Financial Markets **INSIGHTS**

Fintech's next frontier: Data-as-a-Service

The Realization Group

ipushpull

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Data-as-a-Service can provide easy access to live streaming data and analytics at any time and anywhere.

Data has always been important to financial markets. In 1850 Paul Julius Reuter used pigeons to carry stock prices between Germany and Brussels because they were faster than trains. Now there are not enough pigeons to carry the amount of data being generated on a daily basis. In the 21st century the financial services firms who emerge as winners will have unique datasets and be able to provide clients easy access to live streaming data, on-demand data and real-time analytics. In order to meet these competitive challenges the financial services industry is increasingly turning to "Data-as-a-Service" (DaaS) to help overcome the inflexibility of their legacy technology, cut costs and provide users with a better experience.

For example, Virtu Financial, the US market maker and infrastructure provider, said in May this year that it was launching Open Technology, a new Data-as-a-Service platform. Open Technology's framework of standardised APIs allow subscribers to access Virtu's curated and cleansed market-data, enriched transaction cost analytics across asset classes and the firm's suite of multi-asset market impact models without having to write any code.

In addition, the Covid-19 pandemic has forced staff to work remotely and highlighted the importance of being able to access real-time data from anywhere and at any time, while maintaining the necessary regulatory controls. The post-Covid world will look very different, with flexibility remaining key, so the importance of data and using it efficiently will only become more important.

In this Financial Markets Insights report, **Matthew Cheung**, chief executive of ipushpull; **John Macpherson**, deputy chair of the Investment Association's advisory panel (Engine); **Patrick Flannery**, co-founder and chief executive of MayStreet; **Mark Woolfenden**, managing director of Euromoney TRADEDATA; and **Julien Dugat**, fixed income client execution platforms and digital sales at NatWest Markets talk to the Realization Group's Mike O'Hara and Shanny Basar about the opportunities for Data-as-a-Service to make capital markets more efficient and innovative.

Buy versus build

John Macpherson is deputy chair of the Investment Association's advisory panel (Engine), a fintech accelerator for the asset management industry. He highlights that it is impossible for any financial firm to hold, curate and use all of the data now being produced on a daily basis in any meaningful way.

Macpherson's previous roles include head of fixed income futures and options for EMEA at Goldman Sachs, and more recently chief executive at BMLL Technologies, a fintech providing market data and analytics to financial firms. He spent nearly a decade at Goldman Sachs before leaving in 2013. At the time of his departure the bank had a "buy last, build first" philosophy but this has since reversed. Last year a former chief technology officer at Goldman Sachs asked him: "Why would we spend all that money and resource when there are firms who can deliver data to us in a way that we can consume and use it?"

In addition, financial firms usually have inflexible legacy technology platforms and so cannot use data seamlessly through their organisation. Macpherson says: "In my most recent role as a consultant, one well-known firm told me they had bought the same dataset twelve times in two years. It is staggering."

Macpherson says there are two key factors needed to improve the use of data – the willingness to look at things in a fresh way and having staff with the requisite skills. "The title of data scientist, which, I'll be honest, I'd never heard of ten years ago, now seems to be the hottest hiring handle on Earth," he says.

In addition, he notes that buy-side firms have a fraction of the budget of sell-side firms. He says: "It doesn't matter how many brilliant people you have in a room, they will never be able to keep up."

There are few financial firms outside of the HFT space who can meet both of these requirements, which presents an opportunity for Data-as-a-Service providers. Macpherson adds: "They can produce or provide data in the format and size that firms want, and slice and dice it as required so it is easy to consume."

He explains that Data-as-a-Service providers are responsible for the curation, accuracy and delivery of the right data. "Data-as-a-Service means it can be used right out of the box, ipushpull are doing the heavy lifting so the data can be used multiple times."

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John Macpherson, deputy chair of the Investment Association's advisory panel (Engine)

London-based ipushpull aims to improve efficiency across capital markets by allowing real-time data sharing and workflow automation by integrating with applications that are already widely used. The fintech extracts, or 'pulls', data from a firm's workflows in different formats, and 'pushes' it to clients so it is also integrated into their existing processes.

Patrick Flannery, co-founder and chief executive of MayStreet, describes the firm's Data-as-a-Service platform as helping clients overcome four challenges around market data – collection, transformation, storage and the ability to ultimately consume it. MayStreet delivers real-time market data and what they call "near-time" historical data intraday, rather than overnight, through an API. Last year MayStreet became the market data provider in US equities, options and futures data for the Securities and Exchange Commission's Market Information Data Analytics System (Midas), which allows the regulator to monitor trends in capital markets. Flannery says: "A lot of firms need a lot of data. However, they cannot be in the data business in the same way as Google or Facebook or Amazon unless they build the same infrastructure."

The first challenge is collection, which requires both technology and negotiation of intellectual property rights, as most financial data is licensed in some way. Flannery says: "The broader the collection effort is and the higher quality the data must be, the greater the value."

The second challenge is transforming the data. The original data can be in different raw formats and has to be aggregated and normalised so it is consistent. For example, market data has timestamps – but are they all in UTC (Coordinated Universal Time) and how precise are they? Normalised data then has to be updated and maintained, for example, with corporate earnings and dividend payments.

The third challenge is storage, which can be expensive. For example, storing 10 petabytes of data at Amazon's AWS costs a few hundred thousand dollars per month in just one region. Flannery adds: "Just because you have the bytes doesn't mean that the data is any good."

The final step is delivering to internal users so they can consume it, which can also be expensive. Users may want to access the data in different timeframes – such as real-time, low latency or 'near-time', which for MayStreet is about a minute delay – each of which has different cost implications. In addition, some users want to access data in the cloud, while others need it on premises or in different places around the world at the same time. Other clients want unstructured data such as chats or social media in addition to market data.

"The data is the elephant and each user looks at it from a different perspective. But there is an enormous opportunity when it comes to digital transformation in financial services."

Patrick Flannery, co-founder and chief executive of MayStreet

Flannery compares the problem to the fable of six blind men meeting an elephant for the first time. Each man touches a different part of the elephant and makes predictions about what the animal looks like. "The data is the elephant and each user looks at it from a different perspective," he says. "But there is an enormous opportunity when it comes to digital transformation in financial services."

New business models

Julien Dugat, fixed income client execution platforms and digital sales at NatWest Markets, highlights the potential of digital transformation as the UK bank uses Data-as-a-Service led solutions to optimize its distribution of fixed incomes axes.

Previously each dealer had to build their own connectivity to each customer in order to directly send them axe data. On the receiving end, each investor had to build connectivity to all of their dealers, which was usually unfeasible due to cost. NatWest Markets wanted to send axes to a repository which could then distribute the data to clients with minimal effort required on their part.

"Customers should not have to launch a technology project just to be able to consume our data," says Dugat. "We really liked the concept of ipushpull, which is very simple on paper."

Last year NatWest Markets began to use Symphony and has been building bots on the messaging platform for automating functions including execution, RFQs, and sending prices to clients. ipushpull can share live data from Symphony, as well as more than 20 other formats, into applications and systems commonly used across capital markets such as Excel, APIs and FIX connectors.

As a result it has become much easier and quicker for the NatWest Markets sales team to distribute axes as they are streaming in real-time. Dugat explains: "We don't have to chat to a number of traders and manually put axes in an email – they are just there and available instantly to give to clients. The salesperson can just go 'tick, tick, tick' and push specific axes to a client. It is a big time-saver."

In addition, sales teams at NatWest Markets previously had to manually collate axes in a file and distribute en masse to clients via third party platforms. Using Data-as-a-Service allows the bank to tailor axes to clients, who receive the data in a format which can be fed automatically into their order management system. Dugat says: "The ability to be able to stream data straight onto the client desktop is of huge value to them – ensuring they have the accurate, live information they need."

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Julien Dugat, fixed income client execution platforms and digital sales at NatWest Markets

For example, a salesperson can find out in a chat that a client is interested in axes for the auto sector and send this specific data to Symphony or Excel. In addition, during the conversation the salesperson can update axes in real-time and send the data on demand. Or a client may ask for the top five axes in banks in a Symphony chat. The salesperson can select those axes and publish them straight into Symphony, and the client can execute any trades using an execution bot. The bot automatically sends the trade to straight-through processing without requiring any manual intervention. Dugat says: "One of the reasons we picked Symphony was because we could link the platform to our existing workflows."

Clients benefit from receiving accurate, real-time, data. For example, when axes were distributed by email, they might not be acted on for a few hours – by which time they would be stale. Dugat says: "Clients now know that when they are using the ipushpull add-in they are seeing live axes being streamed in real-time, which they can use to trade."

Natwest Markets started using ipushpull in credit, recently expanded to rates and has seen client demand to expand into foreign exchange.

Mark Woolfenden, managing director of futures and options reference data supplier Euromoney TRADEDATA, says innovation and new operating models are being driven by younger millennials reaching senior positions in financial services. He says: "They expect data to be available 24/7, on demand, and on any device including smartphones, tablets or laptops. That expectation will only increase as millennials continue to advance their careers and the industry will have to adapt."

The market is also being driven by the need to cut costs and reduce operational risk. Data used to be delivered in bulk to cover all eventualities, for example, a sell-side provider may not know which specific markets a buy-side customer wants to trade. The bank, therefore, buys data for all markets for a specific asset class, even though some of it may not be used, for example, obscure markets which trade infrequently.

In contrast, Data-as-a-Service allows purchase of just the relevant data on demand for a specific activity such as processing a trade, marking a position, reporting to a regulator or any other part of the trade lifecycle. Woolfenden says: "Clients only pay for what they need, which is quite a big transition from where many systems and contracts are at the moment. As an adjunct to the reference data market, I also think it is a matter of 'when', and not 'if', cloud-based market data systems can deliver real-time pricing as part of live order execution and to prime post-trade activity."

Euromoney TRADEDATA formed a strategic partnership with ipushpull last year as the data provider recognised that the on-demand model of Data-as-a-Service will play a big part in the future of reference data consumption, particularly within community chat and messaging networks. A single connection to ipushpull allows Euromoney TRADEDATA to distribute data into a variety of applications that clients already use in their existing workflows, such as the Symphony messaging platform, via an app or a chatbot, or directly into an Excel spreadsheet.

Woolfenden compares legacy technology that many firms use to a district general hospital. "They've been built up over many years, they've got a brand-new operating theatre or outpatient centre and they work well but it's about efficacy as opposed to efficiency."

However, APIs can now take specific data from legacy systems and post it to another part of the system, or to a new system or to another API. Woolfenden says: "You divide it into very small parts, apply APIs around it, and with the right design and integrity, you can ultimately remove the dependencies on the legacy system piece by piece."

Euromoney TRADEDATA traditionally delivered data to clients through large, bulk data files. Woolfenden says: "Data-as-a-Service allows the client to customise the extraction of data in real time to meet their specific needs. It is the same data warehouse, but the new challenge is how data makes its way to the end-user, but that also represents an opportunity."

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There is an opportunity for clients to only buy data they need and use it in real-time, for example, for pre-trade validation of risk to confirm data completeness to support a trade, or as part of portfolio management, where a client supplies Euromoney TRADEDATA with their anonymised open positions which the firm then enriches with linking symbology enabling the client to retrieve market prices. Or a client may have a trade break and just needs to check one specific piece of information, the vast majority of which can be resolved using artificial intelligence or machine learning. There may be some outliers, between 1% and 3% of breaks, that need human intervention, but the rest can be automated using a bot.

Woolfenden says: "If you look at our business development of data over the past decade it has been based on solving a client's pain point in their process and their need for increased regulatory reporting."

Flannery also highlights the issue of firms buying the same dataset a number of times in the front, middle and back office, or across different trading desks or different regions. He agrees there is potential to move to more of a pay-per-use model, especially through APIs and chatbots. He says: "Clients will be able to ask for a specific piece of information and put it in a certain location. For any one firm to do that on their own they need incredible scale, which is why they turn to commercial solutions."

Macpherson also predicts there will be a paradigm shift in both the delivery of data and in the business models of the firms using the data. "I don't have a feel right now for the winners and losers in delivering data but I think the incumbents will ultimately be the losers and they are having to defend their territory very fiercely," he adds.

He points to new business models such as OpenFin, who provide a desktop operating system so applications are standardised and interoperable.

"OpenFin is not producing data but being very clever at creating the operating system that other people use for presenting data to the end-user," Macpherson says. "The end-user wants to use their desktop space more constructively rather than having 500 things trying to come through their firewall."

Security

Flannery highlights the challenge in marrying public and private clouds in a highly regulated environment such as financial services. In addition, for market data, there is the issue of entitlements and a proper audit trail of what is being used by whom, where and when – and also whether it is real-time, same day, end-of-day or historical. There are also significant security concerns around private data, particularly since the European Union introduced GDPR (General Data Protection Regulation).

Woolfenden explains that the API designed by Euromoney TRADEDATA went through an incredible amount of due diligence and testing for security. He says: "Clients may have had concerns about security in the cloud, but I think that is being overcome day by day. The security challenge is actually around controls and licensing, data access and delivery to a plethora of end-user devices."

However, these challenges can be overcome as, for example, the ipushpull Excel add-in provides metrics of logins and usage to make sure data only flows to licensed users.

Remote working

The Covid-19 pandemic has led to staff having to work from home across the globe. Woolfenden says: "I think this is where Symphony with ipushpull, or any solution that allows remote end-users to retrieve a very small piece of data, are coming into their own. The ability to access real-time data, without having to search through a huge file in a centralised repository in their office is critical."

The Covid-19 pandemic also caused trading volumes to spike as markets became more volatile so operating efficiency was paramount. Dugat says: "The ability to distribute axes in a targeted fashion meant the sales force could focus on other things, which was a huge advantage in the volatile environment."

The bank was rolling out Symphony before the onset of Covid-19 but the pandemic substantially accelerated the process. Between 3,000 and 4,000 users were onboarded in a few weeks as Symphony can be used on mobile phones, which was critical to allow staff working from home to connect to both colleagues and clients.

"People have realised that a lot of the new ways of remote working are much more efficient so it has been a good way to push change," says Dugat. "We have seen years' worth of changes taking place in a few weeks and some will definitely stay for the long-term."

Matthew Cheung, chief executive of ipushpull, says screen real estate has become critical as staff have had to adapt to working remotely. In the office they may have had six to eight screens, each showing different information. In contrast, at home, staff are likely to have only one or two screens, so need to change their workflow.

Cheung says: "A key element of Data-as-a-Service is data interoperability and aggregation in real-time. Using ipushpull remote workers can get a single unified view of live data from a number of different applications, including structured data from APIs and unstructured data from chats without having multiple apps open across a limited number of screens."

In addition to aggregating data, ipushpull users can define custom notifications so they receive alerts on important changes to data in any of the applications to which ipushpull is connected. Cheung added: "The notifications module has become very relevant as remote workers have changed their workflows to use fewer screens."

The global lockdowns due to the pandemic have highlighted the important role of technology in connecting remote workers and clients, and allowing financial markets to continue to operate. Satya Nadella, chief executive of Microsoft, said in the technology company's first quarter earnings report this year that businesses are operating "in a world of remote everything." Nadella continued that he had seen "two years' worth of digital transformation in two months" as the pandemic took hold.

Cheung agrees that the need to work remotely has turbocharged digital transformation in financial services. "We did an on-site installation for a client 18 months ago but we are now moving them to the cloud as there has been a complete culture change accelerated by the pandemic," he says.

He continues that firms are beginning to realise the benefit of using Data-as-a-Service to reconfigure their workflows around data, which automatically flows between different platforms. Historically traders would chat in a system such as Bloomberg to agree a deal and then have to manually re-enter the details into another platform. The same data could then be copy and pasted manually into other applications in the middle and back office and never be live.

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