



# New technologies: Shaping the future of e-FX



By Nicholas Pratt

The FX market has a reputation for lagging behind other markets in terms of the development and deployment of new technology. In many ways this is down to the structure of the FX market. Traditionally it is the big banks that have driven innovations in the FX market, however the developments of the last five or so years – the emergence of online multi-bank portals, a booming retail market, more high frequency trading and a general desire for low latency transactions – have shown signs that this pattern may change and the pace of technology innovation and adoption might quicken somewhat.

So with this in mind, what are the technology developments to look out for in the next year? Where is new technology emerging and what impact will it have on trading strategies and volumes? Are new participants bringing new technology with them? Has the huge growth in trading volumes instilled more urgency in the technology vendor market? Or is there now a larger gap than ever before between customers' needs and the technology available and, if so, where are these pressure points appearing?

For many, the 'new' technology adopted in the FX market will simply be what has existed in other, more technologically developed markets such as equities. "I don't think there is any need for brand new technology," says Viral Tolat, chief technology officer at Integral, provider of FX Inside (a direct market trading service) and FX Inside Plus White Label Private Trading Exchanges. "There is a whole host of technology out there that can be applied to FX to reduce latency and execution times as well as providing broad access to a highly distributed segmented market."

## Growing innovation

Tolat says that Integral is leveraging SaaS (Software as a Service) 2.0 technology to allow customers to build their own trading system, from the sources of liquidity, to the customer experience and the types of execution models. All this is customizable and delivered as a service.

The major providers of forex trading don't limit themselves to a single market and are demanding comprehensive solutions that allow them to be market makers (or not), and allow them to address institutional, professional and the retail market segments. SaaS 2.0 allows these providers to enter new markets quickly and further customize their offerings in these markets on a pay as you go model and without having to own and operate any IT infrastructure.

Key to providing this flexibility is Integral's FX Grid, which provides efficient routing and execution of foreign exchange transactions to all major liquidity venues. FX Grid, which is both a data and compute service, is highly scalable and allows provisioning of services on



**Viral Tolat**

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as needed basis. FX Grid uses technology like multi-cast and distributed computing to handle both institutional requirements for execution speed and low latency to retail requirements of scale and distribution.

### Low latency

The need for speed has been a feature of the equities and fixed income markets for a number of years now and the demands for low latency are now appearing in the FX market. “Absolutely low latency is an issue,” says Tolat. “If you want to trade efficiently and you get a price that is old, you will not get high quality execution and increasingly clients want low response times when they are trading FX. We work very hard to achieve both low latency and fast execution with FX Inside.”

A key driver for low latency will be the development of high frequency trading and algorithmic strategies and software, a phenomenon that is a result of the fact that participants in the FX market are trying new strategies and

experimenting as never before, says Kelly Adams, chief technology officer at FX-Concepts, a buy-side currency manager.

This desire for new strategies is not because the old ones do not work, says Adams. After all, it was a year of healthy returns for the carry trade. Instead it is more a result of peer pressure and the classic desire to keep up with the hedge funds. “More and more people are trading higher frequencies so even firms that traditionally have not traded that way before are looking at doing so purely because everyone else is doing it,” says Adams.

### Demand for low latency

The two elements – the technology capability and the demand for low latency are tightly coupled, in the same way that chicken and eggs are inextricably linked, says Adams. “There is a faddish element to it,” he says, although there are “pearls of wisdom” around the whole developments in predicting market behaviour that will endure.

Meanwhile, the explosion in algorithmic trading products will continue, thus sustaining the drive for low latency. “All of these algorithms are flooding into the market,” says Adams. “Vendors are developing algorithms that can be white labelled, execution platforms are also developing algorithms and the banks are devising algorithms for their own proprietary platforms. It is the hot item that everyone wants to talk about.”

But how sustainable will this growth be? Low latency technology may be the hot topic now and in the immediate future but surely the logical conclusion is that the

market eventually will reach a point where it simply cannot get any faster, or to a point where the extra investment needed to shave off a further microsecond far outweighs the potential benefit in execution. But where is that point and when will it be reached?

“I think the market will determine that,” says Tolat. “It will get to a point of equilibrium where everyone is happy and the speed is good enough. I don’t know what that number is and it will be different for different markets. Technology providers like Integral are driving latency down and will continue to do so.”

The technology industry’s attempts to limit latency have seen execution and transaction time moving from seconds to milliseconds to microseconds, particularly in the equities and future/options markets where the demand has been biggest, and Tolat believes that the FX market will also have those same requirements.

There are further issues for firms to address in the desire for low latency, issues that are not always highlighted by those vendors that are offering products in this area. One is the lack of standardised measurement of latency, says Adams. There is also the unreliability of measurements. With each processing hop that has to be negotiated in a transaction comes a separate timing and if the synchronisation is out in anyway, the measurement will be off.

“These numbers get thrown around but the real test, if you are a high frequency trader and you are frequently at the front of the queue when you are trading, then you must be doing ok.”



**Kelly Adams**

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### Messaging standards

The FX market is still a very segmented, unregulated and heterogeneous market which may be good from a trading perspective with the opportunity for arbitrage and the low market impact that comes with anonymous trading. But from a purely technology perspective, this market structure, coupled with the growing volumes, has created a clear goal for platform providers – to offer as much connectivity as possible.

Multi-bank portal FXAll launched an anonymous trading platform Accelor in February 2007, which is set up as an ECN designed to complement its disclosed trading platform and to appeal to the high frequency traders looking to generate alpha from their FX trading and to have minimal market impact and low latency.

"Clients' FX needs are becoming more diverse and sophisticated," says Minor Huffman, CTO at FXAll. "Electronic trading venues have stepped up to this challenge and

revolutionised the way the industry operates through increased efficiency, workflow and audit tools as well as straight-through processing – all in a cost-efficient manner. Significant investments are being made in trading technology so that multibank portals and banks can become more flexible in the ways they source and provide liquidity to the market."

"At FXAll, once clients are connected they have access to the complete solution for FX and money markets trading – either on an anonymous or disclosed trading basis. On our anonymous ECN Accelor, which was launched in February this year, we provide very high performance FIX compliant connectivity, which makes it extremely easy to connect to us and start trading.

On our dealer-to-customer platform we offer end-to-end STP through our connectivity solution QuickConnect, giving clients access to 65+ liquidity providers. Our post-trade processing platform Settlement Center is compatible with every variation of messaging format used by world's leading custodians. In addition, we work with the leading portfolio management system vendors to ensure seamless connectivity for our asset management and corporate treasury clients. The FIX protocol has become a dominant messaging protocol for FXAll – it is generally compatible with active traders' systems and integrates well with their own existing platforms. Nevertheless, for those clients who are not FIX compliant, FXAll also provides proprietary APIs for internal systems built on Java or C++."

"The latest FIX 5.0 version and FIX Fast are currently being tested

in the market", says Huffman. "However the nature of the market and its many different ways of doing things means that FIX becoming a true market standard may simply take longer to develop in FX than it has in other markets."

"With FIX Fast we are making improvements in terms of transmitting FX prices," says Integral's Tolat. "But a lot of the APIs are still much leaner and need less data to represent an FX rate. In terms of getting on board and time to market, FIX Fast is going to help but until standards can give you the same capability that you get with a custom solution, they are always going to be one step behind."



**Minor Huffman**

*"One of the features that we support is the ability to initiate a request for quotes from single or multiple banks,"*

### The retail market

Among vendors in the FX space there has been a significant change of focus from the tier one banks to the e-brokers that are targeting the retail investors, where there has been a significant growth in technology spending. "The hottest area at the moment is retail FX," says Michael Thrower, head of sales and marketing at Irish-based FX technology vendor Cognotec. "It is

an established market for a lot of e-brokers that have been running for two to three years with their first generation platforms, which are now coming to the point where they do not have the scalability for the kinds of volumes that we are seeing in the market – so the investment is coming from the e-brokers but also the banks that see the retail space as a key area for the future.”

There is also a growing movement among e-brokers to address the poor market practices that exist in the retail FX market and technology plays a key part in establishing a higher market standard. “There is a certain workflow that goes around executable streaming rates, and various liquidity providers and sites have all sorts of checks and balances to make sure that they control the market rates that go out to clients,” says Thrower. “The retail client is becoming more sophisticated and more demanding in terms of the quality of prices and the ‘what I click is what I get’ requirement is increasingly important in the retail market and there are a number of sites that don’t achieve that so the quality of price distribution is becoming very critical.”

### Rate and Channel management

Thrower also highlights the issue of rate management and channel management. “Banks have invested significantly in ensuring that they have coverage over a wide variety of channels. Now we are seeing a lot of banks looking into how they might increase their profitability and grow these different channels in a more profitable way. So the emphasis has moved from providing liquidity to as many



**Michael Thrower**

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channels as possible to providing liquidity in the areas that the banks want to. That requires much more sophisticated technology to handle the pricing of liquidity through different channels.”

Another vendor that is increasingly focusing on the retail market is US-based Oanda which provides currency and FX rates online. “The growth of the retail market is going to be huge,” says co-founder and CEO Michael Stumm. “The retail traders are already a force in the market and they are big enough to have a direct effect on FX pricing. Moreover there are estimates that the retail market is growing at a rate of 30-50% each year and this growth will continue for the next three to five years. So it is not difficult to envisage the retail market accounting for 20 to 30% of the FX market’s trading activity.

On the technology side, many people are wondering if the technology in the retail market will now catch up to what is available in the institutional market. Our view is the complete opposite.

The technology and platforms in the retail market are light years ahead of that in the institutional market.”

“When you deal with institutional clients, they are used to pretty shoddy service and unreliable platforms. If you trade with the major banks, their platforms will be down for 30 minutes or an hour at a time, unannounced, periodically throughout the week. Institutional clients are used to that and learn how to deal with that. Retail clients on the other hand do not find that acceptable so the retail platforms are far more reliable as a result of the higher expectations of their clients. The institutional platforms are going to have a lot of work done to them to catch up to the state-of-the-art retail platforms. I think if you talk to the banks and traders they are starting to understand this and are looking at the retail platforms for this reason.”

Stumm cites the recent retail FX platforms launched by Deutsche Bank and ABN Amro and the fact that these were not done through their existing institutional platforms, something Stumm expects to be copied by many other banks. “I don’t think the institutional platforms have the scalability that the retail platforms do and I think the people working within the institutional space recognise that and they are working hard on applying technology to bring these platforms up to the level of the retail market.”

### The internet vs private networks

The central technology plank for these retail platforms is simply the internet, something which is still



**Michael Stumm**

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treated with scepticism by the institutional side of the FX market, albeit unjustifiably, according to Stumm. "I think the issue with the internet is public acceptance. All of those issues about security, latency and bandwidth were solved ten years ago. All of our trading is done over the internet. We are told that private networks are more reliable and more secure but our experience is that the internet is more reliable and just as secure. So there are not any new technology advancements in the FX market that have improved things, it is just that people are realising that the internet works amazingly well. "

The private network providers continue to stress the importance of low latency in their offerings and how the speed cannot be matched by public internet networks, which Stumm refutes. "I understand the mindset of the institutional market that says 'Latency! Latency! I need a private network'. Our view is that latency on the internet is good enough if not faster than some private networks so it is not an issue. We do lots of hedging with major banks over the internet and it has never been an issue."

There are others, such as Integral's Tolat, that believe the internet will

become the network of choice for distributing FX rates. "If you want to distribute your prices to a wider audience, you cannot rely on private infrastructure to do so. When there were only a small number of participants, you could subsidise paying for these private lines to be laid and these separate connections to be made but when you reach a higher distribution level, it will have to be over the internet. That will then rely on services like QOS and the prioritisation of traffic over the internet. The internet itself is becoming more real-time and a lot of advancements are happening in nano-technology and LAN-technology that is allowing for large distribution over the internet without requiring a leased line," says Tolat.

### Systems architecture

For a market growing so rapidly, one that research firm Client Knowledge claims will grow by 26% between 2006 and 2010, scalability is the obvious issue that arises and is one that has to be addressed primarily through a new approach to systems architecture. "There are many products in this market that were originally built around that corporate and retail traders that do one or two trades a day," says Sean O'Donnell, real stream product manager at Cognotec. "The retail trading market is a completely different ball-game and you have hundreds of thousands of traders online at any one time and the architecture needed to support is quite different from the traditional RFQ, auto trading engine. New technology such as the latest version of Weblogic's application server has been a big plus for us in terms of being able to scale out and support that number of users and add numbers of boxes to your installation to support more scalability," says O'Donnell.

As well as scale, there is also the issue of deployment and the ability to develop technology that can be run on both a small and large scale - from a Microsoft Windows operating system to a 16 core Sun Solaris rack-mounted, 200,000K server - without any changes being made to the software.

"Anyone that wants to operate seriously in the FX market will have to adopt this type of supporting architecture," says O'Donnell. "It's a big investment once you pick a vendor and you don't want to have keep doing this every time your business grows or there is a change to the business model. So you do not want to invest in something for 1500-2,000 users and then find that you have to find a new vendor because your client base has grown. And everyone wants to be optimistic in terms of their own market growth."

Service oriented architecture (SOA) is a vogueish term that has become ever present in the development of the more flexible, component-based approach to systems infrastructure. Can it be suitably applied to the FX market? "The architecture does need to be flexible in terms of how it integrates with other back-end systems, settlement systems, credit checking systems and so on.

It is very important in terms of vendor selection and systems procurement and SOA is a big development in this area. It has been around for a number of years but it is only really now that banks are beginning to get on that wave and are able to wrap up that functionality that they provide as a suite of services that they can offer out both internally to other departments within the bank and on a B2B perspective or to their own FX customers."

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Grid technology is another major development in systems architecture and the ability to handle an increase in capacity but O'Donnell feels there is some way to go before it appeals on a major scale to the FX market. "It can be applied to specific aspects of the market, particularly algo trading but from a pure trading perspective I think there is a lot of maturity to come. So there is a lot of yardage to be gained in that area before it goes further into other areas like grid computing."

### **Data, data everywhere**

The final area of technology development in the e-FX market relates to the issue of data, from processing to storage. With the typical trader receiving 20 prices a second from 20 different providers on a 24 hour, seven



**Zohar Hod**

*"In terms of data storage and queries, it is my experience that standard SQL queries and relational DBs are not fast enough,"*

days a week basis, it leaves a huge amount of data to be stored and should you want to ask complex queries of that data, it involves prohibitively expensive database operations. Consequently, research and development projects are underway to

resolve the issues concerned with data collection and storage and linking the data to execution and testing.

"In terms of data storage and queries, it is my experience that standard SQL queries and relational DBs are not fast enough," says Zohar Hod, head of IBM's Trading Solutions Group. "Other methods of querying by line rather than columns might reduce speed for query turnaround times, he says also mentioning a number of market data feed handlers associated with low latency, such as IBM WFO, Wombat and Hyperfeed as being in high demand in this area. "We have been trying to create a unified environment where we can do back-testing in quasi real-time and have that connected to an execution platform," adds Adams of FX-Concepts. "It is major logistical work to get that set up and the more ready-made collections of data that are available, the more it will level the playing field."