

As liquidity fragments, sophisticated algorithmic trading tools are emerging to support best execution. *Sarah Underwood* reports.

Challenging complexity

Once a 'nice to have' in the trader's toolkit, algorithms have become a 'must have' for both the buy-side and sell-side as they seek good deals for their customers and ensure best execution.

In Europe, the driving force behind the development of ever smarter and more complex algorithms is, of course, before The Markets in Financial Instruments Directive (MiFID) and the arrival of multilateral trading facilities (MTFs). Fragmentation of liquidity requires smart order routing, so, in theory, the smarter the algorithms, the better the trades in terms of cost, anonymity and market impact.

While that is the basic premise, practical solutions to algorithmic trading vary, as do opinions on whether algorithmic technology should be developed internally or sourced from trading software providers.

THE NEXT GENERATION

The first generation of algorithmic trading tools were based on quantitative models aimed at achieving particular benchmarks by determining when an order should be placed in the market. Now, an emerging second generation of algorithms considers where and how best execution can be achieved as the market fragments and a high degree of anonymity is desirable.

Joseph Wald, managing director of EdgeTrade, a US agency broker and developer of algorithmic trading strategies that was acquired by Knight Capital Group early this year, says: "The 'where' and the 'how' are the challenges. In Europe, where traders are working in a new market environment, they are looking at where to trade and how to take advantage of

the new models and the benefits they offer. Early adopters of advanced algorithmic technology will benefit the most."

EdgeTrade claims that its algorithmic strategies stretch beyond the norm of second generation smart order routing as they are based on smart order execution logic. The company's FAN strategy simultaneously sweeps and posts orders to public markets and dark books, using real-time executions and historical and analytical data to adaptively and continuously recirculate orders to available liquidity. It is possible to define the quantity of an order that will be displayed in public markets, while the remainder is circulated among dark pools. It is also possible to opt out of specified dark pools.

In the US, FAN has aggregated access to public markets and 40 dark pools, while in Europe, EdgeTrade is working with institutional asset managers to help them take advantage of emerging MTFs and technologies. The company hosts its algorithmic trading software and acts as an applications service provider (ASP) for buy-side institutional firms, hedge funds and asset managers, as well as for sell-side brokers. Knight Capital, with its own internal liquidity and executing over 3 billion share trades a day, also uses EdgeTrade developed algorithmic strategies.

"The benefits of adaptive smart order execution technology are anonymity, reduced market impact and price improvement. About 30% of order flow through FAN is executed in dark pools, way above the average 6% to 7%. We make almost zero market impact and we generate more alpha in dark pools for our clients," explains Wald.

ITG, an agency broker and technology firm working with

institutional investors, also notes the development of algorithms to give users advantage in new trading venues with new trading patterns. The company runs its own dark pool as a means of filling client orders and is also a provider of sophisticated automated algorithmic strategies aimed at reducing market impact, maximising execution quality and improving overall trading performance.

Rob Boardman, head of algorithmic trading at ITG in Europe, describes the company's constant drive to expand the scope of its algorithmic trading solutions to connect to emerging trading venues, cover more geographic markets and, possibly, to trade assets other than equities.

A recent innovation at ITG is the inclusion in algorithmic tools of tests to make sure that traders are not being 'gamed' - trades being used by another party for financial gain. Both independent and broker dealer owned dark pool participants want to put an end to this practice. "We have seen an improvement in trading performance as a result of our work on anti-gaming," comments Boardman.

Liquidnet, which claims to operate the largest dark crossing network in the world, has been using second generation algorithms to trade equities in the US for the past few years and intends to bring its in-house developed technologies to the European market, where it already operates dark liquidity pools that use manual negotiation processes, by the end of this year.

Essentially, Liquidnet offers two trading options, a natural liquidity pool that focuses on large blocks of shares and its H2O streaming solution that matches smaller blocks of shares on their way to public markets. The company's natural pool solution hooks asset managers' order management systems to the Liquidnet platform, giving large orders



access and possible matches to billions of shares of liquidity before they go into public markets.

H2O brings together the collective equity volume of 22 third-party liquidity sources – called streaming liquidity partners and including retail brokers, electronic and algorithmic brokerages, order aggregators and exchanges – to execute against institutional order flow. H2O is available only to Liquidnet's buy-side members and attempts to fulfil smaller, retail-sized orders bound for the New York Stock Exchange, Nasdaq and other destinations, while members wait for large block-sized matches in Liquidnet's natural pool.

Richard Johnson, an executive in Liquidnet's project management group, explains: "Our strategy is to bring liquidity to our customers, typically large institutional investors and hedge funds, so that they don't have to go outbound to public markets. They can execute in the dark and make savings on trades because they are trading in a growing liquidity pool and not creating market impact. They can also stay exposed without the risks of going outbound.

Our differentiator is being independently owned and not being a broker or exchange operated dark pool. We have the largest dark pools and they are integrated with algorithmic strategies that are constantly refined to maximise the probability of crossings and executions, and to minimise market impact."

Quod Financial, which previously worked on the sellside, but is entering buyside markets, is also a developer of liquidity

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Ali Pichvai, co-founder and CEO of Quod Financial

seeking adaptive algorithms that address liquidity fragmentation. Its software solutions cover the European markets and include an adaptive mode that updates decisions as markets change and, if liquidity is moving, can make automatic decisions to execute or cancel orders within four or five milliseconds.

Quod provides its algorithmic software to clients as part of its advanced execution platform, an open platform that gives users relatively easy access to Quod's technology or allows them to build their own algorithms using Quod templates. "Today, 40% to 45% of equity trades use algorithmic trading technologies but that percentage is growing quickly as traders use algorithms not just as a means of automation, but for smart order routing. Similarly, most of our customers are using our algorithms at the moment, but they will do more of their own development and patent their ideas as the market develops," says Ali Pichvai, co-founder and CEO of Quod Financial.

Pichvai believes the best algorithms are the product of collaboration and suggests that an experienced trader, a mathematician and a technologist make a strong development group. Quod has in-house mathematicians and technologists, but also works with algorithmic specialists at the University of Paris to deliver the tools that will help its clients address fragmentation and achieve best execution.

"The speed of today's markets means quotes on a stock are needed in just a few milliseconds. Using smart order routing pushes up the probability of accessing quotes, getting a better flow of trades and achieving best execution," says Patrick Westerberg, chief technology officer at Neonet. As an agency broker with membership of Europe's largest exchanges and connectivity to emerging MTFs, the firm gives customers access to fragmented liquidity and the added value of smart routing and fast market access technologies.

The company also has a business division dedicated to

technology development. As well as using its own technology as an agency broker, Neonet provides a hosted ASP smart routing solution for other brokers and banks.

"Finding liquidity is a game of probability. A smart router needs a good model that will calculate the probability of where an order will be filled and at what price. It then needs to iterate through markets to achieve best execution," says Westerberg. "The primary benefit of smart order routing to MTFs such as Chi-X is lower trading costs that can be passed on to institutional investors."

TIME WILL TELL

While software providers and traders using sophisticated algorithmic tools promote their potential, these are early days in post-MiFID Europe and some observers remain sceptical about the impact of new markets and the quality of tools that will be available to access them.

Frédéric Ponzo, managing director of financial services consultancy Net2S, notes that smart order routing remains in its infancy in Europe as there are not yet many alternative markets to route orders to. Chi-X Europe, he suggests, is successful on the basis of being first in the market, while Turquoise will succeed on the weight of the bank consortium behind it. Equiduct and SWX Europe he believes, will not be major players.

In terms of trading tools geared to the new markets, Ponzo says: "Fragmentation has been coming for a long time, so vendors have had time to prepare. In the build versus buy debate, I think smart routing products will take the largest share of investment, but they will range from the easiest to use but not very good from large software vendors, to dedicated cutting edge solutions from companies focusing on smart order routing. In the middle will be traditional execution management system vendors providing algorithmic tools as part of those systems." ●



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