interxion™

COUNTDOWN TO MiFID II:

Best Execution, Brexit and Trading Infrastructure Best Practices

INTRODUCTION

MiFID II is on track for sweeping changes in financial services from January 2018. It's widely recognised that the regulation will require firms to make major changes to the way they operate, and the technology and connectivity infrastructures they use to remain competitive.

But events in 2016 have muddied the waters. The UK's July Brexit vote to leave the EU means that London – Europe's largest financial centre by far – faces the prospect of finding itself outside of the EU and its large and lucrative single market, if Brexit goes ahead as expected. The range of possible outcomes for UK-based business is making planning for Brexit – and for MiFID II – a substantial challenge for many financial institutions operating in Europe.

Then, in November, the situation was further complicated by the surprise election of outsider Donald Trump as US president, raising the prospect of an unwinding of some of the stringent regulation that has been imposed since the Credit Crisis, most notably the Dodd- Frank Act.

Against this political backdrop, the European execution venue landscape is undergoing major change. First, MiFID II introduces a new category of trading venue, the Organised Trading Facility (OTF), for the trading of OTC instruments. Then, the LSE's proposed merger with Deutsche Boerse – if it goes ahead – would consolidate key market venues under a single market operator, albeit one whose corporate ownership straddles a future EU/UK border.

Add in the 2015 takeover of NYSE and its LIFFE derivatives market by InterContinental Exchange (ICE), the 2016 relocation of the London Metal Exchange's (LME) primary data centre, and the Chicago Board Options Exchange's (CBOE) pending acquisition of BATS Exchange, and what emerges is a picture of significant change in the European execution landscape topology. This ongoing state of flux will impact firms' efforts to plan for Best Execution, a key tenet of MiFID II and several other emerging regulations worldwide.

At the same time, the UK's new-found freedom under Brexit will allow it to forge trade deals in new pastures globally. This raises the prospect of newly attractive sources of liquidity for UK-based institutions, further confusing the overall connectivity and infrastructure situation.

This paper surveys the current state of play, and offers guidance on how European, UK and London-based financial institutions go about planning for the upcoming turmoil. Specifically, it looks at how a thoughtful approach to connectivity, hosting and cloud-based services can help firms optimise their response to the oncoming rigours of MiFID II against the confusion posed by Brexit and the Trump presidency.

MiFID II: The Intent and What It Means for Market Practitioners

MiFID II is the next incarnation of the EU's Markets in Financial Instruments Directive (MiFID), which came into force in late 2007. The original MiFID's primary objective was to establish an integrated financial market, in which investors are protected adequately, while ensuring efficiency and integrity of the overall market.

If MiFID I sought to put in place a new framework for capital markets in the EU, MiFID II has been designed to address the issues that regulators see as contributory factors to the Credit Crisis of 2008. It thus seeks to address the lack of transparency, especially in OTC derivatives, shifting liquidity away from dark pools and onto lit, exchange-like trading facilities, and place more controls over high frequency trading, particularly through new rules on the use of algorithms.

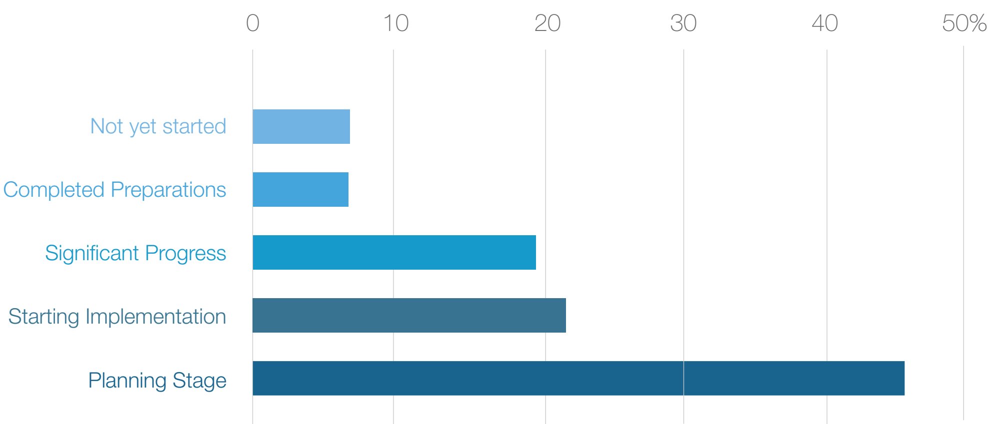
This initiative translates into a far more wide-ranging regulation affecting a much broader range of financial institutions. To give an idea of the scope, MiFID I required mostly sell-side institutions to report on some 35 data points relating only to equities markets; MiFID II, by contrast, requires monitoring of more than 60 data points, by firms ranging from investment banks to custodians, fund administrators and asset servicers, across all asset classes from equities, to fixed income, foreign exchange and OTC derivatives.

After several delays, MiFID II is now scheduled to come into force on January 3, 2018. Certain requirements – like data collection for assessing eligibility for systematic internaliser status – will take effect sooner (January 2017). Others – like the adoption of systematic internaliser classification criteria – will come later (July 2018).

The latest major delay – in September 2015 – shifted the implementation deadline back a year from January 2017, with the European Securities Markets Association (ESMA) citing market participants' need for additional time to prepare for what is perceived as the biggest shake-up in European market structure for a generation.

A poll of more than 40 members of A-Team Groups' community of financial trading technology professionals in November 2016 suggests the marketplace appears to be in an appropriate state of readiness:

MiFID II Readiness

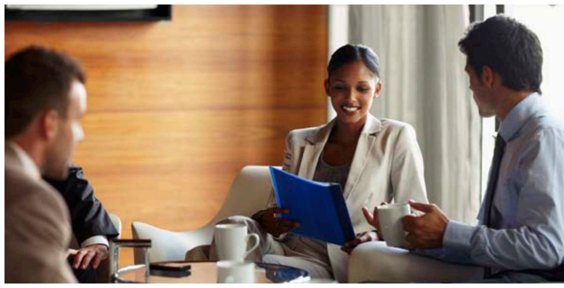


Anecdotally, market practitioners interviewed for this paper say the level of readiness varies across market segment and by type of firm. The ESMA postponement gave executives a significant amount of time to digest the emerging requirements, and at this stage the overall regulatory specification is still missing detail in some areas with the result that firms are well prepared in some areas but less so in others.

A glance at the poll results over the past 12-24 months suggests a fluctuating level of readiness. The constant is that survey respondents acknowledge they aren't ready but they believe they will be in time for the deadline.

That said, some practitioners used the last ESMA delay to push off their preparations. While large sell-side firms may be close to readiness, particularly in areas like best execution based on their preparations for the US Dodd-Frank Act, smaller sell sides and buy-side institutions are markedly less well prepared.

Why?



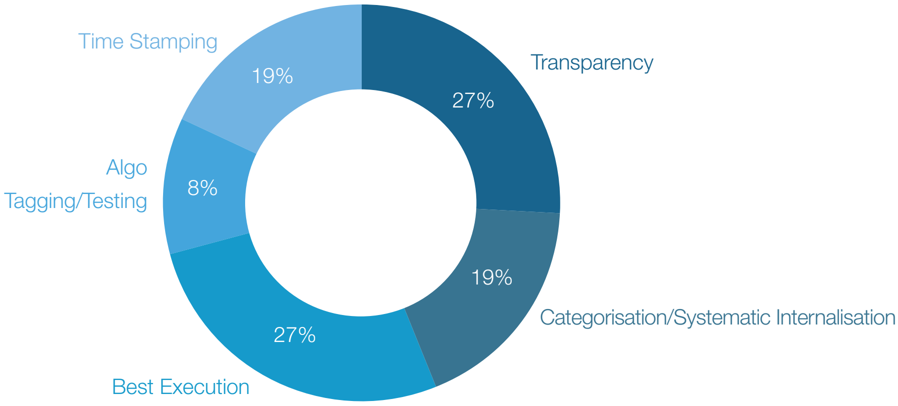
One market commentator says: "Because people in the first instance didn't read the regulation properly, they have since looked at areas where there are small elements of text in the regulation that belie huge amounts of work and investment, and the bottom line is that a lot of people aren't going to be ready."

MiFID II impacts firms' trading infrastructure considerations on a number of levels. It establishes a new category of execution venue, the Organised Trading Facility (OTF), which seeks to level the playing field for trading of non-listed non-equity instruments alongside the Regulated Markets (exchanges) and Multilateral Trading Facilities (MTFs) established under MiFID I. Firms wishing to participate in these markets must be able to connect to the new platforms, and apply rigorous best execution policies in order to comply with the new rules.

MiFID II's best execution requirement is underpinned by the need for robust records retention, and for both pre- and post-trade reporting. It also requires highly granular time-stamping of orders and trades, so that it's clear how trading workflow events took place as evidence of best execution. MiFID II's systematic internalisation requirement, meanwhile, adds complexity by forcing firms to demonstrate their eligibility to operate (or not) as a systematic internaliser (SI). And the regulation imposes rigorous checks on market participants' use of algorithms, in part to ensure trading programmes don't wreak the kind of havoc witnessed during the so-called Flash Crash of 2010 and other similar market-disrupting events.

All of these require a substantial level of investment on the part of firms wishing to participate. In the same A-Team poll, participants identified the following key issues as topics of concern to be addressed in time for MiFID II's January 2018 deadline:

Top MiFID II Challenges



From the survey result, it's clear that MiFID II's best execution and transparency requirements are front and centre of market practitioners' thinking. Taking into account ancillary issues around time-stamping and algo tagging/testing, and it becomes evident that meeting the best execution requirement will be a mainstay of overall MiFID II compliance. The challenge presented by best execution, and the other key requirements for that matter, are being accentuated by the UK's recent Brexit vote.

All of the above points to the need for firms to assess carefully the infrastructure partners they select as they choose hosting facilities for their trading operations. With firms increasingly keen to reduce their onsite IT footprint, colocation and proximity hosting from established data centre operators are becoming essential components of their trading systems. Combining hosting with the availability of value-added technology services – like connectivity to execution venues, testing facilities and time-stamping – will become an important consideration in firms' attempts to comply with their MiFID II obligations. Indeed, firms have already started moving in this direction. According to Bill Fenick, Strategy and Market Director for Financial Services, at Interxion:

> *"We are seeing our capital markets customers asking for various auxiliary services related to MiFID II such as time-stamping and additional connectivity to further data sources and exchanges."*
>
> Bill Fenick, Strategy and Market Director for Financial Services, at Interxion

Brexit Muddies the Waters

The UK's Brexit vote last June to withdraw from the European Union has raised questions of the status of MiFID II (and other EU regulations) as it pertains to institutions with operations in the UK.

Technically, things are clear: The UK has two years to negotiate its exit once Article 50 has been invoked, which prime minister Theresa May has said will happen during the first quarter of 2017. The earliest the UK can leave the EU, then, is spring 2019 (there is provision for extension of the negotiations if all parties agree). MiFID II for the most part comes into force in January 2018, meaning that the UK firms will need to comply.

But this apparent clarity hasn't completely convinced the marketplace. Several financial institutions active in London – among them Citi, and possibly Goldman Sachs – have initiated discussions about shifting regulatory supervision to the European Central Bank (ECB) from the UK's Financial Conduct Authority (FCA), indicating some nervousness about what may happen post-Brexit.

Meanwhile, along with lots of talk about non-UK institutions upping sticks and leaving for Frankfurt, Paris or some other European financial centre in order to guarantee continued access to the single market for financial services, there has been much speculation about the future location of clearing of euro-denominated instruments, an activity now dominated by London. Some financial centres, notably Paris, have made a play to attract London-based financial services businesses, citing Brexit and indeed the possibility of euro clearing leaving London, which the London Stock Exchange has estimated could cost the industry some $77 billion in additional collateral requirements.

But many observers point out that no other European centre has the expertise or infrastructure required to take on euro clearing in a serious way, and suggest that New York would make a more appropriate home. The election of Donald Trump – and his promises to roll back financial services regulation – have served to bolster the view of New York as a candidate for euro clearing's new location.

To be sure, none of the above indicates any change in the guidance for London operations of financial institutions: They will need to be compliant with MiFID II when it comes into force in 2018. Indeed, asked whether Brexit had affected their planning in any way, a panel of investment bank data and IT managers at A-Team Group's Data Management Summit in October universally responded that there had been no impact. Indeed, firms are proceeding with their MiFID II plans with a 'business as usual' attitude, perhaps reflecting the underlying belief that London will remain as Europe's leading financial centre.

But Brexit and the US election have injected uncertainty into proceedings. Furthermore, ESMA itself has pushed back the deadline for implementation of MiFID II's rules around systematic internalisation. While this is not related to Brexit, it has added to the overall sense of uncertainty, leading financial markets participants to wonder how best to proceed.

This situation doesn't look like it is changing anytime soon. Industry participants expect a lot of posturing and jostling for position as the UK begins negotiations in earnest. Many fear that this will continue right up to the deadline for conclusion of the negotiations, translating into a minimum two-year period of uncertainty for financial institutions as they plan and implement their response to MiFID II, the widest ranging European financial services regulation for a generation.

Changing Execution Venue Landscape

The market uncertainty posed by Brexit comes against a backdrop of significant changes underway in the European trading venue landscape. MiFID II's introduction of new categories of execution venue as part of its core remit to boost transparency, particularly in over-the-counter markets, plus ongoing mergers and acquisition activity in the exchange sector, together point to oncoming change – and this may have repercussions for firms' efforts to ensure best execution under MiFID II, specifically with respect to where they should locate their execution gateways.

MiFID II's new categorisation of execution venue will require liquidity pools to classify themselves under one of three designations: Regulated Markets, Multilateral Trading Facilities (MTFs) or Organised Trading Facilities (OTFs). Financial institutions, meanwhile, also need to decide whether their internal matching activities qualify them for designation as Systematic Internalisers (SIs).

An OFT takes the concept of an MTF established for off-exchange trading of equities under MiFID I and applies it to non-equities instruments, in a bid effectively to shift OTC trading onto 'lit' exchange-type trading mechanisms. It remains to be seen, however, whether OTFs gain traction.

Indeed, the uptake of MTF categorisation by trading platforms after MiFID I came into force did not set the world on fire. The same may be true for MiFID II, with one industry observer expecting perhaps seven MTFs to emerge come deadline day: Bloomberg, Currenex, EBS, MarketAccess, TradeWeb, Tradition and UBS.

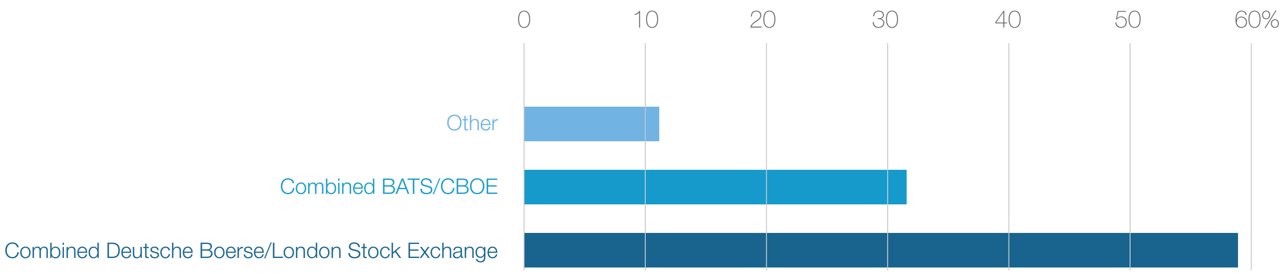
The same observer expects to see the major interdealer brokers step up as OTFs, among them: BGC Partners, Cantor Fitzgerald, TP ICAP and Tradition. Whether this OTF landscape actually materialises is another matter. One insider suggests these firms has each opted for MTF status even though OTFs were designed by the regulators as the preferred vehicle for bring the cash bonds and OTC derivatives markets serviced by the IDBs onto lit trading platforms.

Meanwhile, firms qualifying as Systematic Internalisers will be required to report their pre- and post-trade prices to the marketplace. While this has been for post-trade equities transactions under MiFID I – and as a result there is a range of commercial transaction reporting facilities available – pre-trade quote publication is new under MiFID II.

Those firms obliged to report will need post their quotes in real time to a so-called Approved Publication Arrangement (APA), which acts as a consolidator and exposes them to the marketplace. So far, a number of firms are believed to be assessing the possibility of becoming an APA under MiFID II, among them: BOAT, Deutsche Boerse, TP ICAP, London Stock Exchange, TradeWeb and TRAX.

Within the established European exchange segment, the A-Team survey suggested that market practitioners are concerned in particular by the proposed merger of the London Stock Exchange and Deutsche Boerse, probably the two largest exchange groups in Europe.

Important Execution Venues Post-MiFID II



More than half of survey respondents (56%) said the combined German and UK exchanges would be the most important group in the post-MiFID II environment. But Brexit once more had injected uncertainty into the situations. Anecdotally, many industry practitioners doubt the deal will win final approvals should Brexit go ahead; the prospect of an exchange group with one foot in and one foot outside of the EU, and controlling liquidity for German and UK cash equities and derivatives markets (via Eurex) is politically difficult, no matter that it could be appealing to a post-Brexit UK seeking to establish itself as some form of gateway to the EU marketplace.

Elsewhere, other major European execution venues could be impacted by the proposed takeover of BATS Exchange by the Chicago Board Options Exchange (CBOE). Through its acquisition of Chi-X Europe a few years back, BATS has become a significant liquidity pool for UK equities in its own right. An acquisition by CBOE would bring equities and derivatives under one roof in the exchange groups' home marketplace the US, but it's less clear what the impact would be in Europe, beyond adding to uncertainty.

What's feared is that the merger could introduce the kind of uncertainty that's resulted from the acquisition of the New York Stock Exchange (NYSE) by the InterContinental Exchange (ICE), which saw the spin-off of the Euronext group of exchanges (Paris, Lisbon, Brussels, Amsterdam) and the subsuming of NYSE's Liffe derivatives exchange under the ICE umbrella. This re-fragmentation has had repercussions for those using NYSE's Basildon colocation centre for access to these markets, with questions as to how long ICE will continue to support the facility and its links to venues it no longer owns.

These changes, of course, represent known unknowns as far as the European execution landscape is concerned. On top of that, there are those developments that we don't yet know about, the unknown unknowns. These can have far-reaching implications when it comes to location of execution servers, a key consideration for best execution under MiFID II.

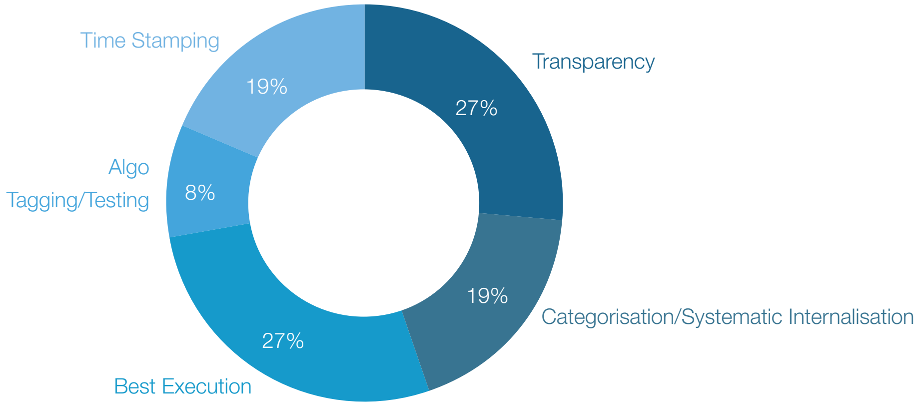
Take for example the prospective merger between LSE and DB – where might equities be traded and where might derivatives be traded? Would the merged exchanges keep both locations? Or would they move one product to London whilst the other product stays in Frankfurt? These are the unknown unknowns that are being postulated.

Impact on Best Execution

The combined uncertainty posed by the factors described above promise to disrupt financial institutions' plans for best execution under MiFID II. With location (and speed) a significant factor in firms' ability to execute according to clients' wishes, issues around best execution can have significant ramifications for firms' colocation or proximity hosting strategies.

Best execution is a key tenet of the regulation in terms of transparency and investor protection, and was acknowledged as such by respondents to the A-Team survey, who put it as joint top priority along with transparency, with 27% of participants listing it as their main concern.

Most Pressing Aspects of MiFID II



Practitioners complain that it's not entirely clear from the published regulation or ESMA guidance how to comply fully with the new requirement. While most are optimistic that they will solve the issue ahead of the January 2017 deadline, others fear that for some players, the solution will be to discontinue that particular line of business.

Building considerably on its MiFID I predecessor, MiFID II's best execution requirement will hold affected firms to far more rigorous standards relating to quality of execution, taking into account factors such as timeliness, cost and other factors. Under MiFID I, it was sufficient for firms merely to explain their execution policy to clients – whether it was simple VWAP or some other straightforward benchmark. Under MiFID II, firms are expected to take "sufficient steps" to ensure the best possible execution outcome for clients.

This 'sufficient' requirement implies significant obligation for firms to collect and – when required – present to regulators any and all data pertaining to how a given trade was executed. For many firms, this will force a rethink of their existing transaction cost analysis (TCA) monitoring tools and the collection of transaction histories going back as far as seven years in order to satisfy regulators.

Data collection and data quality is at the heart of the requirement, which specifies that firms must retain records relating to the entire trade lifecycle and be able to reconstruct transactions upon request. This in turn drives the MiFID II requirement for highly granular time-stamping of order and transaction data, which firms need to put in place using sophisticated monitoring systems. By monitoring both real-time order and post-trade transaction data, firms also can address the surveillance aspects of MiFID II, as well as those of the complementary EU Market Abuse Regulation (MAR).

Fortunately, larger institutions are finding they are able to leverage the work they've already put in to comply with the US Dodd Frank Act's best execution requirements. For these firms, it's relatively straightforward to extend their solution to the European marketplace, even though the precise interpretation of the term 'sufficient' is not yet fully understood and is expected to mean tougher than its predecessor's 'reasonable'.

Things may be less rosy for smaller firms, though. Brokers without significant enough US operations to be covered by Dodd-Frank are essentially starting from scratch. For many of these firms, this is the first time they've had to address the complexity posed by MiFID II's best execution provision, and buy-side clients expecting their brokers to provide best execution say they haven't seen much progress to date.

Moreover, the requirement is further blurred by the addition of OTC securities. With trading of OTC instruments shifting to lit venues, firms aren't clear on how to demonstrate execution quality for illiquid securities that trade infrequently. They are daunted by the sheer number of issues – estimated at some 15 million instruments traded via 300 execution venues. The expectation is that firms will need access to pricing and provide execution quality analysis across this spectrum of securities.

Further complexity is added by considering the implications for cross-asset trading. It's acknowledged that best execution will differ across asset classes, and firms are now exploring how to institute consistency of policy across equities, fixed income, foreign exchange and derivatives, where trading terminology, classification of clients and other factors can vary widely.

Despite the challenges of MiFID II's best execution requirement, some firms have indicated their intention to embrace the new provisions in the hopes of leveraging them into a revenue opportunity. Firms are looking at how to optimise their best execution processes and demonstrate their superiority over others' as a way to differentiate their overall service offerings to clients. These market participants are developing tools that allow them to compare their own best execution strategies with those of their competitors, with a view to highlighting their superiority.

> *"We're seeing a great deal of activity at our London data centre due to its proximity in central London. It's become a key networking location, helping firms achieve best execution".*
>
> Bill Fenick, Strategy and Market Director for Financial Services, at Interxion

25
miles from Heathrow Airport

90+
carrier and ISP PoPs

200+
financial services community of members

MiFID II Post-Brexit Complexity: What to do

Despite the distractions of Brexit and a Donald Trump administration, the message from regulators, and indeed practitioners, is clear: MiFID II will apply to financial institutions with operations based in London. The imperative is to plan and implement so as to meet the 2018 deadline.

Even if Brexit goes ahead as planned, whether it takes two years to implement or longer, there will be at least some form of passport or equivalence regulation that institutions will need to comply with in order to operate in the European marketplace. Until negotiations are completed, the details of this kind of arrangement will remain unclear; but MiFID II will surely point to how any final outcome will look.

For practitioners in the trading and electronic execution space, the onus is on ensuring their trading infrastructure is optimised for MiFID II compliance. As mentioned above, the regulation will bring about major change that will require firms to add elements to their existing architectures, with the most demanding elements relating to best execution, records retention and pre- and post-trade transparency.

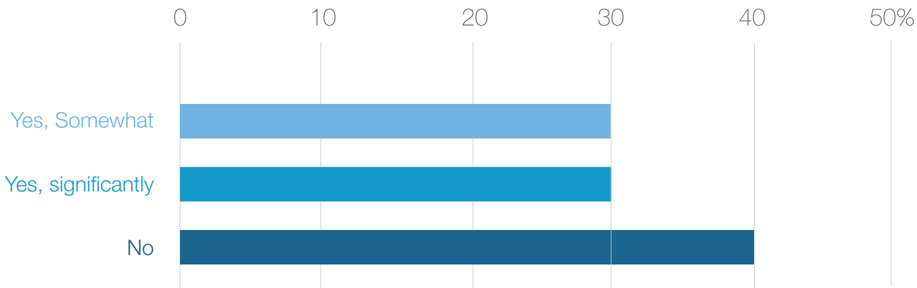
With the expectation of an increase in the number of trading venues – whether in the form of MTFs or OTFs – firms will need to review their proximity strategy to ensure they remain competitive from a location/latency perspective. As liquidity fragments across these venues, firms will need to assess the optimal physical location for their execution servers across a range of asset classes. Colocation with established Regulated Markets may need to be supplemented with additional hosting facilities that support low-latency connectivity to related venues in order to execute complex multi-leg strategies competitively and in compliance with MiFID II.

Another factor in consideration of execution gateway location will be convenient availability of value-added services. While this has been a factor for some time, MiFID II ups the ante. Firms are looking now at how to add trading infrastructure functionality – in the areas of time-stamping, algo testing and others – in order to satisfy the new requirements.

This imperative comes against the backdrop of a reluctance among firms to add more on-site infrastructure. In their assessments of how to meet the MiFID II requirements, firms are finding that key aspects can be implemented on an 'as-a-Service' basis, using cloud technologies for remote access. Some, even, are finding that the savings from not owning – and not hosting on-site – the hardware and related infrastructure needed for system monitoring, time-stamping, testing and so on, can greatly reduce the total cost of compliance.

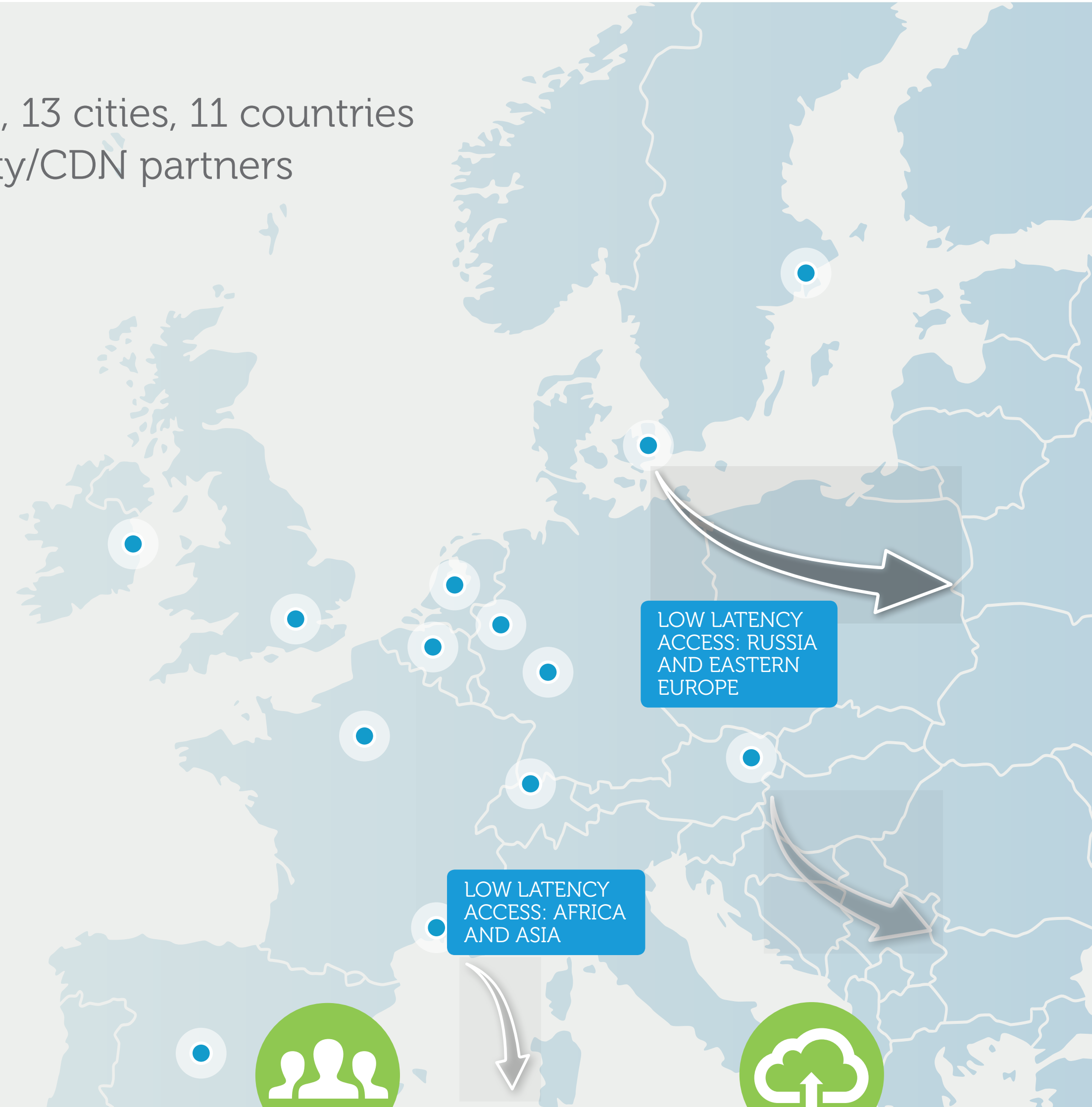
Cloud access to this kind of community of MiFID II functionality seems to be appealing. According to the A-Team survey, 60% of respondents saw at least some value from cloud in their efforts to comply, with 30% expecting cloud to contribute 'significantly' to their MiFID II solutions.

Can Cloud Help Address MiFID II Requirements?



These firms saw potential for cloud to solve issues around challenges such as market data capture, aggregation and analysis, record-keeping, and management of non-proprietary data. One growing element of this is the need for managing infrastructure performance data, an imperative under MiFID II.

Over 40 data centres, 13 cities, 11 countries
Over 600 connectivity/CDN partners



Maximise reach using leading connectivity & CDN partners

Enhance audience experience through high QOS and lowest latency

Scale on demand with direct, secure connection to the major clouds

About Interxion

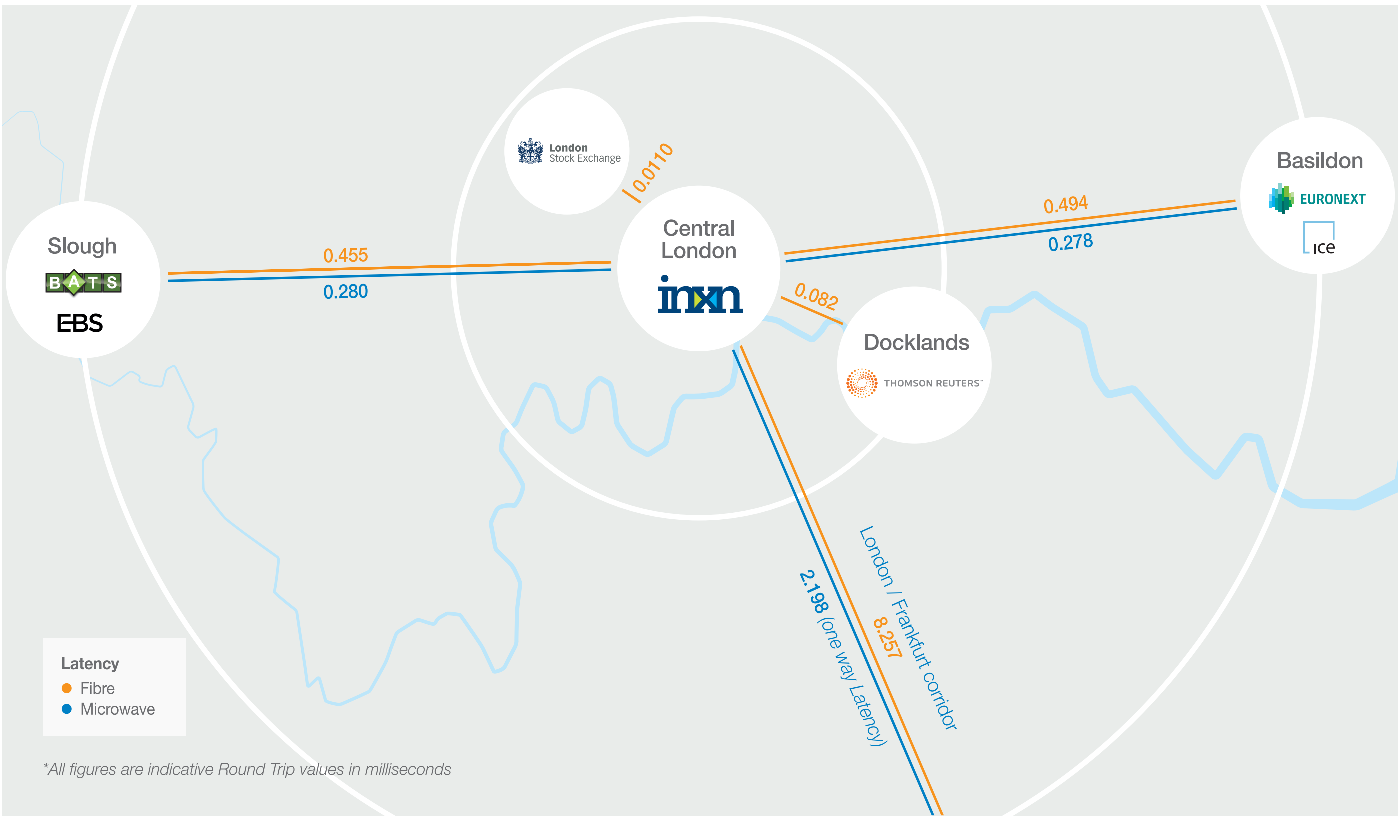
Interconnectivity within a data centre is a premium requirement. Firms using Interxion's London Data Centre Campus have direct access to London Metal Exchange, Equiduct and three dark pools, as well as order-routing and market data via POPs to 14 leading European and global execution venues, including many MiFID II-designated Regulated Markets and MTFs.

Interxion's geographical proximity to the London Stock Exchange, its equidistance between the key hosting centres of Slough (BATS, TOM) and Basildon (ICE Futures, Euronext), and access to microwave connectivity to Frankfurt (Eurex) make it unequalled in terms of European trading venue access. This central location yields major speed advantages for multi-venue trading strategies and enables optimal order book aggregation / consolidation under MiFID II. Interxion's London data centre houses all the major POPs for connectivity to all of Europe's major exchanges, multilateral trading facilities (MTFs) and broker routing systems.

Interxion's community of ISVs – offering time-synchronisation, time-stamping and order aggregation, to pre-trade risk controls and more – provide on-site access to key value-added services to facilitate high-performance trading and regulatory compliance under MiFID II.

The Interxion London Financial Services hub is one of the most established data centre communities in Europe, enabling customers to effectively execute their European trading strategy.

TRADING EXECUTION AT INTERXION



Notes

About Interxion

Interxion (NYSE: INXN) is a leading provider of carrier and cloud-neutral colocation data centre services in Europe, serving a wide range of customers through over 40 data centres in 11 European countries. Interxion's uniformly designed, energy efficient data centres offer customers extensive security and uptime for their mission-critical applications. With over 600 connectivity providers, 21 European Internet exchanges, and most leading cloud and digital media platforms across its footprint, Interxion has created connectivity, cloud, content and finance hubs that foster growing customer communities of interest. For more information, please visit **www.interxion.com**

Data Dentre services across Europe

www.interxion.com
customer.services@interxion.com

International Headquarters
Main: + 44 207 375 7070
Email: hq.info@interxion.com

European Customer Service Centre (ECSC)
Toll free Europe: + 800 00 999 222 / Toll free US: 185 55 999 222
Email: customer.services@interxion.com

Cofounder: Uptime Institute EMEA chapter. **Founding member:** European Data Centre Association. **Patron:** European Internet Exchange Association. **Member:** The Green Grid, with role on Advisory Council and Technical Committee. **Contributor:** EC Joint Research Centre on Sustainability. **Member:** EuroCloud.

Interxion is compliant with the internationally recognised ISO/IEC 27001 (537141) certification for Information Security Management and ISO 22301 (BCMS 560099) for Business Continuity Management across all our European operations. WP-FS-UK-MIFID2-UK-eng-1/17