I refuse to use ‘the new oil’, nor the expression ‘unprecedented’. Or Brexit. Well, at least not here.) As have

the tools to hunt the insights, aggregate and assimilate, remove the noise, and attempt to address what’s biased, siloed or sullied. Regulatory obligations set high, demanding expectations for better governance, surveillance, compliance and risk management, while RegTech innovation has attracted investment on an epic scale. As we know, unlocking insights takes technological finesse, budget and speed. Oh, and increasingly scarce, therefore costly, skills.

How then do we tackle the common challenges and take advantage of the common opportunities? How about we share? Code. Best practice. Sorry, say that again? We couldn’t possibly... although do talk to me about the wasted cost, pace of development and potential operating efficiencies. When you put it like that, I guess it’s a next step from collaborative trading community working groups to sorting out the frictional wrinkles. This awakening has paved the way for other collaborations and open source foundations, leading us to financial services and fintech-wide operating layers. After all, co-ompetition (terrible word), collaboration and interoperability dominate the buzzword bingo scorecards.

We’re heading for the edge of the cloud and 5G could radically reimagine how we work. Imagine harnessing IoT, virtual reality and augmented realities as we

**“We need ideas from fresh perspectives. Diversity of thought, diversity of skills and diversity of people.”**





**“Today, every trader needs to be a technologist. And if we’ve learned anything in 2020, it’s that every leader needs to know how to signal the next crisis, pandemic wave and market event.”**

reconfigure the trading desks against a backdrop of redesigned future of workspaces?

Whatever your state of technological adoption and sophistication, one question remains: do we have the talent and the leadership. As organisations? As an industry? Today, every trader needs to be a technologist. And if we’ve learned anything in 2020, it’s that every leader needs to know how to signal the next crisis, pandemic wave and market event. We all need to appreciate and imagine how technology can drive us through and out the other side. But many may not be born or trained that way. So, for me, one technological development to watch is low code, but choose wisely. Not all are fit for the complexity and specificity of the capital markets. Self-aware leaders with likely tech-limited knowledge can achieve their business line ambitions for growth, risk management and operational efficiencies. At speed, and on an enterprise and industrial scale.

Margins continue to be squeezed. Interest rates remain low. The cost-axe hangs precariously close and the world has been thrown like never before. We need ideas from fresh perspectives. Diversity of thought, diversity of skills and diversity of people. What have we learned from the last financial crisis? Investors are expecting returns and/or down-side limitations. Regulators are expecting us to demonstrate evolution, oversight and control. And the technology has given us the tools. We now need to think differently.

# The long journey to frictionless electronic trading

Having been instrumental in the development of the Financial Information Exchange (FIX) Protocol, CEO of Rapid Addition and director of FIX Protocol, Kevin Houstoun, provides a brief history of the industry's messaging standard.

Thinking about how integral FIX protocol has become to electronic trading, it's interesting to reflect on the long journey that has brought us to where we are today. FIX started out as an experiment between Salomon Brothers and Fidelity in the fledgling days of electronic trading with the aim of automating the sending of execution reports and IOI transmissions.

Initially dubbed SBX (Salomon Brothers Exchange), the protocol was first used in anger during 1993. Recognising its potential value to the industry, Salomon and Fidelity looked to extend the community, inviting Goldman Sachs and Putnam to join the initiative.

At the first meeting someone was smart enough to point out that Salomon's branding might prove an obstacle to adoption by other broker-dealers. The name was swiftly changed to the Financial Information Exchange Protocol, or FIX, as it's more commonly known.

In 1995 the first public version of the specification, written by Robert Lamoureux and Chris Morstatt, was released as FIX.2.7. It included the session layer and application messages covering the original execution reporting and IOI distribution, but also added messages to support orders, order modification and cancellation, basic list functionality, and a rudimentary exchange of allocation information.

The spec was 50-pages long, but just six of those pages addressed the business use

of the 17 application messages. It offered a mere 103 fields and only supported equities. Unwittingly creating challenges that would later pose problems, this early version used some of the message types for multiple purposes.

In contrast, the 2020 spec is so large that the FIX technical committee has split it into multiple volumes and introduced a machine-readable format, FIX Orchestra. The current spec contains 168 messages and 7,868 fields, covering all asset classes. It also supports a far richer set of functionality and electronic trading workflow.

This partly reflects how sophisticated and pervasive electronic trading has become since those pioneering days, but also how FIX has evolved into a compelling industry standard for enabling electronic message exchange.

**“The increasing prevalence of FIX made it an obvious choice as the messaging protocol for new trading venues.”**

Following the proof-of-concept between Salomon and Fidelity, FIX started handling the submission order, order modifications and cancels, and allocations electronically. Adoption grew as electronic trading became more widespread, which, by 1998, had become firmly established. By then, many of the orders passing through the electronic trading desk at Salomon's were not touched by sales traders. The industry was inexorably heading towards a world where trader intervention would be on an exception management basis only.

## Natural evolution

FIX has helped to accelerate changes in market structure. Rapidly gaining traction as the industry moved away from a screen and phone-based environment, the increasing prevalence of FIX made it an obvious choice as the messaging protocol for new trading venues.

The sanctioning of electronic communication networks (ECNs) in 1998 and subsequent US market decimatisation in 2001 accelerated the spread of electronic trading and use of algorithms, as did further liquidity fragmentation resulting from Reg NMS and MiFID I in the US and Europe.

While the established stock exchanges had grown up in a non-competitive environment with little incentive to collaborate over common standards, the plethora of new alternative trading venues, such as ECNs and multilateral trading facilities (MTFs), looked to minimise obstacles to growth, often adopting FIX as their primary connectivity solution to lower the effort of onboarding brokers.

With FIX adoption resulting in efficiency gains within equity trading, broadening to other asset classes was a natural evolution. Today, FIX is the dominant standard in equities and widely used in fixed income, derivatives, and forex. It has become the de facto messaging standard for pre-trade and trade communication, supporting

# Rapid Addition Innovators in Electronic Trading Infrastructure



## “The industry needs to complete the journey to standardisation, enabling far greater levels of automation and cost efficiency.”

order workflow, market data and price dissemination, and increasingly post-trade workflow as the industry strives for greater automation.

FIX has undoubtedly delivered significant efficiency to the industry over the years. But, looking forward, what more can be done to maintain its relevance and generate value?

### Next phase

Electronic trading has transformed capital markets for the better, but increased electronification along with changes to market structure and regulatory oversight have drastically compressed commissions.

Regulation has also added significant cost overhead, as has connecting to ever more fragmenting liquidity. The result is a sell-side industry that operates on increasingly thin margins and a consolidating broker community that is not necessarily healthy for the wider market. Standards should champion increased efficiency and drive down costs - with the global COVID-19

pandemic suggesting turbulent times ahead, the need to reduce operating costs and protect margins is more acute than ever.

But, despite the ubiquitous nature of electronic counterparty connectivity and order flow, there is still considerable friction in the system. Models for new trading processes are not well documented, leading to protracted alignment processes. Onboarding and conformance testing are time consuming and still require significant manual intervention.

The industry needs to complete the journey to standardisation, enabling far greater levels of automation and cost efficiency, and extending the model to include the binary, often proprietary, protocols favoured by high-frequency trading (HFT) firms and their preferred venues.

Currently, the FIX Trading Community Global Technical Committee is looking to address this through its Orchestra initiative, with the aim of creating a standard for machine-readable rules of engagement

between counterparties. We believe tools such as Orchestra can only help this, and I am a major advocate of removing cost and complexity from electronic trading workflow.

Greater automation and higher levels of interoperability should be the next phase of evolution for FIX, along with the development of tools that put more control in the hands of the end-client, with brokers growing increasingly comfortable ceding tasks to the buy-side. This can drive further cost efficiencies while also helping position brokers as a genuine partner in helping clients achieve their execution objectives.

FIX has come a long way in achieving its original vision of making trading more efficient. It has succeeded beyond the wildest imagination of those of us that were involved in the initial efforts to get the idea off the ground. I think we can see a clear path ahead for what still needs to be achieved.

Ultimately, the nirvana is a frictionless world of electronic trading where connectivity engineers are only involved on an exception management basis, allowing firms to redeploy valuable resources elsewhere. In many ways this will mirror the role of the sales traders, once the focal point for client orders, but today only involved in the largest trades or when something goes wrong.

# Events that shaped the last 20 years

As TradeTech Europe celebrates its 20th anniversary, the TRADETECH Daily takes a look back at some of the biggest events that have impacted the industry over the past two decades.

## 1999-2000 DOT.COM BUBBLE

The dot.com bubble was fuelled by unrealistic expectations from investors that placed their hopes in tech start-ups becoming million-dollar ideas, like Amazon and eBay. Venture capitalists invested in anything with .com in its name. Valuations were based on metrics that essentially ignored cash flow, leading start-ups to float on exchanges and their stock prices to soar exponentially. The value of equity markets grew aggressively with the Nasdaq in the US rising from under 1,000 points to more than 5,000 between 1995 and 2000.

At its peak in March 2000, market leaders such as Cisco and Dell placed large sell orders that encouraged panic selling. Nasdaq would suffer a 77% drop that resulted in billions of dollars being erased from the market and equities entered a receding bear market as the bubble well and truly burst. One year later, most of these dot.com companies had evaporated taking with them trillions of dollars.

## 2001 9/11

The terrorist attacks that took place on 11 September closed the New York Stock Exchange (NYSE) and Nasdaq for five consecutive days, marking the longest shutdown since 1933. Further significant delays impacted the brokerages and financial firms that had offices in the World Trade Center. On the first day of trading after the attacks, the market plummeted 684 points, the biggest loss in exchange history in a single day until the COVID-19 pandemic in 2020.

At close of trading that week, the S&P index was down 11.6% and the Dow Jones was down 1,370 points, making it some of the largest losses in the history of the NYSE. Airlines and insurance sectors in particular experienced huge selloffs and mass fear saw the price of gold jump from \$215.50 an ounce to \$287.



## 2007 MIFID I INTRODUCED

Implemented in 2007 for equities trading across Europe, the Markets in Financial Instruments Directive would transform execution processes and workflows for much of the industry. The MiFID regulation created a single European financial services market, bringing competition to a landscape that had once been dominated by incumbent stock exchanges. New trading venues such as systematic internalisers and multilateral trading facilities were rolled out, adding choice to where investors could execute trades, but with increased complexity and fragmentation. The legislation also laid out the idea of best execution, which would become a key part of its successor.

MiFID only covered stocks and critics argued this allowed for markets such as derivatives to have less transparency and regulatory oversight. Over a decade later, MiFID II would expand the scope to cover additional financial instruments.

## 2008 THE GLOBAL FINANCIAL CRISIS AND THE COLLAPSE OF LEHMAN BROTHERS

The collapse of Lehman Brothers greatly intensified the collapse of the global equity markets in 2007/8, which created a market capitalisation erosion close to \$10 trillion, one of the largest market crashes in history. In the US, Wall Street firms active in the mortgage markets began to fold after defaults in sub-prime mortgages reached a record high. The crisis expanded outside of the US when the sour investments forced Northern Rock to approach the Bank of England for emergency funding, followed swiftly by Swiss investment bank UBS which became the first major institution to confirm a substantial \$3.4 billion loss due to sub-prime activities.

Lehman Brothers was the largest victim of the crisis and marked the largest bankruptcy in the history of the US. When the firm filed for bankruptcy, it had \$639 billion in assets and it was \$619 billion in debt. Concerns arose in March 2008 that Lehman Brothers would fall during the crisis causing its shares to plummet 48% in a single day. Despite emergency restorative measures put in place from March onwards, the firm continued to haemorrhage before finally on 15 September the firm filed for bankruptcy resulting in its stock plunging 93%. The collapse of the Lehman Brothers has since become the symbol of the 2008 crisis.



## 2020 THE COVID-19 PANDEMIC

The COVID-19 pandemic shook the global financial markets to their core. Local lockdowns and office shutdowns globally meant institutions had to rapidly adapt their operations to accommodate remote working conditions. Trading floors emptied virtually overnight, while volatility spiked due to disruption to trading and mass panic. The pandemic would also halt major plans and projects across the industry, including plans the launch of new exchange groups Members Exchange (MEMX), MIAx PEARL Equities, and the Long-Term Stock Exchange (LTSE).

Research has shown that at the height of the market volatility, participants were reluctant to engage in block trades that required broker capital commitment due to an unwillingness to risk capital amid changing levels of liquidity in the market. Retail trading volumes globally have also risen at an exponential level as amateur investors have tried to take advantage of the volatility. This, some argue, has led to a falsification of the market where select stocks have excelled despite being in financial dismay.

## 2010 EUROPEAN SOVEREIGN DEBT CRISIS

The European Sovereign Debt crisis played out as the economies of several European countries collapsed due to high government debt and rising bond yield spreads in government securities. The crisis was significantly worsened by the 2008 global financial crisis. Iceland's banking system collapsed first in 2008, followed swiftly by Portugal, Italy, Ireland, Greece, and Spain in 2009. Greece, Ireland, and Portugal had their debt status temporarily downgraded to 'junk'.

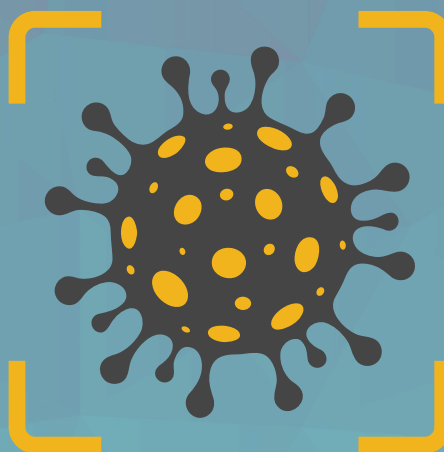


By the end of 2009, these countries were unable to repay debt or bail out their financial institutions without assistance from the European Central Bank, the International Monetary Fund, and the European Financial Stability Facility (EFSF). The EFSF was formed in 2010 at the peak of the crisis, which would continue until 2012. Fearful lenders worried they would not see returns on their loans drove up interest rates causing affected countries to hike up taxes and slash spending.



## 2016 BREXIT VOTE

On the 23 June 2016, the British public voted to leave the European Union. The referendum caused mass disruption in the financial markets as many predicted it would have a devastating impact on the economy by weakening the value of sterling and halting UK economic growth. Mass selloffs of perceived riskier assets took place and spreads on peripheral European bonds widened. The sterling fell 11% against the dollar to a level that had not been seen since 1985. In the worst of the turmoil, traders dumped shares in the panic, causing a massive 550 points or roughly £142 billion to be wiped-off the value of London's FTSE 100 index.



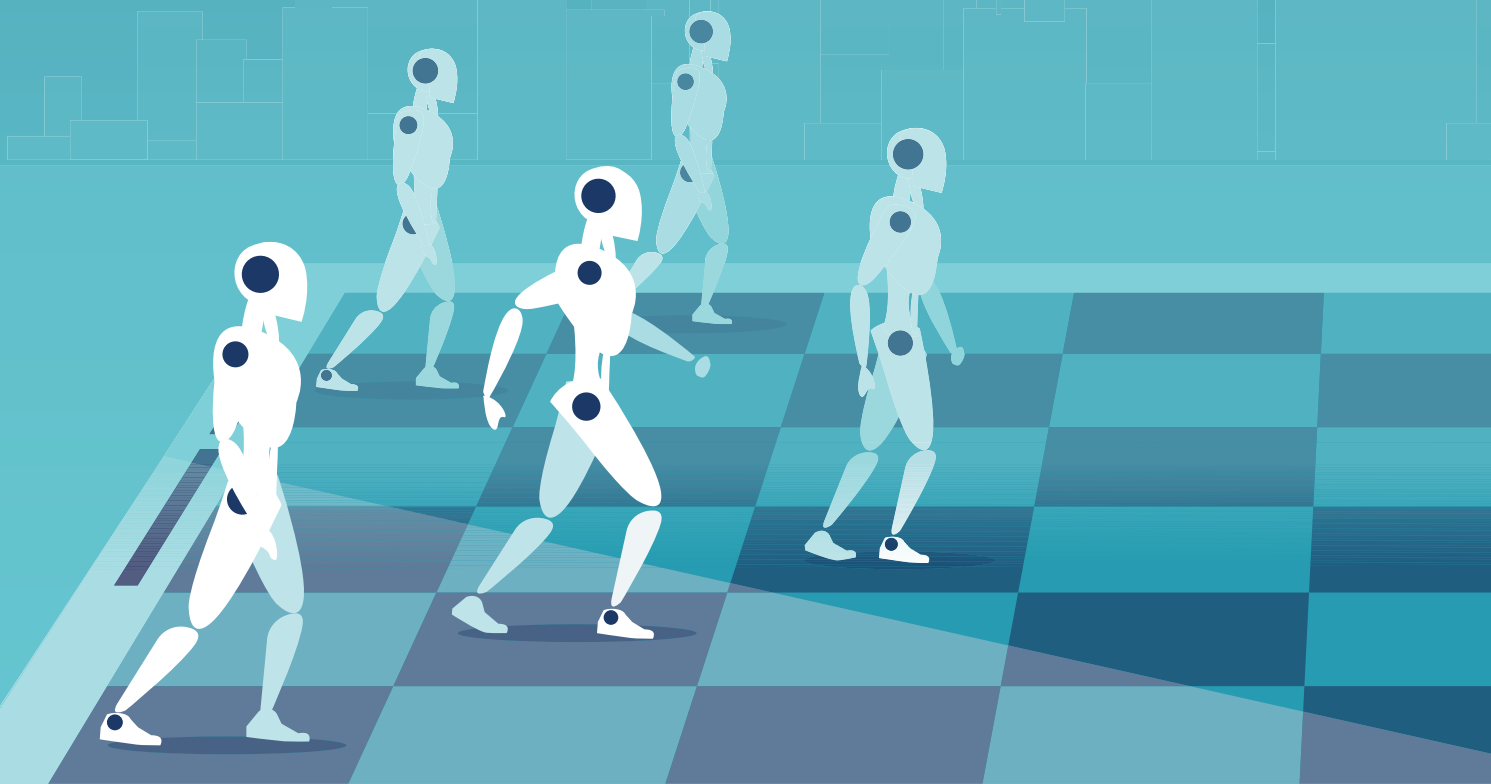
## 2018 MIFID II INTRODUCED

The MiFID II regulation came into force in 2018 to increase protection of investors and restore confidence in the industry following the devastating losses that took place during the 2008 financial crash. The MiFID regulation, which came into force in 2007, was undermined by the global financial crisis with many arguing its scope was too narrow. MiFID II expanded the markets covered by MiFID for a greater feeling of transparency and trust in the markets.

MiFID II enforced this transparency with more reporting requirements. The regulation supervises high-frequency trading also trading in more depth. Algorithms used for automated trading must now be registered, tested, and have circuit breakers included. The regulation also sought to reduce the use of dark trading and dark pools by limiting the trading volume of a stock in a dark pool to 8% over a one-year period. Financial institutions can no longer bundle payments for research and transactions, encouraging a more transparent relationship between the client and provider. Brokers are also required to provide more detailed reporting on their trades, including price and volume information. These factors combined aimed to force more transparent trading activities across Europe.

# HUMAN JUDGEMENT

still **king** in a world of  
algorithmic trades



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Following extreme market conditions at the height of the COVID-19 crisis, **David Whitehouse** explores how algorithmic trading performed in comparison to other market-moving events, and finds the human touch remains critical.

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**A**s the head of fixed income trading at a European bank in 2007, Jens Kramarczik was troubled by the early stages of the US subprime mortgage crisis. He shifted out of risk assets, shorted Italian government bonds and bought the yen as a flight to safety. In this case, human judgement was the key, and the shift was made “long before the rocket science told us to,” he says.

These days, Kramarczik is a consultant in trading algorithms, working from home in Frankfurt. He had a sense of déjà vu as the COVID-19 pandemic prompted market collapse. While algorithms did not cause the mess, they were “not very helpful in March,” he explains. There was the same sense of panic that he witnessed in 2007. “People think that if they use algorithms they are not emotionally involved,” he says. “But that’s not true.”

Kramarczik now uses simple algorithms to identify the best days of the month on which to buy securities, or the best hour within a day. He sees gold as a “safety net” against the massive amounts of liquidity that have been injected into the financial system. Even having reached record levels, gold can still provide “insurance for the future,” he believes.

Still, he treats algorithms as a tool rather than a guide. “If there are moves that are not in your database, it becomes difficult,” he says. “Sometimes the correlation disappears.”

#### Flash Crash

The benefits of algorithms are obvious: much more efficient investment research and faster trading execution. Algorithms are also used to reduce the market impact of big trades as they make it easier to sub-divide orders, so the size of the trades will not be apparent.

The behavioural biases of traders, at least in theory, are eliminated. This doesn’t come for free: market exchanges still experience software glitches, the effect of which can be magnified and spread by algorithms.



“There is no argument” that algorithmic trading adds more liquidity to the markets, says Ashu Swami, chief technology officer at Apify, a global trading and financial value transfer network in New York. But, given their high volumes and automatic nature, “if they go wrong and are not contained, they can cause sharp swings in the market”. Swami previously led the high frequency market-making business at Morgan Stanley.

Algorithms are often used to instantly exploit even minor price discrepancies in the same security trading in different markets. The International Organisation of Securities Commissions (IOSCO) Technical Committee in 2011 found that algorithms can quickly transmit shocks rapidly from one market to the next, so amplifying systemic risk.

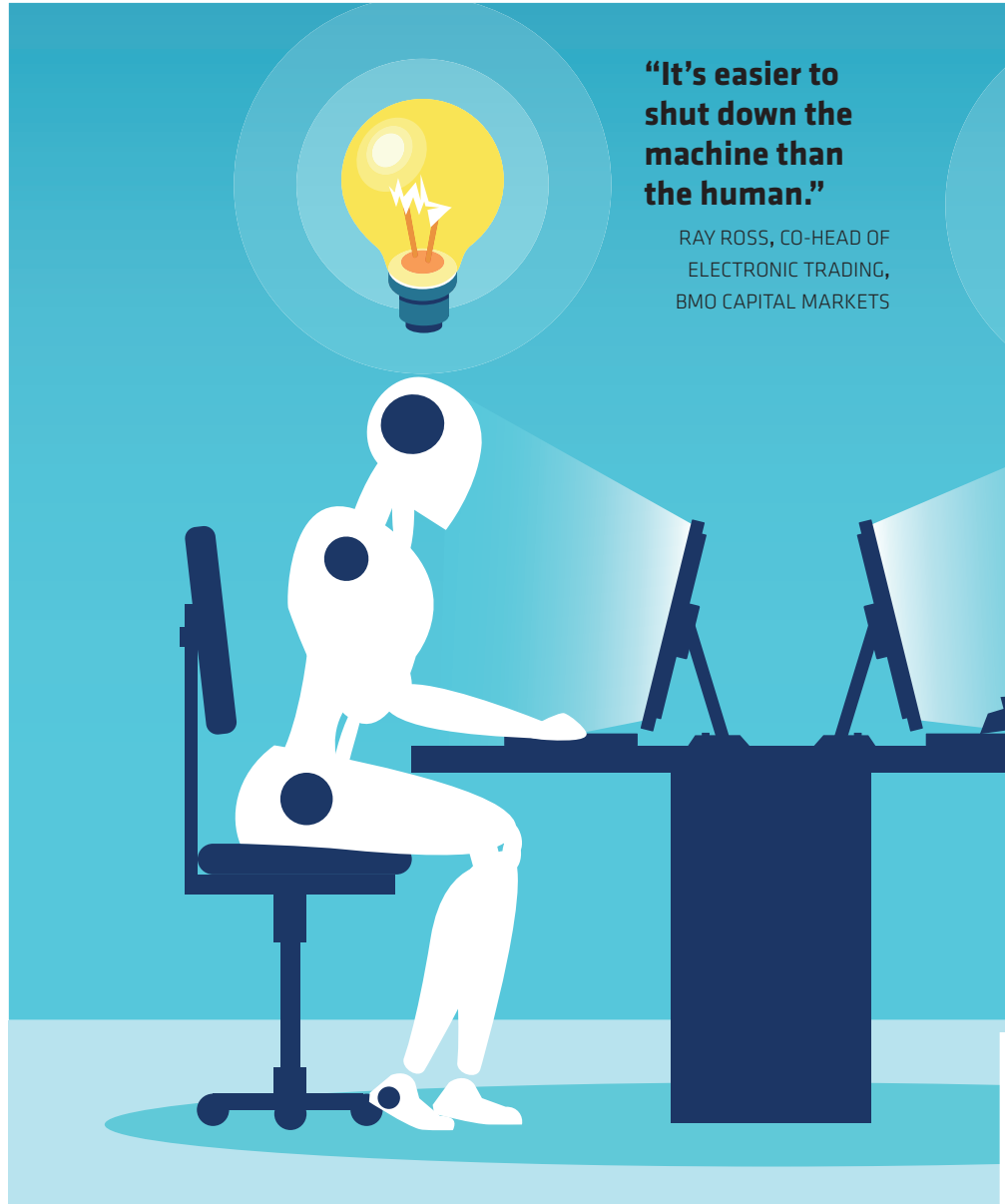
A classic example is the ‘Flash Crash’ of 6 May, 2010 when more than a trillion dollars was temporarily wiped off US equity prices. Computer programs exacerbated the damage by selling large volumes of stocks in response to the volatility. Greater use of market-wide circuit breakers was a result.

#### COVID-19

Rather than a financial or market-led crisis, COVID-19 is a crisis of health and the economy. Some argue that algorithmic trading allowed a prompt, if partial, recovery from the COVID-19 lows seen early this year. The danger now, Swami says, is one of contagion.

When an algorithm goes wrong, “the other algos either see it as an anomaly and pull their quotes, or they make unreasonable trading decisions based on the outlier prices”. Swami is confident that the problem will tend to be reduced over time: “More people using algos will lead to their democratisation and lessen deleterious contagion.”

The volatility seen in March was a function of the pandemic rather than being caused by



**“It’s easier to shut down the machine than the human.”**

RAY ROSS, CO-HEAD OF ELECTRONIC TRADING, BMO CAPITAL MARKETS

## **“Profitability should never take a back seat to risk management. We learned the hard way who focused on reward without sufficient focus on risk.”**

STEVE SOSNICK, CHIEF STRATEGIST, INTERACTIVE BROKERS

algorithms, says Ray Ross, co-head of electronic trading at BMO Capital Markets in New York. BMO, he claims, performed well for its clients while using algorithms.

BMO uses algorithms to manage execution and market impact, rather than to generate trading ideas. Given the fact that they can be used for any kind of strategy, Ross sees little danger that they will all give off the same signal.

Neither does Ross see algorithms as being responsible for increased numbers of failed trades in March. He sees settlement and clearing as the more likely candidates: “my guess is that it’s at that end.”

BMO Capital Markets has been functioning

pretty much as usual with people working from home, Ross says. They will keep doing so for the foreseeable future and he expects the change in working culture to outlast the pandemic. Working from home is “a real improvement” due to technological improvements in the years before the pandemic. Still, the ability to meet face-to-face with clients is missing, he says. That is what will drive decision-making about getting people back into the office. “There’s no way to make up for personal contact.” The most likely result is a “hybrid comeback”.

#### High-frequency trading

For Dejan Ilijevski, president at Sabela

Capital Markets in Chicago, the pandemic has expanded the opportunities to use algorithms for high-frequency trading (HFT). “When markets are slow and flat, there are no triggers, no edges, no opportunities for profits,” he explains. “Uncertainty is the main source for volatility, and the context around COVID-19 is all about uncertainty.”

Since market efficiency depends on price discovery, an increase in trading volumes and market participation leads to fairer asset prices, Ilijevski argues. HFT has also led to lower transactional costs for investors, he adds.

BMO’s Ross takes a more nuanced view. He does not expect there to be a decline in high-frequency strategies. Under normal conditions, he counters, high-frequency traders reduce volatility, but at times of stress, they can serve to create a “phantom” illusion of liquidity. The order books look full, but no-one is really willing to step in and take the risk. “People think there’s more





**“More people using algorithms will lead to their democratisation and lessen deleterious contagion.”**

ASHU SWAMI, CHIEF TECHNOLOGY OFFICER, APIFINY

liquidity in the market than there really is.”

**Liquidity auctions**

Ross also points to US volatility auctions as showing a weak point in algorithms. The US had a level 1 cross-market trading halt on 9 March for the first time in 20 years, and this was followed by three more such halts.

Market-wide circuit breakers force a pause to let markets reset from extraordinary spikes in volatility. The halts led to volatility auctions designed to allow price discovery. “That’s not really what we saw,” Ross says.

Since auctions are a key form of price discovery, lack of participation is likely to have an impact on the market once the auction is over, Ross contends. He points to post-volatility auction trading volumes and price moves which were significantly higher compared with the first minute of trading after a typical opening auction: stabilisation has still not been achieved.

Some brokers were completely unable to support participation in the auctions. The most likely explanation, he believes, is that algorithms were not coded to handle such events. The algorithm “only really knows what it has seen before,” and so chose to sit the auctions out, leaving the markets to fend

for themselves.

Managing an automated options market making model for about 20 years taught Steve Sosnick that successful algorithms “need to be tweaked constantly”. A shock that is beyond the normal scope of a model “doesn’t invalidate the algorithms inside it, but it does force a larger re-evaluation of its underlying premises,” says Sosnick, now chief strategist at Interactive Brokers in Connecticut.

“Profitability should never take a back seat to risk management,” he says. “We learned the hard way who focused on reward without sufficient focus on risk.”

There’s no way that algorithms and HFT are going to go away, Sosnick adds. The key is managing control. Practitioners must “maintain risk controls that work even in extraordinary circumstances”.

**Artificial intelligence**

Algorithms can be divided between those that simply follow the rules laid down in the programme, and those that are linked to machine learning and artificial intelligence (AI). In the latter case, the aim is for these “self-learning” algorithms to be updated automatically in a changing situation, without human intervention.

The danger is that the speed at which these algorithms learn will outpace human capacity to manage and regulate them. According to a report in June from the International Organisation of Securities Commissions (IOSC), AI and machine learning (ML) can “create or amplify” risks for financial markets.

Regulators should consider requiring firms to have designated senior management responsible for monitoring and controlling AI and ML, the report says. Regulators should also require firms to continuously test algorithms to validate the results of the techniques used, the IOSC said.

Further, compliance and risk management functions need to be able to understand and challenge the algorithms that are produced, and conduct due diligence on third-party providers.

Ross says the danger of market manipulation is “a regulatory concern”. “The machine does not know the regulations. It could certainly come up with something that does not meet market norms.”

Still, he believes the same kind of dangers exist with human traders as with algorithms and “it’s easier to shut down the machine than the human”. Of course, rogue human traders are easier to prosecute once you find them. But who gets prosecuted when the algorithms go wrong?



**“Uncertainty is the main source for volatility, and the context around COVID-19 is all about uncertainty.”**

DEJAN ILIJEVSKI, PRESIDENT, SABELA CAPITAL

# What to look out for at this year's virtual TradeTech

THE TRADETECH DAILY TAKES A LOOK AT SOME OF THE HOTTEST KEYNOTE SPEECHES AND PANEL DISCUSSIONS THAT YOU SHOULDN'T MISS AT THIS YEAR'S VIRTUAL CONFERENCE.

## MUST-SEE PANELS

### DAY ONE

10.20 CEST

**All Star Panel: What are the skillsets required for today's traders in the new remote working environment and how can you optimise workflow and enforce regulatory compliance?**

Given the global pandemic this year, which has forced entire trading desks and operations into remote working environments, this discussion on the skillset's traders need to thrive in the new norm will certainly prove interesting. With buy-side trading heads from PIMCO, Vanguard Asset Management and Capital Group giving their thoughts, this is one session not to be missed.

12.25 CEST

**All Star Panel: Exploring future sell-side services: How have buy-side requirements changed and how is the broker community adapting as a result?**

Trading representatives from UBS Asset Management, Liontrust Asset Management, Citi and Virtu will debate the future of the sell-side in this session. As the recent market volatility will have brought about new trends in terms of the buy-side's relationship with brokers, this discussion could prove to be interesting.

14.15 CEST

**Fire Side Chat: Outsourcing the trading desk and building operational resilience: evaluating the pros, cons and true competitive advantages of each**

Amundi's deputy global head of trading, Gianluca Minieri, will share his thoughts a trend that has swept the industry in recent years. As outsourced trading providers claim the pandemic has accelerated demand for their services, don't miss this discussion on the pros, cons and advantages of each outsourced trading desk.

17.05 CEST

**LIVE All-star Panel: Reflecting on the evolution of the equities landscape and how it adapted and reinvented itself through the years**

This buy-side only all-star panel, featuring heads of trading at BlackRock, Capital Group, Invesco and Schroders, is perhaps the hottest panel on this year's agenda. Hear from senior buy-side traders on how the equities trading landscape has evolved, and how the coronavirus crisis compares with the events of 2008.

### DAY TWO

10.00 CEST

**Buy-side Keynote Interview: How can data-driven decisions help you better navigate turbulent markets and identify new opportunities that benefit your end investors?**

Hear from State Street Global Advisor's global chief investment officer, Richard Lacille, on the latest quantitative techniques that are informing decision-making. He will also reveal how you can build models using your trading data to better identify signals to predict market movements and trends.

10.20 CEST

**All Star Panel: How to leverage Machine Learning to transform front office activities and how can you best overcome the common pitfalls to get it right first time?**

As machine learning continues to dominate discussions on technology in trading, you won't want to miss this session with AXA Investment Managers' global head of trading, Yannig Loyer, and Natixis Investment head of technology, George Marootian. They will be looking at how machine learning technology can be used for smarter decision-making across the trade lifecycle.

12.00 CEST

**LIVE Regulatory Fire-side chat: What measures are European financial regulators taking to protect investors and support an efficient and transparent market?**

The European Commission's Tilman Lueder and managing director at the Association for Financial Markets in Europe (AFME), Pablo Portugal, will sit down to discuss whether the regulatory framework is fit for purpose given the current circumstances. They will also debate the impact of the pandemic on regulatory reforms, including MiFID II.



## Day 1- 20th October

08.45 CEST	<b>Virtual networking &amp; Exhibition</b>	
09.55 CEST	<b>Opening Remarks:</b> Julia Streets, CEO, <b>Streets Consulting</b>	
10.00 CEST	<p><b>LIVE Keynote Economic Address: How have European markets managed during the economic downturn and what are the mid-long term impacts of Covid-19 on the equities market?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What is the outlook for the likely trajectory of the economic recovery?</li> <li><input type="checkbox"/> What are the long-term economic and market implications of extreme volatility and how can firms navigate market disruption?</li> <li><input type="checkbox"/> How will Covid-19 impact stocks and shares and what will the next 6-12 months hold for the equities market?</li> <li><input type="checkbox"/> Exploring the implications of a no-deal Brexit and the economic fallout from Covid-19 on European financial markets</li> </ul> <p>Shamik Dhar, Chief Economist, <b>BNY Mellon Investment Management</b></p>	
10.20 CEST	<p><b>All Star Panel: What are the skillsets required for today's traders in the new remote working environment and how can you optimise workflow and enforce regulatory compliance?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What are the skill sets required for a remote trading workforce?</li> <li><input type="checkbox"/> How can you ensure seamless workflows across your trading desks when your team are working from home?</li> <li><input type="checkbox"/> Compliance considerations: What are the latest monitoring and surveillance solutions available to prevent market abuse and enable traders to record orders in a remote working environment?</li> <li><input type="checkbox"/> Streamlining trader and PM communication: How to implement effective processes and systems to best handle information flow and communication between your traders and PM's</li> </ul> <p>Eden Simmer, Global Head, Trading, <b>PIMCO</b>                  Vernita Exum, European Head, Equities, <b>Vanguard Asset Management</b>                  Simon Steward, Head, European Trading, <b>Capital Group</b>                  Dr Hans Christian Reinhardt, Head of Business Development, Europe, <b>Citadel Securities</b>                  Matt Smith, Chief Executive Officer, <b>SteelEye</b>                  Moderator: Brett Berkowitz, Head of End-User and Remote Trading Strategy, <b>IPC</b></p>	
10.55 CEST	<p><b>All Star Panel: What impact have SIs had on the traditional equity market structure and what is the impact on the execution landscape?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What is the impact of SIs on the buy and sell side relationship?</li> <li><input type="checkbox"/> How are SIs providing new liquidity opportunities for the buy side?</li> <li><input type="checkbox"/> With recent regulatory reviews on SIs, what is new and what is required for compliance?</li> <li><input type="checkbox"/> Updates from ESMA: what are latest insights on trading volumes between January-June 2020 and how does this impact SI calculations under MiFID II?</li> </ul> <p>Peter Whitaker, Head of EMEA Market Structure and Regulation, <b>UBS</b>                  Gregg Dalley, Global Head of Trading, <b>Schroders</b>                  Moderator : Shane Swanson, Senior Analyst, Market Structure and Technology, <b>Greenwich Associates</b></p>	
11.25 CEST	<b>Virtual networking &amp; Exhibition</b>	
<b>NAVIGATING THE CHANGING EXECUTION LANDSCAPE</b>		
11.50 CEST	<p><b>All Star Panel: How have regulatory reforms and changes to the equity landscape impacted trading and has this succeeded in making market activity more transparent?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> How has the market structure evolved post MiFID II regarding the route to best execution?</li> <li><input type="checkbox"/> What are the regulatory updates on periodic auctions and tick regimes and how has this impacted flow?</li> <li><input type="checkbox"/> Are the new auction processes helping or hindering the market, and how?</li> <li><input type="checkbox"/> How do periodic auctions compare to block trading platforms, request for quote (RFQ) venues or systematic internalisers when accessing liquidity?</li> </ul> <p>David Miller, Head of EMEA Trading, <b>Invesco</b>                  Mark Pumfrey, Global Head, Equities, <b>Liquidnet</b>                  Scott Bradley, Head of Sales and Business Development, <b>London Stock Exchange Group</b>                  David Howson, President, <b>Cboe Europe</b>                  Simon Gallagher, Head, Cash and Derivatives, <b>Euronext</b>                  Moderator: James Baugh, Director, Equities, <b>Citigroup</b></p>	
12.25 CEST	<p><b>RAII Star Panel: Exploring future sell side services: How have buy side requirements changed and how is the broker community adapting as a result?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What does the growth of non-bank market makers mean for buy side and how are traditional banks adapting to the rise in competition?</li> <li><input type="checkbox"/> How has the rise of non-bank liquidity providers impacted liquidity sourcing?</li> <li><input type="checkbox"/> How will the buy side be impacted by a rise in sell side consolidation, and how do they need to prepare for this?</li> <li><input type="checkbox"/> What have been the biggest changes to buy side requirements post MiFID II regarding broker connectivity, fees and transparency?</li> </ul> <p>Lynn Challenger, Global Head, Trading &amp; Order Generation, <b>UBS Asset Management</b>                  Matthew McLoughlin, Head, Trading, <b>Liontrust Asset Management</b>                  Matthew Cousens, EMEA Head of Platform Sales, <b>Citi</b>                  Rob Boardman, CEO Virtu Execution Services, EMEA, <b>Virtu</b>                  Moderator : Duncan Higgins, <b>Independent Consultant</b></p>	
<p><b>12.55 CEST: Lunch Break &amp; Lunch &amp; Learn Interactive Roundtables:</b>                  Join 8-10 of your peers to discuss your specific trading desk challenges and requirements</p>		
	<p><b>ROUNDTABLE 1:</b> How to leverage real-time data visualisation to derive meaningful insights and influence trading decisions</p> <p>Host: Hugues de Grandmaison, Director, Data Analytics, <b>Altair</b></p>	<p><b>ROUNDTABLE 2:</b> Overcoming the limitations of machine learning and advancing your trading strategies by leveraging the new science of causality</p> <p>Host: Dr Darko Matovski, CEO, <b>CausaLens</b></p>
		<p><b>ROUNDTABLE 4:</b> Alpha generation requires Big Insights, not Big Data. How do we stop researching a lot and start researching smart, to discover hidden signals?</p> <p>Host: Chandini Jain, CEO, <b>Auquan</b></p>
<b>LEVERAGING TRADING ANALYTICS TO OPTIMISE EXECUTION</b>		
13.45 CEST	<p><b>LIVE Panel: How can you leverage the latest innovations in TCA to drive smarter trading strategies and generate greater alpha</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> How is advanced TCA driving greater pre, intra, and post trading insights?</li> <li><input type="checkbox"/> How can you ensure your TCA goes beyond price and gives you increased scrutiny across the full investment process?</li> <li><input type="checkbox"/> How can you measure trading costs relative to market conditions to understand if costs are at a reasonable level?</li> </ul> <p>Ryan Chidley, Senior Equity Trader, <b>APG</b>                  Mark Ford, General Manager, <b>ISS LiquidMetrix</b>                  Moderator : Ken Monahan, Vice President, Market Structure and Technology, <b>Greenwich Associates</b></p>	

Day 1- 20th October Continued

14.15 CEST	<p><b>Fire Side Chat: Outsourcing the trading desk and building operational resilience: evaluating the pros, cons and true competitive advantages of each</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What has driven the growth of outsourced trading and will this trend continue as a result of the global pandemic?</li> <li><input type="checkbox"/> What is the regulators' view on outsourced dealings and what is the reporting structure?</li> <li><input type="checkbox"/> What are the risks of outsourcing your trading desk and can it have a detrimental impact on market insights and customer relationships?</li> </ul> <p>Karen Zachary, Acting Chief Executive Officer, <b>CRUX Asset Management</b>                  Gianluca Minieri, Deputy Global Head, Trading &amp; CEO, UK &amp; Ireland, <b>Amundi Intermediation</b>                  Moderator: Julia Streets, CEO, <b>Streets Consulting</b></p>
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ACCELERATING AUTOMATION TO ACHIEVE SMARTER WORKFLOWS

14.40 CEST	<p><b>Panel: How can you integrate the latest technologies into your trading ecosystem to drive intelligent workflows and make smarter execution decisions?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> How to integrate machine learning into your trading desk and what are the key considerations?</li> <li><input type="checkbox"/> How to ensure information is sent to the right person when post-trade analytics is hosted on different systems?</li> <li><input type="checkbox"/> What are the current progress monitoring capabilities to ensure this is happening?</li> <li><input type="checkbox"/> How to do this in a cost effective manner when quantitative traders and IT team resources are limited?</li> </ul> <p>Alastair Clarke, Senior European Equity Trader, <b>Capital Group</b>                  Robert Watts, VP, Global Sales Director, Trading Solutions, <b>FactSet</b>                  Grant Lowden, Head of Partnership sales, <b>TradingScreen</b>                  Matthew Reid, Product Manager, Order Management, <b>SimCorp</b>                  Dan Schleifer, CEO, <b>Cosaic</b>                  Moderator: Steve Grob, Founder, <b>Vision 57</b></p>
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15.15 CEST	<p><b>Panel: How to build an infrastructure that can automate access to multiple venues and source new liquidity opportunities at speed?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What are the latest developments in smart order routing and how can you leverage this to source new liquidity opportunities?</li> <li><input type="checkbox"/> How to best on-board new trading venues and what are the implications on new execution management systems?</li> <li><input type="checkbox"/> What are the best approaches to integrate new block trading solutions?</li> <li><input type="checkbox"/> How to overcome connectivity challenges around accessing liquidity providers quickly</li> </ul> <p>Joseph Bacchi, Head, Multi-Asset Trading, <b>Acadian Asset Management</b>                  Christoph Hock, Head, Multi-Asset Trading, <b>Union Investments</b>                  Terence Chabe, Business Manager, <b>Colt Technology Services</b>                  Moderator : Shane Swanson, Senior Analyst, Market Structure and Technology, <b>Greenwich Associates</b></p>
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15.40 CEST	<b>Virtual networking &amp; Exhibition</b>
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16.00 CEST	<p><b>Panel: How can you best leverage smart O/EMS developments to flag new multi-asset opportunities, improve desk communications and drive efficiencies?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What capabilities have current platforms got for capturing more trade information?</li> <li><input type="checkbox"/> What are current strategies for flagging alpha opportunities from fund managers?</li> <li><input type="checkbox"/> How are providers evolving their OTC and multi-asset offerings and what are their shortfalls?</li> <li><input type="checkbox"/> How are the buy side managing the varying execution systems interacting and data sharing?</li> <li><input type="checkbox"/> What is the future of mobile/agile access to real-time data through the OMS?</li> </ul> <p>Dylan Kluth, Head, Dealing, EMEA &amp; Americas, <b>AMP Capital</b>                  Linda Middleditch, Chief Product Officer, <b>Itiviti</b>                  Stuart Field, Solutions Executive, FIS' Cross Asset Trading and Risk business, <b>FIS Global</b>                  Michael Beattie, Director, Product Strategy, <b>Charles River Development</b>                  Moderator: Steve Grob, Founder, <b>Vision 57</b></p>
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16.35 CEST	<p><b>Panel: How can you best drive data standardisation across your firm to ensure enhanced data quality, improved collaboration and streamlined use?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What does internal data sharing structures and collaboration need to look like to ensure standardised and clean data?</li> <li><input type="checkbox"/> Readdressing the role of compliance when accessing data through the cloud</li> <li><input type="checkbox"/> How can you get systems on your trading desk to better speak to each other and help align shared data sets?</li> <li><input type="checkbox"/> Data governance: what framework is in place and what quality control strategies are still needed?</li> </ul> <p>Sam Ratcliff, Head, Execution Technology, <b>Man Group</b>                  Rodrigo Dupleich, Executive Director, Quantitative Analyst, <b>UBS Asset Management</b>                  Peter Jeanmonod, Senior Technical Lead, <b>Options Technology</b>                  Moderator: Hayley McDowell, Editor, <b>The TRADE</b></p>
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THE FUTURE OUTLOOK OF THE GLOBAL EQUITIES MARKET

17.05 CEST	<p><b>LIVE All-star Panel: Reflecting on the evolution of the equities landscape and how it adapted and reinvented itself through the years</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> How have the financial markets overcome historical challenges and how do we continue to innovate in order to thrive?</li> <li><input type="checkbox"/> Future outlook: what does the coming months hold for the equities market?</li> <li><input type="checkbox"/> What similarities and differences can we derive from COVID-19 and the 2008 recession?</li> <li><input type="checkbox"/> How will working practices continue to evolve over the next 6-12 months and what are the latest innovative technologies that we should be exploring to support the trading desk?</li> </ul> <p>Paul Battams, Head of EMEA Equity Trading, <b>Blackrock</b>                  Simon Steward, Head, European Trading, <b>Capital Group</b>                  David Miller, Head of EMEA Trading, <b>Invesco</b>                  Gregg Dalley, Global Head of Trading, <b>Schroders</b>                  Moderator: Gervais Williams, Head of Equities, <b>Premier Milton</b></p>
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17.40 CEST: End of Main Content

16.50-17.25	<b>Virtual Roundtables: Join 10-12 of your peers to discuss your specific trading desk challenges and requirements</b>
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Day 2- 21st October

09.00 CEST	<b>Virtual Networking &amp; Exhibition</b>
<b>ACCELERATING AUTOMATION TO ACHIEVE SMARTER WORKFLOWS</b>	
10.00 CEST	<p><b>Buy Side Keynote Interview: How can data- driven decisions help you better navigate turbulent markets and identify new opportunities that benefit your end investors?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What are the latest quantitative techniques that will help inform strategic decision making?</li> <li><input type="checkbox"/> How to leverage advanced analytics to navigate market volatility</li> <li><input type="checkbox"/> How to build models around your trading data to identify signals to better predict market movement and trends</li> </ul> <p>Richard Lacaille, Global Chief Investment Officer, <b>SSGA</b>                  Moderator: Ken Monahan, Vice President, Market Structure and Technology, <b>Greenwich Associates</b></p>
10.20 CEST	<p><b>All Star Panel: How to leverage Machine Learning to transform front office activities and how can you best overcome the common pitfalls to get it right first time?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> How are quantitative traders applying ML techniques for smarter decision making across the trading lifecycle?</li> <li><input type="checkbox"/> How are firms leveraging Natural Language Processing technology to drive smarter trading</li> <li><input type="checkbox"/> How to overcome the bottlenecks of implementation such as cost and infrastructure limitations?</li> <li><input type="checkbox"/> How do firms need to evolve the architecture of their quant infrastructure to enable the application of ML in their trading strategies?</li> <li><input type="checkbox"/> How can firms efficiently and effectively test all of the 1000s of datasets that are potentially valuable for their strategies?</li> </ul> <p>Yannig Loyer, Global Head of Trading, Securities Financing and Derivatives, <b>AXA Investment Managers</b>                  George Marootian, EVP, Head, Technology, <b>Natixis Investment</b>                  Emmanuel Hauptmann, Partner &amp; Quantitative Fund Manager, <b>RAM Active Investments</b>                  Dr Darko Matovski, CEO, <b>Causalens</b>                  Michael Stelarios, Global Head of Quantitative Execution Services, <b>Goldman Sachs</b>                  Moderator: Julia Streets, CEO, <b>Streets Consulting</b></p>
10.55 CEST	<b>Virtual networking &amp; Exhibition</b>
11.25 CEST	<p><b>Panel: Executing new alpha generation strategies: How can you evaluate alternative datasets and prioritise new data initiatives to better support trader decision making?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> What are the new markets to trade with and where are the future investment opportunities?</li> <li><input type="checkbox"/> What other alpha generating techniques and tools are available such as generating alpha signals through analytical tools</li> <li><input type="checkbox"/> How are new analytical tools and techniques being leveraged in the investment process?</li> <li><input type="checkbox"/> How to measure the efficacy of these initiatives? Evaluating and measuring the performance of new tools and datasets</li> </ul> <p>Daniel Leon, Global Head, Trading, Treasury Management and Global Solutions, <b>HSBC Global Asset Management</b>                  Andrea Nardon, PM, Head of Quant, <b>Sarasin &amp; Partners</b>                  Chandini Jain, CEO, <b>Auquan</b>                  Peter Simon, Lead Data Scientist, Financial Markets, <b>Datarobot</b>                  Aurelien Decros, Solutions Architect- Capital Markets, <b>Altair</b>                  Moderator: Carrie Osman, CEO, <b>Cruxy &amp; Co.</b></p>
<b>NAVIGATING THE NEW REGULATORY LANDSCAPE</b>	
12.00 CEST	<p><b>LIVE Regulatory Fire-side chat: What measures are European financial regulators taking to protect investors and support an efficient and transparent market?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Is the regulatory framework fit for purpose in the current climate?</li> <li><input type="checkbox"/> Exploring the future shape of equities markets in the EU</li> <li><input type="checkbox"/> What impact will Covid-19 have on MiFID II and what likely reforms will we see in the MiFID II/MiFIR rulebook?</li> </ul> <p>Tilman Lueder, Head, Unit – DG FISMA, Securities Markets, <b>European Commission</b>                  Moderator : Pablo Portugal, Managing Director, <b>AFME</b></p>
<b>12.25 CEST: End of conference</b>	