Systematic trading 2013

- New architecture improves data capacity
- Testing the efficacy of new strategies
- Improved risk controls drive greater capacity
In this issue...

03 Improved risk controls can give systematic trading firms and HFTs greater trading capacity
By James Williams

06 UBS Quant HQ
Interview with Charlie Susi, Global co-head of Direct Execution in New York, and Gerry Polizzi, Senior Prime Brokerage Relationship Manager for Prime Services, UBS

09 New trading architecture improves data capacity
Interview with Wolfgang Eholzer, Head of Trading System Design for Eurex

10 If you’re driving a Porsche on the Autobahn, make sure you’ve got the right brakes
By James Williams

12 Systematic traders can test the efficacy of new strategies
Interview with Rob Lane, European Business Manager, Trading Solutions, at Interactive Data
Improved risk controls can give systematic trading firms and HFTs greater trading capacity

By James Williams

Technology vendors are constantly looking for ways to support increased activity in systematic trading. Trading firms, of which high frequency traders (HFTs) are but a sub- sect, are applying high precision engineering to shave millionths of a second off their latency profile.

One such firm, Solarflare, provides low latency software and 10GbE network solutions for precision time synchronisation for application servers in co-locations at the world’s major trading centres. It has installations in all the banks and exchanges, and many trading firms.

“For example, we power the networks at Cboe, Deutsche Boerse, Nasdaq, and the NYSE, just to name a few,” says Bruce Tolley PhD, vice president of solutions marketing at Solarflare.

Explaining the order execution, throughput and trading benefits, Tolley comments: “With various third party and open source benchmarks we can show three to four times improvement in message throughput and 50 percent reduction in latency while maintaining very small jitter in the trading system. *Since our solution is application transparent and supports the standard Linux API, Sockets, customers have no need to
rewrite their application to take advantage of the performance benefit.

Increasingly, systematic traders require low-latency high-performance 10GbE switch to server solutions. Results showed that in TCP testing, server-to-switch-to-server mean latency was as low as 3.6 microseconds. Solarflare recently conducted low-latency switch and adapter testing in conjunction with Arista Networks, the market leader in ultra-low latency 10GbE and cloud networking solutions, and was able to replicate the results referenced above “in a multivendor system”.

Solarflare also provides a middleware OS bypass solution named OpenOnload. The software works in combination with its 10 Gigabit server adapters to enable what is known as “kernel bypass”.

“This means we are able to eliminate the overheads and delays of the operating system by giving the network application direct access to the network hardware while maintaining protocol conformance and application transparency. NYSE was able to go from testing to operational deployment within in a matter of weeks.”

Latency is only half the story for systematic traders. Equally as important is getting access to market data. This is the fuel in the engine. Latency is irrelevant if you don’t have the data to execute a strategy. Interactive Data is a leading provider of ultra-low latency market data and trading architecture to support the growing systematic trading community. It offers 10GbE level data, providing millions of updates a second. Trading firms can choose to get a consolidated data feed, or have it piped directly from the exchange if they are a HFT.

“Between one exchange and another the data is the same. From a client’s perspective, you only have to implement the feed once. Then, whatever markets you want to add, the feed will be delivered to you in exactly the same format,” explains Henk D’Hoore, Head of Product, EMEA.

How trading firms intend to use market data will dictate whether they go down the co-location direct market route or not. But given the broad range of strategies being used, a typical systematic trader might well have one or two co-locations for certain time-sensitive strategies, and settle for a consolidated feed for others. With its 7ticks trading infrastructure, Interactive Data can support clients in a variety of ways.

“We make it our primary goal to help clients with change,” says Rob Lane, European Business Manager, Trading Solutions at Interactive Data. “If you decide to do co-location trading in Germany, great, we can facilitate that. If you decide to swap to a data centre with Interactive Data in London, no problem. If you then decide you need a consolidated data feed for Asia, we’ll do that as well. The client has the ability to change their choice of regions and asset classes as strategies change.”

“The overall 7ticks infrastructure is designed to support HFTs with its cutting edge design.

“We are able to use our 7ticks infrastructure to deliver our consolidated and direct feeds. One of our ticker plants sits at the Equinix datacentre in Slough, London which is where various liquidity pools are located,” continues Lane.

Exchanges are starting to get more involved in the provision of managed services, to both complement and compete with the likes of Interactive Data. NASDAQ OMX Group bought FTEN, a provider of real-time risk management, at the end of 2010 to improve transparency. And just last month (February 2013), the London Stock Exchange acquired two thirds of GATElab, a low latency trading solution provider, in a bid to move more into the OMS space.

“The GATElab acquisition continues to diversify our technology offering with initial projects focused on access and risk technologies. We hope to work with them to offer more services that collaboratively link in to MillenniumITs core platform technologies,” comments Nicolas Bertrand, Head of Equity & Derivatives Markets, London Stock Exchange Group.

“Some exchanges are building out a Chinese menu of services for trading firms, whereas other exchanges are starting to scale back. So it’ll be interesting to see how things develop,” says Lane.

At the heart of the evolution of electronic trading is risk management, the provision of tighter controls, and greater transparency. Incidents like the May 2010 Flash Crash need to be avoided, and that responsibility
Execution consulting. The *paradigm* hasn’t shifted. It’s been turned on its head.

Introducing **UBS Quant On Demand**.

The world of electronic trading has changed forever. From now on, everything will revolve around a single axis. You.

Technology, trading tools, consultation and solutions. Everything will be designed to express your views. Welcome to totally personalized execution consulting. Welcome to a brave new world.

Explore it at www.ubs.com/quantondemand

*We will not rest*  

© UBS 2013. All rights reserved.
UBS Quant HQ

Interview with Charlie Susi & Gerry Polizzi

UBS Quant HQ was launched last year as a global joint venture between UBS Direct Execution Services and UBS Prime Services. They’ve combined the firm’s human insight and expertise with innovative technology to provide quantitative traders with tailored access to the wide range of UBS Global Investment Services. The depth of the UBS Quant HQ product offering not only includes execution and clearing, but also global technology infrastructure and solutions, commission sharing agreements, quant research and a market leading capital introduction business.

Charlie Susi is Global co-head of Direct Execution in New York, and Gerry Polizzi is Senior Prime Brokerage Relationship Manager for Prime Services.

“The biggest reason behind launching UBS Quant HQ was that we’ve got a world-class global trading infrastructure that we’ve heavily invested in over the years, in addition to a very product rich prime brokerage platform that we’ve built over the last 20 years. The idea was to synthesise the two businesses and really focus on supporting quantitative trading teams,” says Polizzi.

Charlie Susi adds that as well as having multiple technology infrastructures and a global footprint, there’s a strong commitment to providing high-touch consultancy.

“Quant shops need consultative services and will work with a provider that understands systematic trading, how to leverage technology, provide the right prime brokerage services, and figure out the right way to access global markets,” says Susi.

Part of this consultancy service is being able to manage different requirements of systematic traders. “We offer an array of technologies and services to solve complex problems. The client pushes our product offering and we are always willing to explore, embrace and leverage emerging technologies,” Susi adds.

UBS Quant HQ is not just about offering low latency emphasises Susi: “It’s about risk controls, risk management, and consulting with the client. Our role is to protect everyone and provide the right liquidity at the right time.”

“Along those lines, we also recently rolled out an iPad application called UBS Quant on Demand Studio to help us work closely with clients to build customised algorithms. It’s a visualisation tool that allows us to sit down with the client, discuss how they want to trade, simulate what it would do, and then build a totally personalised algorithm with all the parameters that matter to them individually. It helps automate the client’s workflow,” explains Susi.

“The segment we’re talking about is quantitative systematic traders and that’s not a binary thing. It’s not like you are one or you aren’t one. A lot of funds run multiple strategies; some are quantitative, others are not. Someone might trade in a low latency capacity but you can be high frequency and not low latency and vice versa,” says Susi.

Aside from having the technology, global reach and consultancy expertise, UBS Quant HQ is also built on one of the industry’s strongest balance sheets.

“Our clients take great comfort knowing that we’re a safe and secure institution. Counterparty risk is a big concern these days. Our prime services platform puts us in a position where we’re able to service this particular client segment very efficiently, and respond quickly to meet their needs and requirements,” adds Polizzi.

Accessing new markets and asset classes is pivotal to UBS with the electronification of the markets. It just recently closed the purchase of the Brazilian brokerage firm Link Investimentos and as Susi notes: “This deal positions UBS as the top trader of cash equities and futures in Brazil.”

“We are very excited to continue to execute on the UBS Quant HQ strategy with a diverse set of quantitative clients embracing our product offering. We are building a feature rich product, attracting the targeted client base and expanding our footprint globally,” concludes Susi.
As one of the world’s leading investment banks, UBS is all too aware of the need to support systematic traders in all facets, from low latency trade execution and clearing through to risk management. Last August, it launched Quant HQ, a joint venture between the firm’s Prime Services and Direct Execution businesses.

“We invested a lot of money and effort in building the infrastructure requisite to monitor the risk checks that are demanded by the market to ensure no one is gaming the system. We want to be respectful of managing the integrity of the market place,” says Gerry Polizzi, Senior Prime Brokerage Relationship Manager for Prime Services.

Charlie Susi is Global co-Head Direct Execution. He notes that increasingly clients are not only strengthening their own internal risk controls but are asking “What controls do you have in place for me?” “Systematic traders want to consult with us on how we can be their safety net. They worry about their exposures and risk controls. Likewise, we at UBS worry about them trading under our name and what controls we have in place.”

Electronic traders understand that it’s not a case of having speed over safety.

“The change in posture among the HFT community in the past two years has been profound,” observes Nick Solinger, Chief Marketing Officer at Traiana, a leading post-trade network owned by UK interdealer ICAP supporting FX, equity derivatives and exchange-traded derivatives.

“There was concern, suspicion even, when we first rolled out this solution to the market. But now I would say that demand on the buy side is greater than it is from the clearing brokers. Even the best and most sophisticated market makers still have software engineers, designing algos that can potentially go wrong. People understand the need to adopt best practices.”

Traiana has developed a kill switch solution, which prevents market order limits from being breached. By having an independent system, the clearing firm sets out its limits, the client sets its own internal rules, and both sides can monitor activity. That the buy side is embracing such solutions shows that the electronic markets are maturing.

Typically a systematic trader will send out hundreds of thousands of orders. Only a small percentage ever gets filled. Traiana’s kill switch monitors order activity on the way in and what gets filled on the way out. Because each clearing broker will set rules and limit orders for each client, if there’s a glitch in the algo and limits are breached, the kill switch automatically cancels the execution.

“It’s a high-speed real-time system. We’ve invoked the kill switch more than five times now. Twice, buy-side firms have invoked it to stop their trades because of a defect in the trading algo, twice by clearing firms because their client is in distress, and once in the case of a breached limit.”

UBS’s Susi says that Quant HQ is not just about offering low latency. “It’s about risk controls, risk management, and consulting with the client. Our role is to protect everyone and provide the right liquidity at the right time.”

Susi is part of a working group to help exchanges implement kill switches. “It’s important that they have that safety net. Systematic traders need it as well. I think, set at the right level, there should be economic disincentives for loss of orders if you have no intention of trading.

“Systematic traders are also supportive of these measures because in their minds, if there are a handful of firms doing things inefficiently it gives the whole industry a bad name. Putting controls like kills switches in place is a good thing. Everyone will adapt.”

Solinger believes that the adoption of kill switch solutions and other risk tools can directly work to the advantage of trading firms. The more risk controls in place, the more likely clearing brokers will be comfortable at extending market access and trading capability.

Says Solinger: “We have one top name client and we saw their limit get loosened dramatically once we had the real-time monitoring kill switch watching over their activity. They were able to add 10 to 40,000 additional trades a day based on the expansion of their limit capacity. So getting better risk controls gives you greater access, greater limits, and ultimately gives you greater trading opportunities.”

Now live!

Eurex technology sets global industry standards in speed, innovation and reliability.

Now our new trading architecture is set to revolutionize how traders and investors access market opportunities worldwide.

Designed in partnership with exchange participants, this platform enhances trading performance across the board, including reduced latency and increased throughput.

The architecture also features innovations to the all-important “back end” of capital market technology, including:

- Greater system flexibility, allowing for reduced time-to-market when introducing new financial products and new functionality

- Improved functionality, including enhanced calendar spreads and user-defined strategies

- High performance messaging architecture for minimum latency, high-speed communications and reliable database systems

All this means a more dynamic and responsive platform for trading more than 1,900 products from around the globe on Eurex Exchange – including futures and options on benchmark indexes, leading fixed income derivatives and access to one of the world’s most attractive markets.

Technology that delivers a world of opportunity.

Discover more from Eurex Exchange.

www.eurexchange.com/nta
New trading architecture improves data capacity

Interview with Wolfgang Eholzer

“One of our core beliefs is that we should offer at least two ways of hooking up to our system,” says Wolfgang Eholzer, Head of Trading System Design for Eurex.

When it comes to cross-border electronic trading, Eurex Exchange has been a first mover since it was born out of the merger between Deutsche Terminbörse (DTB) and the Swiss Options and Financial Futures Exchange (SOFFEX) in 1998. While its technological capabilities have developed enormously, the ability to provide the right technology to suit different client needs has evolved as well.

Eholzer explains: “We don’t believe that a one size fits all approach is appropriate today. We would either be forcing one group to invest substantially in their technology infrastructure for low latency and high data volumes. Or we would be giving insufficient support to liquidity providers (market makers) in our futures and options market who need to quote in a short period of time.

“We offer two different kinds of interfaces to support clients’ trading requirements. We have clients for whom low latency and highly capacity of the trading platform matter a lot. But we also have other clients, who we value highly, who are more interested in technical interfaces that are simple to integrate and don’t cause large infrastructure spend on their end,” says Eholzer.

Take market data for example. An HFT firm can receive highly granular market data with a good latency profile using a 10 Gbit/s network and trade from a co-location cabinet. But for a manual trader, that wouldn’t make economic sense.

“Consequently, we also offer a stripped down data feed that provides benchmark futures price updates every quarter of a second. This is sufficient for a fund manager who just wants to buy a few Euro-Bund Futures, for example.”

This “dual” approach applies to order management in just the same way as it does to market data feeds. Traders can either leverage a high-speed binary interface, or a standard FIX interface for order management.

By the end of June this year, all Eurex Exchange products will have been migrated to the new trading architecture, which has been live since December 2012. The Exchange has been and will continue to transition products in a stepwise approach. The system is similar to that which was rolled out at International Securities Exchange (ISE) in the U.S. two years ago (ISE is part of Eurex Group since 2007).

As well as offering higher capacity and even lower latency, the new system also offers enhanced functionality. Eholzer says: “It supports considerably more strategy trading on options. You can pick and choose the legs you want with the signature you want. Enhanced implied ins and outs for futures spreads are available as well.”

Also, the availability of a native GUI (Graphic User Interface) to access the new trading architecture means that clients won’t need a server installation. All they’ll need is a browser and a Java virtual machine to access and use the GUI.

“We had a big footprint on clients’ premises with the legacy platform, which we wanted to avoid with the new platform,” adds Eholzer. “At ISE (median) latencies are in the order of 200 to 220 microseconds for the order/quote door-to-door latency.”

As for improved capacity, Eholzer notes that they did a load test recently for clients: “Compared to peak market data volumes for futures in the old system, we saw a factor of 13 or 14 more market data points per unit of time. So it’s a major step forward. We have advised our clients that they should calculate an increase of a factor of 10 to 20 on short time scales for market data.”
Last year witnessed an anticipated record high in quantitative (algorithmic) fund launches. As reported by the Financial Times recently, citing data provider Preqin, some 187 “quant” funds launched in 2011. Through the first six months of 2012, that number had already reached 95; the final figure is not yet known as its data normally has a six-month lag but Preqin’s Head of Hedge Funds, Amy Bensted was quoted as saying “We expect 2012 numbers to exceed those of 2011”.

Technology has come a long way in supporting systematic and high frequency traders. Many of these firms use highly sophisticated trading algorithms to quote and bid on thousands of securities a second. Trades are short-term, executed at millionths of a second. This has necessarily forced the exchanges to evolve accordingly as traders engage in a race to zero, driving latencies down ever further in a to exploit price inefficiencies faster than their competitors.

The London Stock Exchange bought Sri Lankan firm MilleniumIT for GBP18million in 2009 to develop its proprietary trading technology.

Nicolas Bertrand, Head of Equity & Derivatives Markets, London Stock Exchange

If you’re driving a Porsche on the Autobahn, make sure you’ve got the right brakes

By James Williams
service levels for our clients. ISE, a member of Eurex Group, won an equity options award recently and it’s using the same technology that will be rolled out at Eurex Exchange. At ISE, median latencies are in the order of 200 to 220 microseconds for the order/quote door-to-door,” comments Wolfgang Eholzer, Head of Trading System Design for Eurex.

Frankfurt-based Eurex has long played a leading role as a technology provider in the derivatives space. Supporting electronic traders is hardwired into its DNA. Although it’s hard to determine the percentage of trading volume that originates from HFTs and algo traders, it is estimated that around one third of its 430 members use its co-location service.

To accommodate both the expansion in quant fund numbers, and the demands of ultra-low latency from existing clients, Eurex embarked on an ambitious project to overhaul its trading architecture. This started back in 2008 after it had acquired International Securities Exchange the previous year. It was finally implemented in 2011, and is expected to go live on the Eurex exchange this summer.

“Our technology teams are committed to delivering the best quality and superior
Systematic traders can test the efficacy of new strategies

Interview with Rob Lane

“Our proposition revolves around market data and trading infrastructure. We can supply market data via consolidated or direct feed. How firms actually receive the content depends on the trading infrastructure,” explains Rob Lane, European Business Manager, Trading Solutions, at Interactive Data.

“We can deliver raw data straight from the exchange, or we can deliver a consolidated data feed. All the information comes down the pipe which is fully integrated to Interactive Data’s 7ticks trading infrastructure; so simply speaking, through this advanced connectivity, a client can pick and chose which content to use and when to use it.”

As the electronic/systematic trading community grows, having access to ultra-low latency market data is vital. Some trading firms will choose to establish a co-location presence next to the source with Interactive Data; others, who may not be high frequency traders, might select Interactive Data’s direct or consolidated feed. Choice and flexibility are critical for Interactive Data to provide, particularly as trading houses constantly change the strategies they use, and their subsequent data requirements.

“Maybe today they are looking at cash equities in Europe, tomorrow it might be Asia. The versatility that we have makes it possible for us to effectively change as and when our clients change their trading strategies,” says Lane. Henk D’Hoore, Head of Product, EMEA adds: “An arbitrage strategy, for example, might look good on paper but you can never be sure until you’ve tested it if it will yield the right results.

“Having a vendor who can provide a multi-asset class consolidated data feed or direct feed makes it possible to pursue different strategies.”

Interactive Data’s consolidated feed provides full-tick level 2 data. It delivers every single tick from the source to the end user or application, ensuring the full integrity of the data is maintained.

“We try to maintain the integrity of the underlying feed as much as possible. If you over-normalise the data you diminish its value. Typically, traders want the underlying integrity of the data because their applications can use it to their own advantage,” says D’Hoore.

Interactive Data supports how clients utilise the data with its 7ticks ultra-low latency trading infrastructure. It offers co-location and proximity hosting services in leading financial centres including (but not limited to) New York, London, Chicago, Frankfurt and Tokyo.

Says Lane: “We can provide raw data from the exchange to complement the consolidated feed but if latency is key, they’ll never go down the consolidated route they’ll always go the direct route via co-location. Firms can utilise this connectivity to support order execution.

“A firm may not be sure if they want to invest in a co-location presence in Singapore, for example. We can support them by a consolidated feed or tick history service to run back-testing. If they’re happy with the strategy, they can then choose to invest in a proximity or co-location, which we can host, manage and support.”

For more information, please visit www.interactive-data.com
“When we design these risk tools we do so in a way that ensures no one has a disadvantage when using them. At the clearing layer, we have a real-time risk management service delivering real-time margining information to clients. Members can also set limits at the clearing stage which, if breached, will back fire into the trading engine. We have volatility interruptions for all our products including benchmark futures if prices decay or rise too steeply over short time periods.

“If you drive a Porsche on the Autobahn, you'd better ensure you've got the right brakes!” says Eholzer. Maintaining the integrity of the markets has to be the priority. Barney Dalton is Chief Technology Officer at London-based Aspect Capital, one of Europe’s leading CTA firms with USD6.9 billion in assets under management. Although not as aggressive as HFTs – its execution algorithms are generally quite passive – Dalton confirms that its primary safeguard is its software development lifecycle.

“We have invested heavily in this over the last year with a primary motivation of reducing software risk. This has covered all areas of software development such as: initial change specification, scheduling/prioritisation, risk assessment, design, build, automated testing and commissioning.

“Our second level of defence is the use of a ‘safety valve’ concept within our platform to ensure algorithms operate within a safe envelope. These valves operate per market as well as globally across all trading and cover areas such as trade size, price, trade slippage and orders per second. At the moment this is internal to our own software but we are also looking at using a third party FIX gateway solution to further enhance our level of protection.

“Done in the right way I think some sensible restrictions to ensure that bids and offers are a genuine expression of a desire to trade is a positive step forward.”

Barney Dalton, Aspect Capital
Remco Lenterman is a managing director at IMC, an Amsterdam-based HFT firm. Speaking to Hedgeweek in his capacity as head of the FIA European Principal Traders’ Association, Lenterman is quick to set the record straight and debunk a lot of the myths that surround HFTs.

The most vocal critics are some of the mid-sized buy-side institutions who see HFTs as predatory, but Lenterman says although they only represent a minority of the buy-side community, they basis of their criticism stems from a lack of knowledge. “It’s based around: ‘Whenever I place an order in the market the market moves against me so it must be HFTs doing that’. They go on panels and all they say is ‘these guys front run my orders’. In this environment it’s politically convenient because it’s what people want to hear to justify the regulations they are pushing for.”

The front running argument is something that Lenterman has heard every since he joined Goldman Sachs in 1989. At the time it was the hedge funds or brokers that were being accused of it, now it’s the HFTs. But given that HFT firms have no client business, Lenterman doesn’t see how they could have any prior knowledge of institutional orders. “The question is, will the price of stock that they are looking to buy or sell move against them more or less than it did 10 years ago?

“Vanguard states that the reduction in transaction costs they’ve enjoyed over the last 15 years means that the average pensioner, whose funds they manage, will have 30 per cent more in their investment account at the end of a 30-year investment cycle. If you believe HFT is a new phenomenon, which it’s not, and if you truly believe that our intention is to front run orders, then you have to believe the TCA metrics will show that. But they don’t,” says Lenterman.

The other point that Lenterman takes issue with is the idea that HFTs are willfully engaging in what is referred to as “quote stuffing”, where exchanges are flooded with quotes, only to then get withdrawn. Canada has imposed cost penalties on such activity. Lenterman says that because of market fragmentation, HFTs might be required to quote and bid in 10, 15 different markets. “If I trade in one of them, then naturally I’m going to change my quote in the other 14 markets. That’s what you call risk management.”

What people tend to overlook is that when they’re not trading, HFTs still update quotes. This helps tighten spreads, making the markets more efficient. “I understand that there’s sloppiness with algorithms, but what I can’t understand is how ‘quote stuffing’ is meant to be used for market abuse purposes. I’m not saying it doesn’t happen, I’m just saying I don’t see the economic rationale for doing it on purpose.”

Remco Lenterman, IMC

“I understand that there’s sloppiness with algorithms, but what I can’t understand is how ‘quote stuffing’ is meant to be used for market abuse purposes. I’m not saying it doesn’t happen, I’m just saying I don’t see the economic rationale for doing it on purpose.”

Remco Lenterman, IMC