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NAVIGATING THE IBOR TRANSITION

How does your firm compare?

**41%**Understanding and
assessing LIBOR
transition impact**0%**

Largely completed



Message from the CEO

What a year 2020 has been! As we approach this year's end, it is natural to look back with reflection. This has been a year of unprecedented uncertainty. The COVID-19 pandemic, political turmoil and climate change have presented challenges not faced in living memory. During all of this, I would like to reaffirm Quantifi's commitment to support our employees, clients and broader community. We take this commitment seriously and take a long-term view focused on sustainability.

As Quantifi has grown, we have been on a transformative journey to improve everything we do. A key part of this has been improving how we can rapidly adapt to the changing needs of our clients. Technology and corporate structure are critical components to this and I believe our ability to quickly adapt and serve a wide range of clients with increasingly diverse needs provides us with a key competitive advantage. We believe this ability to adapt faster than our competition will help us emerge from this year in a stronger position.

Despite challenges, 2020 has been a successful year for Quantifi, with strong revenue growth, industry recognition and significant new product development. Our growth has been driven by a strong flow of new business and wider adoption from clients. This growth has been achieved while completing large-scale implementations and ambitious product innovation.

Industry recognition has come with numerous awards. Most recently, we received three awards including *Best Buy-Side Product* at the Waters Buy-Side Technology Awards. Earlier in the year, we won the *Best System Support & Implementation* award at the Risk.net Technology Awards.

We have also continued a very aggressive schedule of product enhancements this year. One of the most exciting developments in our latest release, Version 18, is the integration of Data Science technology. We believe this is the future of risk technology. By leveraging Data Science, we are able to provide clients with a new level of capability and flexibility. Version 18 has over 300 individual enhancements and continues our tradition of product re-investment and innovation.

2020 has been a period of substantial progress for Quantifi. Underpinned by a robust pipeline I expect 2021 to be exciting, full of opportunities and change. Let me end by thanking our employees for all their hard work and our clients and partners for their ongoing support.

A handwritten signature in black ink, appearing to read 'Rohan Douglas', written in a fluid, cursive style.

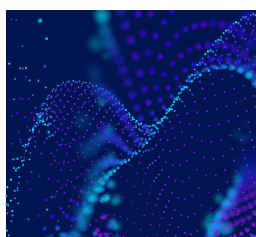
Rohan Douglas, CEO, Quantifi

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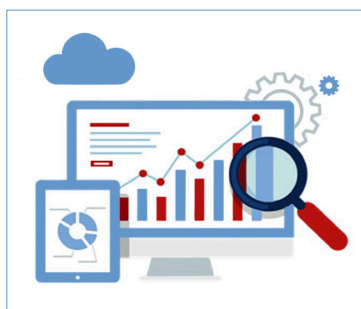
Quantifi has been recognised as Best Data Analytics Provider in the 2020 Waters Rankings.



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Quantifi Releases Version 18

This latest release includes superior performance, BI reporting capabilities and next-generation risk analytics.



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QUANTIFI VOTED BEST DATA ANALYTICS PROVIDER IN WATERS RANKINGS 2020

Quantifi has won *Best Data Analytics Provider* in the 2020 Waters Rankings, which recognize overall quality of service in 30 categories and are voted for exclusively by WatersTechnology's readership of over 10,000 industry practitioners.

Financial services is one of the most data-driven industries. Regulatory and risk management requirements are challenging firms to capture and analyse data at ever-increasing levels of granularity. Firms are turning to Data Science to better leverage these larger data sets and to address key challenges in risk management, trading and regulatory reporting, including FRTB and the IBOR transition.

Quantifi has invested heavily in Data Science and provides clients with the ability to do complex data analysis and flexible reporting on Big Data integrated with Python, Jupyter Notebooks and other popular Data Science tools. Leveraging Data Science, along with investments in AI, Microservices and the Cloud, provides clients with next-generation analytics offering a new level of flexibility, ease of use and ease of integration.

Quantifi has established a reputation as the market leader in analytics with a proven record of delivering timely, accurate and consistent front-to-back analytics to some of the world's most sophisticated institutions, including top tier banks and leading investment managers. A unique combination of high-performance analytics, paired with an institutional quality infrastructure, means Quantifi is able to handle even the most complex and computationally intensive calculations such as XVA. Key technology partnerships with Intel and Microsoft ensure that Quantifi's performance is optimised for the latest hardware and operating environments.

"We are proud to have been selected as Best Data Analytics Provider by WatersTechnology's readers. This award adds to a growing list of achievements and builds on our reputation for delivering the fastest and most sophisticated cross-asset analytics available in the market," comments Rohan Douglas, CEO, Quantifi. "It is a testament to our significant investment in Data Science and the tangible benefits our clients are realising from this," continues Rohan.

QUANTIFI RELEASES LATEST SOFTWARE POWERED BY DATA SCIENCE

Quantifi has announced the latest release of its software, Version 18, which includes 304 new features and enhancements. This latest release provides superior performance, new BI reporting capabilities and includes the next-generation of risk analytics powered by data science. Version 18 also introduces features to help clients accelerate their IBOR transition programme with confidence.

In today's environment, there are a number of themes driving change for financial services. One of the primary forces is technology. This includes high performance computing, the application of big data and data science. These emerging technologies help improve automation, enhance performance and extend functionality. Quantifi's investment in data science provides clients with more dynamic, timely and accurate financial and risk modelling.

"What we observe with forward-looking firms, especially in a fluid market environment, are accelerated efforts to deploy data science offerings to achieve stronger organisational kinetics to streamline collaboration, facilitate stronger data enablement and respond faster to ad hoc information needs," comments Cubillas Ding, Research Director at Celent.

"At Quantifi we have always been at the forefront of innovation. This latest release marks another milestone with the introduction of our data science platform. The technology, tools and strategies we use help us to continually develop new functionality demanded by the ever-evolving financial services industry," comments Rohan Douglas, CEO, Quantifi. "Version 18 includes a number of new features that were driven by what our clients require in order support increased growth, performance and profitability," continues Rohan.

FEATURES AND ENHANCEMENTS INCLUDE:

Expanded Product Coverage

- Structured and exotic equities
- FI ETFs with constituent level analytics

Analytics, Risk & Reporting

- The next-generation of risk, powered by a data science platform
- Support for the transition from LIBOR to AARs
- More flexible, faster and more scalable self-serve BI reporting
- Support for UCITS compliance for credit products

Architecture and Performance

- Enhanced performance and introduction of performance monitoring tools
- Improved diagnostic logging
- Data management improvements

Q&A

INDUSTRY PERSPECTIVES ON DATA SCIENCE

Quantifi recently hosted the webinar 'Next Generation Risk Technology Powered by Data Science' featuring Celent. The panellists, Cubillas Ding, Research Director, Celent and Avadhut Naik, Head of Solutions, Quantifi, were presented with a number of questions from the audience.

'The views and opinions expressed in this article are those of the individual and not of the companies they represent. As this article has been transcribed from the webinar recording, there may be minor differences.'

What would your advice be for firms intending to start their journey to employ data science tools?

Cubillas: I think there are a few things. The obvious one would be to start small and iterative, looking at self-contained areas to socialise as well as build expertise at the same time. If you're going to select different use cases, you'd want to involve some of the business users to think about how to prioritise the highest ROI use case - one that's preferably useful and aligned with the front-office. It's also about the process of getting people involved in building expertise and thinking about how the specific use case will actually benefit the business

as opposed to doing more back-office stuff that may not add much value. That would be the immediate starting point. Then, you may need to identify the constituents' level of expertise and decide how low level you want to be in terms of the environment. With the data science offerings that we looked at (low code, no code and business-friendly coding-type environments), we're actually thinking about the level of expertise of those using the environment and what might be helpful.

"The end goal is to offer an integrated self-service data science platform based on open source technologies."

- Avadhut Naik, Head of Solutions, Quantifi

What are Quantifi's plans in data science?

Avadhut: Quantifi comes from an analytics background. We offer risk and trading solutions as well, but our genesis was as an analytics provider. Analytics is in our DNA. We have always had tools like Excel and MATLAB, which could integrate with our models and data and give the analysts and quants the flexibility to access and analyse Quantifi analytics outside of Quantifi. This is just a natural progression for us. We are now expanding the scope. As Cubillas said, Excel is not going anywhere. However, there are a lot of other tools available on the market that can work with Quantifi data and Quantifi analytics and then combine them with different data sets and data streams, which can be sourced externally, as well as different algorithms like machine learning. Currently, we're making all of our interfaces pythonic, so they can be easily accessed from Python. We are already engaging with clients on visualisation and some risk analytics components that they are using. The end goal is to offer an integrated self-service data science platform based on open source technologies. This would help clients compose risk analytics from different data sources and plug in models from Quantifi as well as third-party models. It would have built-in data and model governance and would offer our clients an environment for fast cycle of model development from experimentation to production. That is the goal. That is what we are driving towards.

Which clients at Quantifi benefit directly from the data science approaches and tools that you employ?

Avadhut: Coming back to some of the use cases that I previously discussed, it's currently more to do with visualisation and BI - integrating Quantifi analytics and Quantifi risk analytics with data from other data streams and presenting it in third-party visualisation tools like Power BI or Tableau. Number two is back testing. The use cases that I presented earlier are not just theoretical use cases. We actually have clients that are using our analytics in those use cases. For the back testing, you have trading strategies back testing, which our clients are benefiting from. As far as portfolio construction

goes, we have our partnerships with AI firms. AI firms and machine learning firms are using us for portfolio construction using bond price forecasting. Another example is a client who is using us for market-making operations, in other words, using AI to help bigger banks make markets more efficiently.

Can you share your experiences of the pitfalls to avoid?

Cubillas: I mentioned earlier about standardising the analytical and data science development stack as much as possible. In a typical environment, it is usually an organic process in terms of the bottom-up selection of tools that the quants want to use. In the longer run, firms may benefit by standardising the stack as much as possible. It has become easier now that Python has sort of become the de facto standard. The chief data officer could act as a conduit in terms of facilitating and steering the standardisation of tools based on the organisation and could use case alignment across different groups that may need quantitative tools like this. You may not standardise to only one tool, but at least then you have a set of tools that are fairly standardised from which the firm can either use or pick and mix. Otherwise, the organisation could degenerate into using fragmented tools with no standardisation, resulting in skill set pollination. I think that is one thing to be mindful of if you are starting the journey. Think about a set of tools limited to a certain group based on the strengths and weaknesses of the tool sets themselves.





QUANTIFI SURVEY

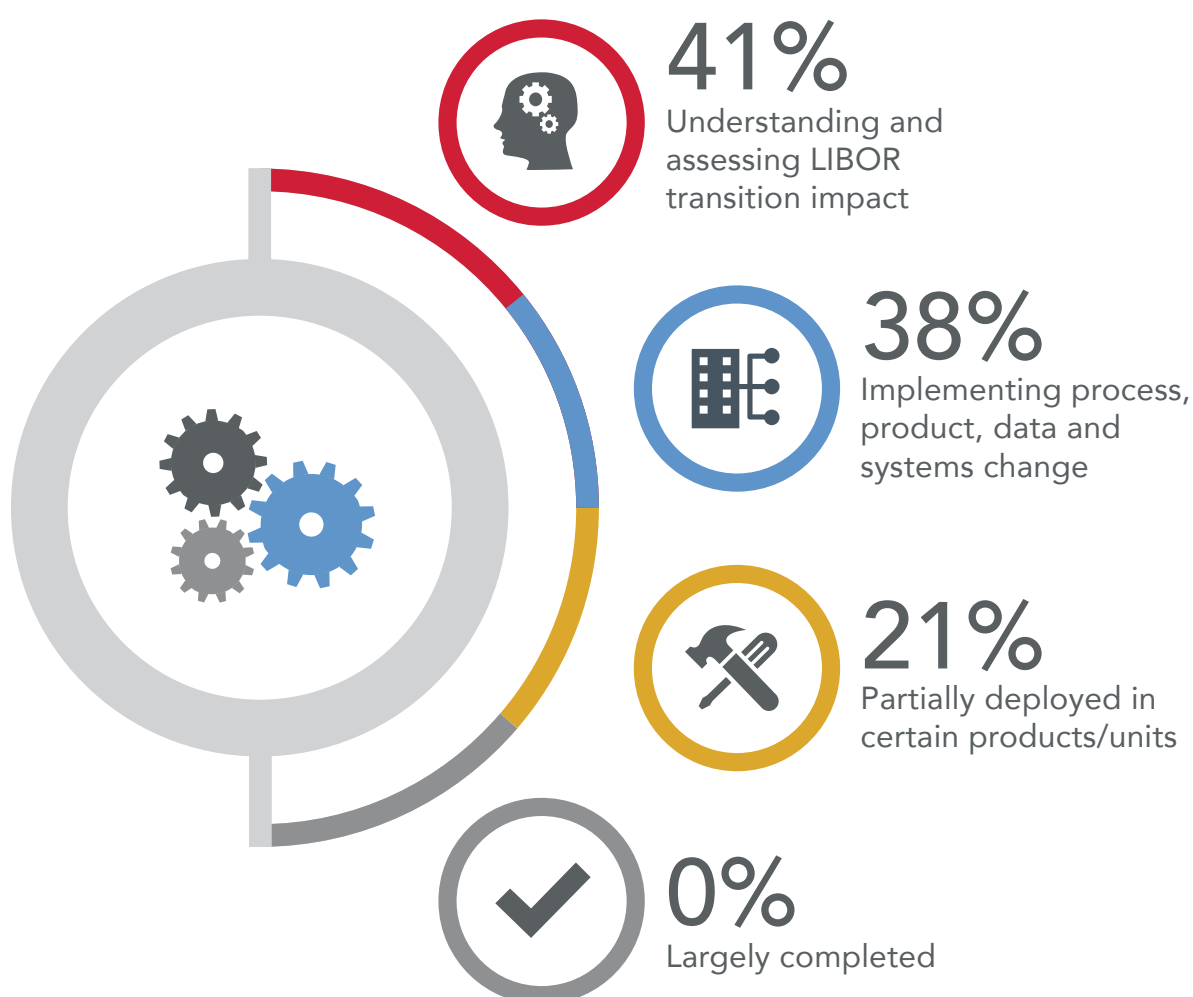
NAVIGATING THE IBOR TRANSITION

How does your firm compare?

Interbank Offer Rates (IBOR) play a pivotal role in the functioning of financial markets. The transition away from IBOR represents one of the biggest challenges facing financial services firms. The reform has been ongoing for more than two years, during which market infrastructure providers, regulators, buy- and sell-side firms and trade associations have been assessing and preparing for a significant transformational effort.

This survey was conducted during a webinar hosted by Quantifi on 'Navigating the IBOR Transition'. Over 350+ individuals from across the financial services industry registered for the webinar and were invited to take part in the survey.

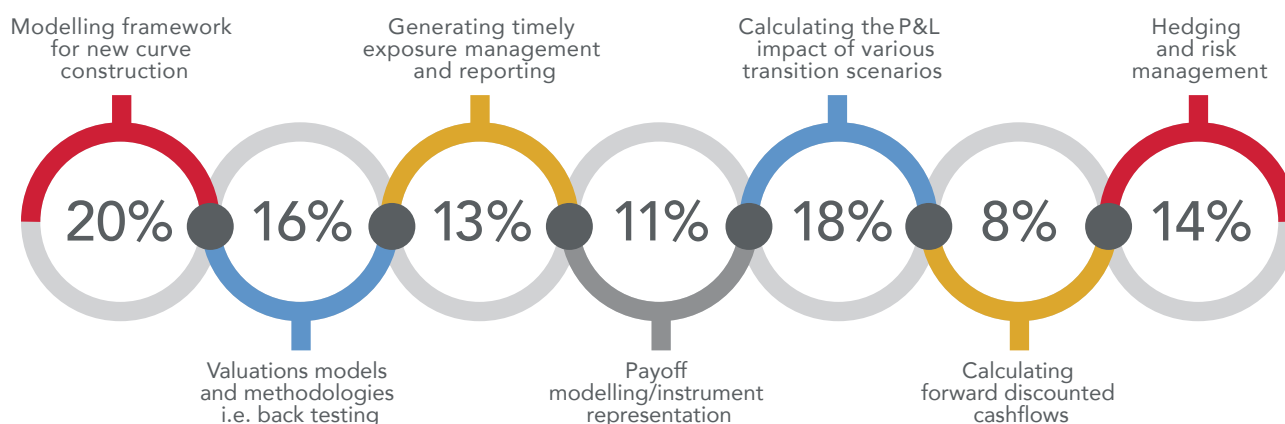
How far along is your firm in their IBOR transition efforts?



Financial institutions must proactively engage with regulatory and industry-led efforts to analyse the complex challenges ahead and develop solutions to mitigate significant risks to their organisations. Successful management of the transition requires significant change and strategic risk management – from adjusting risk profiles and models to navigating an uncertain regulatory landscape. Firms need to understand the implications of different scenarios on their financial performance and delivery programme. They should have flexible delivery plans to be ready for different scenarios and have a clear understanding on potential impacts of each scenario.

Though 59% of firms have a formal transition plan, only 38% have begun implementing process, product, data and systems changes. Only 21% of firms have partially deployed in certain products/units. The survey findings also show that a significant number of firms (41%) have made less progress and remain largely unprepared. These firms are only at the stage of assessing the impact of the transition on their overall business strategy. The results highlight that a transformation of this magnitude will be more complex than anticipated and that the approaches taken by firms is siloed and not integrated across business lines and with technology functions. It is therefore no surprise that 0% of the firms have completed their transition programme.

What are the limitations of your existing tools/systems?



In terms of business tools and systems, it is important for firms to establish where and how processes will be impacted by the reform and then decide how these changes will be implemented. Although some changes will be simple to refine, the scale of the transition means firms must be prepared to assign significant resources and, in some cases, rely on third-party technology providers, like Quantifi, that have the capacity to support the transition process. Leveraging third-party technology can help firms accelerate their transition programme with confidence.

LIBOR and other benchmarks are entrenched in firms' systems, processes, and models. From these results, we can see that many firms' existing systems are limited when it comes to much of the heavy lifting required for the transition, including data consolidation, modelling, reporting, risk and profitability analytics. Since the proposed alternative rates are calculated differently, payments under contracts referencing the new rates will differ from those referencing LIBOR. The transition from LIBOR will bring considerable costs and risks for firms. It will alter firms' market risk profiles, requiring changes to risk models, valuation tools, product design and hedging strategies.

Given the fluid state of COVID-19 and changing practices for business as usual creates an unexpected overhead and poses huge operational restrictions. This is particularly the case for those firms with outdated technology infrastructures that are unable to adapt to the new reality.

What are currently your **TWO** largest challenges in implementing RFRs?

Participants were asked to select the two largest challenges of the transition from the following list: regulatory uncertainty (25%), operations and technology upgrades (19%), recalibration of models (5%), lagging liquidity in ARR derivatives (8%), renegotiation of existing contracts (16%), lack of term rates (16%), delays due to COVID impact (3%) and poor data quality (7%).

The lack of definitive regulatory guidance on the IBOR transition has put responsibility for engagement in the hands of market participants. This absence of direction has led to inaction, which in turn threatens to delay implementation for many firms. Whilst timelines have been developed, there are variations across jurisdictions. It is important for firms to ensure that internal timelines are aligned with regulatory timelines.

There is still no clear consensus in the market on how IBOR will be replaced in legacy contracts and, as such, this poses one of the biggest challenges in terms of operational and computational effort involved within the transition. As the transition progresses, firms will move from exploring to implementing enterprise-wide uses of new technologies. This will change how they monitor their risk profiles and provide updates on stress test and risk forecasts. For 19% of firms, operations and technology upgrades are a major challenge. For financial institutions with outdated technology, another considerable challenge will be the time and cost involved upgrading or replacing existing operations and technology to support today's rate regime and a future state post LIBOR. Firms need to fully evaluate their technology infrastructure, assess the level of risk for impacted areas and then identify opportunities to migrate to new platforms or systems.

CHALLENGES

25%



Regulatory
uncertainty

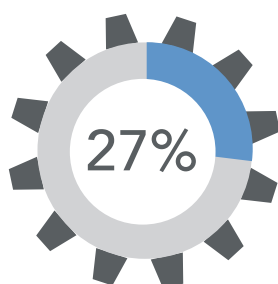
19%



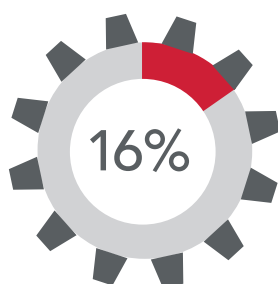
Operations &
technology upgrades

Which are the **TWO** most important activities for your firm in the next 12 months?

The next 12 months will be a period of major acceleration in the LIBOR transition. A disorderly transition would be detrimental to firms. It is therefore paramount that firms identify and manage delivery risks as efficiently as possible to avoid issues further at a future point.



Implement changes
to impacted systems
and processes



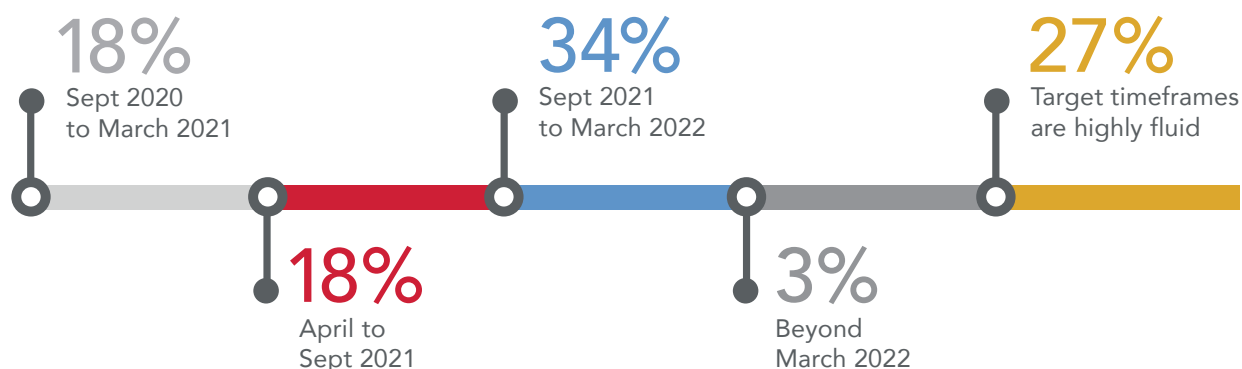
Deploy transition
analytics to analyze
exposures, P&L, risk

Implement changes to impacted systems and processes (27%) and deploy transition analytics to analyse exposures, P&L, risk (16%) were selected as the two most important activities for firms in the next 12 months. Other tasks included: deploy operational infrastructure to automate and speed up transition tasks (15%), accelerate communications/renewal with clients and counterparties (14%), improve legal process workload associated with contracts (7%), legal risks - assess, manage and mitigate for potential litigation (11%), design new ARR products across all business units (3%) and execute operational readiness testing (7%).

Financial institutions recognise the impacts to their systems and processes caused by the LIBOR transition. Many legacy systems are unable to handle ARR curves and others are relying on outdated data structures. It is crucial that firms resolve these issues ahead of the transition. These firms may consider partnering with a third party provider that can offer the models and technology expertise to deliver the necessary support.

Another key focus will be ensuring that firms have the analytics and infrastructure in place to make optimal decisions on how to transition. This will include deciding which clients to prioritise, which exposures to address and determining which hedging strategies to adopt.

When does your firm expect to complete ongoing IBOR transition efforts?



All indications suggest that LIBOR cessation will continue as expected by the end of 2021 and the majority of firms surveyed are prepared for this (70%). Financial institutions should not wait any longer to begin implementing the alternative reference rate across all product areas. Firms that expect to complete their transition beyond March 2022 (3%) and firms without fixed time frames (27%) may be struggling to meet the new requirements or be paralysed by regulatory uncertainty. Financial institutions that are hesitant to move forward need to recognise that a last-minute dash for compliance will create the potential for costly errors. Inadequate preparation and mistakes in implementation will end up costing even more time and money, so it is crucial that firms determine a plan of action and work to the time frames set by the industry.

Conclusion

The IBOR transition impacts almost every part of the financial services industry including banking, capital markets, insurance and asset management. The imminent retirement of IBOR has forced financial institutions to conduct an end-to-end inventory of LIBOR exposure. This should cover the full range of processes and systems, including pricing, valuation, risk management and booking. It should also cover contracts with clients, counterparties, creditors and others. This process has revealed a number of challenges for financial markets participants, with many participants having to rethink their operations and technology infrastructure and adopting new technologies to help with the transition.

With less than 18 months to go until the expected LIBOR cessation, the road ahead remains challenging and unknown. It is important for market participants to put in sufficient resources and effort, as the preparatory work for the transition will be substantial and complex. In operationalising the new benchmark rates, legacy risk management and frameworks should be upgraded, as using the latest technology and innovating faster will be imperative in paving the road ahead for the benchmark reform and beyond.

THE MAIN CHALLENGES FACING BUY-SIDE FIRMS

Quantifi won *Best Buy-side Pricing/Valuation Service*, *Best Integrated Middle-Office Platform* and the high-profile *Best Overall Buy-Side Product* at the 2020 Waters Buy-Side Technology Awards. In this Q&A with WatersTechnology, Rohan Douglas, CEO, discusses the challenges facing buy-side firms and how Quantifi can help clients respond rapidly to market shifts, minimise risk and take advantage of new opportunities presented by market change.



Which key functions within Quantifi PMS are the firm's buy-side clients finding most useful right now? In other words, what are Quantifi's buy-side clients' most pressing needs right now and how, specifically, does Quantifi PMS address them?

The buy-side industry is changing on many fronts. Investor behaviour, new regulation and expanding competition are just a few of the drivers. We are seeing a growing trend of buy-side firms looking for client-centric solutions that can adapt to their particular investment strategies and processes, rather than forcing a one-size fits all approach. Firms that adopt solutions-centric software, like Quantifi, are able to implement faster, reduce risk, reduce costs and more rapidly take advantage of market opportunities. By selecting Quantifi, our clients are able to focus on their core skill-sets of delivering enhanced returns for their clients and investors.

More firms are also moving all, or part, of their applications and processes to the cloud. This presents a major transformation on how to best use new technology to support fast changing business requirements. Quantifi's cloud-based portfolio management solution (PMS) provides clients with an environment that optimises operations for greater flexibility and agility with efficient use of capital investment. Quantifi can also easily scale processing capability up or down to accommodate a client's demands and business needs.

Quantifi has a long track record of working with existing clients to build out new functionality.

Clients are focused on increased automation and reducing costs. There has been consistent downward pressure of fees resulting in investment managers looking to reduce operational costs. Quantifi helps in a number of key areas. Our modern and flexible technology allows clients

to automate more of their processes. Our data management tools, like automated corporate action processing, reduces manual steps. Our ease of use and light-touch technology further reduces the effort required to run and manage the solution.

Fuelled by market developments and shifting investor preference, investment managers continue to explore ways to develop and expand investment strategies and be innovative with the design of their portfolios. At Quantifi, we have extensive experience supporting the investment mandates of some of the most sophisticated investment managers by providing the tools to make more informed investment decisions, improve transparency and reduce risk. Many of our buy-side clients cite our strength in modelling techniques and risk methodologies as key reasons for selecting our PMS. Our valuation library supports models for all major asset classes and our models, coupled with institutional quality infrastructure, enable users to have a consistent set of analytics enterprise-wide.

What are Quantifi's immediate plans with respect to adding new buy-side specific functionality to Quantifi PMS?

Quantifi has a long track record of working with existing clients to build out new functionality. We continue to do this with a number of ambitious projects in progress.

Clients are looking to integrate and automate more of their operational processes into Quantifi. To achieve this we are adding functionality to automate and support more of the trade life-cycle. Our goal is to be a single solution for an increasingly broad range of Investment Managers.

Clients are looking for a better cloud experience. To achieve this we are leveraging some of the latest technology proven outside of finance to provide a more flexible and richer user interface experience and a more flexible cloud deployment.

Clients also want to move with less hardware. To achieve this we are working closely with Intel FasterLab to stay on the leading edge of performance tuned to the next generation of Intel hardware.

Using Azure gives Quantifi the agility and hyper-scale capabilities it needs to support even the largest and most complex of portfolios and allows us to be even more agile, offer a more faster time to market and further reduce our client's capital investment.

Any other plans for the business that WatersTechnology's readers need to know about?

Last year was a landmark year for Quantifi, with strong revenue growth, high retention rate, numerous industry awards and notable global client wins. To maintain future growth, we continue to invest in new technology. Our expanded usage of Microsoft Azure Cloud is a prime example of this type of innovation. With Microsoft Azure, we can offer cloud capabilities to firms that have traditionally used on-premises implementations. We have successfully migrated a number of clients to our cloud solution with no disruption to their existing processes. Azure is also a key enabler for our microservices architecture. By utilising a cloud infrastructure, individual or multiple services can be dynamically unplugged and replaced as needed. Using Azure gives Quantifi the agility and hyper-scale capabilities it needs to support

even the largest and most complex of portfolios and allows us to be even more agile, offer a more faster time to market and further reduce our client's capital investment.

Our open innovation plays a key role in developing technology which satisfies our clients' demands for ultra-fast, flexible technology that can improve operations and drive efficiencies. Our corporate strategy and priorities position us well to continue collaborating with clients to better support their business.

Navigating the IBOR Transition

The IBOR reform represents one of the biggest challenges facing financial services firms. Successful management will necessitate significant change and strategic risk management. Preparing for the transition will require firms to establish a strategy to assess the impact and navigate transition risks. Is your firm ready?

Speakers from Lloyds Banking Group and Quantifi discuss the challenges and risks of navigating the IBOR transition and the adoption of alternative reference rates.



<https://www.quantifisolutions.com/navigating-the-ibor-transition-webinar>



Whitepapers

- Managing Liquidity Risk in Times of Stress
- The IBOR Transition: Challenges and the Road Ahead
- The Impact of COVID-19 on Credit Markets
- Identifying Liquidity Risk for Financial Stability
- Cost of Trading and Clearing in the Wake of Margining

www.quantifisolutions.com/whitepapers

About Quantifi

Quantifi is a provider of risk, analytics and trading solutions. Our award-winning suite of integrated pre and post-trade solutions allows market participants to better value, trade and risk manage their exposures and respond more effectively to changing market conditions.

Quantifi is trusted by the world's most sophisticated financial institutions including five of the six largest global banks, two of the three largest asset managers, leading hedge funds, insurance companies, pension funds and other financial institutions across 40 countries.

Renowned for our client focus, depth of experience and commitment to innovation, Quantifi is consistently first-to-market with intuitive, award-winning solutions.

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