

# Inside Market Data

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# ANALYTICS

SPECIAL REPORT



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## Analyzing Analytics

Analytics—the tools that help traders and investment professionals to identify opportunities and spot trends in raw data, spanning the gambit from basic price and volume charts to technical analysis that can spot and predict trends, to behavioral research engines, and even systems for creating market-derived prices—are in a state of constant evolution. And as data volumes increase, markets become commoditized and strategies become more sophisticated, analytics are becoming ever-more important in the search for alpha.

“The fixed income markets are becoming smarter.... The corporate bond and CDS markets have been the first to evolve to embrace pre-trade transparency, but it won’t be long until we see this in other asset classes,” says Tim Grant, managing director at Benchmark Solutions. “Clients are starting to demand the types of value-added analytics that have been more prevalent in equity markets, such as liquidity metrics, transaction cost analysis and quantifications of market impact.”

This trend is also being reflected in how clients operate, with fundamental and technical traders increasingly sharing common ground. “In the past, we had two camps—quantitative analysts and technical analysts. [Now] these two approaches are meeting in the middle, and a new class of ‘quantamental’ strategies are emerging,” as quants seek more data to differentiate their strategies and as fundamental analysts use quantitative processes to advance their screening processes, says Rich Brown, head of quantitative and event-driven solutions at Thomson Reuters.

Some attribute this to the availability of data, and the tools by which a broader audience can access it: “More and more, we see the emergence of a trading style that is composite or hybrid in nature. This is in part possible because of the commoditization of data that has occurred as a result of the prevalence of the web,” says John Shortt, vice president of research and development at technical analysis software vendor Recognia.

But in addition to being a delivery channel, the web is also a rich source of information, and financial firms are seeking out market-moving information being made public through blogs, Twitter feeds and other forms of social media—which together present far more updates per second than any market data feed, and will drive the evolution of Big Data storage tools and the next generation of analytics. ■



**Max Bowie**

Editor, *Inside Market Data*

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NEWS ROUNDUP

## NYSE Tech Bows Hosted TAQ 'Analytics Lab'

NYSE Technologies, the data and trading technology arm of NYSE Euronext, will unveil a new service this quarter, dubbed Market Data Analytics Lab (MDAL), which will provide access to a central, managed database of its historical trade and quote (TAQ) data and a range of hosted analytics and tools for querying the data, enabling clients to back-test and implement trading strategies without the cost of acquiring and managing the entire TAQ database in-house.

An extension of the exchange's Capital Markets Community cloud connectivity

platform, MDAL allows clients to run analytics against large volumes of TAQ data in NYSE's cloud, reducing demands on their own infrastructures, though the vendor will continue to deliver the data via FTP and email for clients who prefer.

MDAL also includes a library of pre-built, commonly used functions, ranging from simple equations to "more sophisticated, moving average-type calculations," says Brian Fuller, business development manager for global market data at NYSE Technologies.

MDAL initially provides historical TAQ

data for the exchange's US equity markets, and the exchange is looking to expand the service to cover other asset classes traded on markets within its parent group, such as derivatives and bonds, as well as data from other exchanges, Fuller says.

Users may also upload their own data into MDAL in spreadsheets or CSV files, and link them to NYSE's content to filter data according to their list of securities.

NYSE will charge a monthly per-user fee for MDAL, the cost of which will vary according to the number of concurrent accesses. ■

## Intrinsic Adds Russell Index Data in Analytics Push

Equity and fixed income analytics provider Intrinsic Research Systems, a subsidiary of company and financial data vendor Mergent, is expanding the content available via its analytics platform, with the addition of data from Russell Indexes and more global content, as it looks to develop additional analytical tools to meet client demand.

Intrinsic's current content set includes company fundamentals, corporate and municipal bond prices and economic data.

The addition of Russell's benchmark data will support an expansion of Intrinsic's portfolio analytics beyond reporting and monitoring to enable customers—including hedge funds, mutual funds and asset managers—to also run performance attribution analysis.

Along with the content expansion, the vendor is also planning to enhance its screening capabilities to enable users to customize the product and create their own screening items, such as the ability to apply mathematical and scoring functionality on top of the existing 1,400 fixed, screening items pre-calculated by Intrinsic, which clients can use to provide instant results. ■

## Metrixx Taps TT Data for Bond Futures Analytics

Decision support analytics and market statistics provider Metrixx has linked its calculation engine to Chicago-based derivatives trading software vendor Trading Technologies' market data servers and exchange gateways, so TT clients can run Metrixx's analytics on data from TT's trading platform.

Under the deal, traders can access Metrixx's calculations directly within TT's X-Trader desktop, enabling them to derive analytics relating to spreads and differentials—including yield curve duration spreads, Notes Over Bond spreads and analysis on cash-to-futures ratios—and directional trends from TT's data for global fixed income futures contracts.

Metrixx calculates its analytics in real time and provides them as streaming values that would be time- and resource-intensive for derivatives traders to calculate themselves, while X-Trader users can gain access to Metrixx's analytics in under an hour, says Jim Marzano, managing director at Metrixx. ■

## Titan Adds Insider, Predictive Data to Signals

Titan Trading Analytics, an Atlanta, GA-based provider of trading strategy signals based on behavioral research, has added two new sources of sentiment analytics—insider trading data vendor Insider Insights and predictive analytics provider Recorded Future—to its behavioral data.

"We have our models based on price, volatility and our suite of algorithms, then we take the unstructured data and use it as an overlay ... [to] serve up sentiment changes and upcoming actions in our sig-

nal stream," says Titan CEO John Coulter.

Jonathan Moreland, director of research at Insider Insights, who started collecting insider deal data to support his own fundamental research and trading activities, then began selling the results to offset his research costs, says insider deals provide an indicator of a company's—and its executives'—confidence in its own stock, which, in conjunction with other research, could be factored into investors' decisions.

Recorded Future creates so-called "tem-

poral analytics" by scanning public sources of news and information to generate timelines for individual companies and capturing any mentions of future events, then predicting the impact of that event on securities prices based on historic performance around similar events in the past.

"If you can quantify and score news and other media, you can provide another view of what's happening to a company," says David Moon, head of financial services at Recorded Future. ■



## Liberum Capital Bows Fidessa ‘Intelligence’ Tool

UK-based investment bank Liberum Capital has rolled out Fidessa’s Real-Time Intelligence analytics tool to allow its sales traders to provide real-time analytics to clients based on order and trade activity.

Liberum deployed Real-Time Intelligence—which runs any real-time data relating to a specific order through analysis algorithms during or after execution to generate reports that assess a trade’s market impact—at the end of February following a period of beta testing. Liberum uses these reports to prove it has fulfilled the execution criteria specified by each client, by providing details of “what venues were executed upon, what percentage of the entire order they made up, and a number of benchmarks such as interval and limit

VWAP,” says John Truscott, operations director at the firm.

Previously, Liberum compiled execution reports manually—for example, by scraping web portals of direct market access providers to compile spreadsheets of execution volumes on different venues before contacting a client, which Truscott says was not an efficient use of time, as traders could be dealing with hundreds and potentially thousands of executions depending on the size of the client order.

“Putting the ability to look at the various venues that we’re executing on at our sales traders’ fingertips is absolutely critical these days. We are regularly getting asked about where we are executing and what sort of volume is being traded on

each venue—particularly in respect to dark executions—so it has made a tremendous difference to us,” Truscott adds.

The Intelligence product suite—which also includes pre- and post-trade analytics tools—is aimed at front-office sales and trading professionals, compliance officers interested in best execution, and heads of trading and C-level executives wanting to monitor the performance of trades where capital is at risk. “The Real-Time Intelligence product is aimed at mid-tier and small brokers, and allows them to provide analytics as a value-add to the execution process for their customers,” says James Blackburn, marketing director of Fidessa’s European Software-as-a-Service business unit. ■

## EOX, Udata Ally for OTC Gas, Power Analytics

Clients of over-the-counter commodities interdealer broker OTC Global Holdings’ EOX data division can now access and analyze the broker’s end-of-day natural gas and power forward curve data in technical analysis software vendor Udata’s Professional analytics workstation, under an agreement between the two.

“Clients will want to take OTC data and compare it to exchange curves or internal forward curves and look for trading opportunities, and can run historical analysis and strategy testing, and all sorts of technical analysis—such as creating moving averages or oscillators—just as you would for exchange data,” says Rob Garfield, senior vice president of business development at Udata.

EOX officials say Udata will enable clients to get more benefit from EOX’s data. “From an analytical perspective, traders often forget the relationship between technical analysis and forward curves. Technical analysis is the process of analyzing historical price movements to determine market sentiment. The structure of the forward curve—its level of contango, or backwardation—changes on a daily basis and is a powerful method of determining market sentiment. In addition, forward curves—especially in power and gas—highlight the often-referred-to ‘widow-maker’ spreads that traders love to ride,” says Jeff Shipp, director of sales and marketing at EOX.

Udata will enable the data from OTCGH in its terminals for no additional charge, though firms must be an existing client of EOX—or must become one—to access the data in Udata. The initial agreement covers natural gas and power data, but will expand to cover datasets on other asset classes brokered by OTCGH as EOX makes them available. ■

## ParAccel Eyes OTC Data Integration

Campbell, Calif.-based analytic database provider ParAccel is planning to develop data integration modules for loading data from over-the-counter markets into its analytics platform, to enable traders and pricing analysts to perform faster analysis of OTC data.

The vendor already provides On-Demand Integration (ODI) modules for accessing the New York Stock Exchange’s Daily TAQ, ArcaBook and OpenBook data, as well as FIX messages and data from Hadoop and Teradata, and is now looking to build new ODI modules to capture data from foreign exchange and fixed income markets, says John Guevara, senior director at ParAccel.

“Incorporating these OTC tick datasets, you’re going to find different combinations of market data providers with different asset class combinations... particularly with FX, which is a very disparate market, so there’s inherent value in bringing all that data together,” Guevara says. “It seems to be a common strategy now, to adopt some form of FX strategy alongside trading strategies in other asset classes.”

ParAccel already provides pre-loaded pricing models and is equipped to manage and load data rapidly, even at peak volumes, so the OTC data modules will enable users to quickly gather the data they need and conduct the complex analysis necessary for adjusting yield curves and re-pricing bonds. Officials say analysts at trading firms could spend half their time just gathering data and waiting for queries to run, whereas ParAccel’s ODI modules and its analytic database can pre-load the data into their analytics platform, and import additional data in the middle of running a query if needed, which—in combination with the speed of ParAccel’s platform—helps free up users to perform more complex and deeper analysis on larger amounts of data. ■



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## 'Social' Data Requires New Tools

Central to the concept of Big Data is the volume, velocity and variety of data, and the inherent complexity of analyzing it effectively. Thus, firms are looking at tools and techniques to help analyze structured and unstructured data, such as text analysis, which has moved beyond the proven signals available in premium news feeds to exploit value from online news and social media, says Rich Brown, head of quantitative and event-driven solutions at Thomson Reuters.



Rich Brown  
Thomson Reuters

Social media is becoming increasingly important in today's market, and not just because of high-profile IPOs. News stories often break in social media venues such as Twitter before being picked up by the mainstream media. In other cases, an exclusive story that breaks on Reuters News can quickly go viral in social media forums. This means firms in search of alpha can no longer ignore social media. High-frequency trading systems, systematic investors and even human traders need to be equipped with tools that analyze both professional news and social media.

The use of analytics is evolving, and user requirements are changing. Analyzing internet news and social media has traditionally been difficult because of factors such as the lack of publishing standards and formats, the motivations of different authors, the interpretations of different readers, profanity, sarcasm, mixed use of uppercase/lowercase, typos, emoticons, and multiple exclamation points, to name just a few—though several popular sources are at least becoming more defined in their structural elements, using hash-tags, \$ticker references, or even self-policing communities. At the same time, natural language processing technologies for analyzing sources have also become more advanced, and credible research highlighting the market impact from various types of news stories is more widely available.

Internet news and social media content must be analyzed in a number of ways to ensure a trader or trading system can make best use of it. In general, the more high-quality metadata that describes a story, the better, but only as long as one understands how to use it properly. Some techniques employed by the Thomson Reuters News

Analytics system for Internet News and Social Media include noting the source of the information, the story genre, the company mentioned and to what extent it is relevant or substantive to the article, the sentiment—or tone—in which it is talked about, the story topic(s), and how unique or repetitive the story is. The system even flags suspected pricing commentary so as not to over-emphasize stories that tell you what a stock did in late-day trading if you already have a pricing feed of that data.

When modeling the market response to stories and social media posts, this expansive set of metadata items—if filtered appropriately—can help increase the signal-to-noise ratio, eliminating less important items from strategies. Market reaction will also depend on where the story is in the information lifecycle: how do you know which source is leading versus which is lagging, and under which circumstances? This is especially important, since other firms will be trading against any potential overreaction to the story. To assess the information, it is essential to have a common systematic method to analyze whether a source is driving or being driven by the news, under which circumstances, within what timeframes, and with how much momentum.

Yet, the analysis itself is not the only challenge: This vast amount of information also needs to be made easily accessible to traders using powerful visualizations. If a picture is worth a thousand words, an intelligent visualization can be worth a million articles of a thousand words each (See our webinar on incorporating News Analytics into powerful visualizations: <http://panopticon.com/webinar/44>).

But so far, very few firms can do all

this effectively. There is a lot of interest in adopting new tools and technologies, but it is not easy. Complications occur from how the data is sourced (often requiring complex infrastructures) to how it is analyzed (sophisticated software and methods programmed by hard-to-find human talent, which can involve endless, costly recruitment or training cycles that may still yield poor results) and how it is distributed and consumed by users. Building an appropriate historical dataset for proper analysis is also no easy task, since analyzing unstructured data goes far beyond simple keyword searches and attempts to understand the text.

While it is understandable to want to perform proprietary text analysis, we see greater value for firms to exploit the opportunities in news and social media analysis by letting Thomson Reuters perform the complex analytics, allowing users to take strategies to market more quickly, having spent their time on more valuable activities, such as understanding the implications on their portfolio or strategy, or looking for ways to exploit other nuances of the datasets. Later, as more data sources and more analytics on that data become available, the analysts would then adapt their models appropriately, staying at least one step ahead of the masses.

In today's market, firms need to increase the breadth and depth of analytics coverage in an intelligent way to understand how news and social media are connected and influence trading strategies. Now is the time to eliminate the noise, to enable strategies to analyze and take action on only the most important, impactful and relevant information, whether from traditional news or social media. ■

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# The New Face of Analytics: Evolution or Revolution?

Once just basic charting tools, the concept of analytics has expanded to sophisticated displays and calculation algorithms that run behind the scenes, searching for market movements, while the fundamental and technical analysis tools once only the domain of institutional traders are becoming more available and understood by active and retail investors, leading to a growing segment of hybrid “quantamental” traders that need new kinds of analysis tools.

**IMD: How is the concept of “analytics” evolving from charting displays to different types of visual indicators, trading signals, calculation engines, and analysis for use in automated trading engines—and what does this reflect about how the roles of consumers at end-user firms are changing? What trends are driving these changes?**

**Rich Brown, head of quantitative and event-driven solutions, Thomson Reuters:** Technology advances are enabling the next generation of intelligent, actionable analytics to be used by both sophisticated quant analysts as well as traditional fundamental analysts. Market data is becoming ubiquitous, and the analysis on this data is performed “out of the box” by many data providers or tools. More complicated datasets such as unstructured news and social media are being analyzed and presented in quantitative ways, outlining characteristics like the companies mentioned

and their relevance, the sentiment/tone of the article, the topic (M&A, results, etc.), the uniqueness, source, genre, etc., which allow quantitative approaches to be used on qualitative data that previously could only be interpreted by human analysts. The interaction of the quantitative and qualitative data is now being modeled at scale in the cloud using technologies such as Hadoop and Cassandra. This is ultimately enabling users to incorporate the analytics into their strategies in more systematic ways. Automated reactions to events, pre-programmed circuit breakers or adaptive news algorithms, and multidimensional visualizations that update in real time are powering the next generation of analysts and portfolio managers—both quantitative and qualitative. Traders are becoming smarter with these tools, and just like the move to electronic trading, those with the skills to properly assimilate this information will emerge as the next generation of analyst traders,





**“Just like the move to electronic trading, those with the skills to properly assimilate this information will emerge as the next generation of analyst traders, focusing on the higher-value-added activities necessary to effectively compete in the marketplace.”**

Rich Brown, head of quantitative and event-driven solutions, Thomson Reuters

focusing on the higher-value-added activities necessary to effectively compete in the marketplace.

Rolf Broekhuizen, head of business and market development, SIX Swiss Exchange: Market data is the blood flowing at ultra-high speed across automated trading engines and analytical tools. Data consistency and speed of transmission are the two critical parameters to ensure optimal processing through analytical tools such as order management systems, smart order routers or execution algorithms. We definitely notice a clear trend towards increased market data consumption for non-displayed, derived usage that does not create any visible output to end-users but drives execution algorithms.

SIX Swiss Exchange has steadily invested in its infrastructure and competes in the top league of market data providers in terms of latency and data quality. Since the recent go-live of SIX Swiss Exchange ITCH feed (IMI), downstream recipients such as trading participants, data vendors and application service providers can consume price updates within less than 50 microseconds after the event takes place on our central limit order book.

We recognize that there is too much proprietary data logic among the 50 equity market operators in Europe. This broad diversity certainly hinders efficient consumption of market data and makes it unnecessarily expensive. The industry needs standards ensuring that executions of a similar nature are flagged in an identical fashion across most datafeeds. This will lower the overall level of complexity and naturally reduce market data processing costs. SIX Swiss Exchange is therefore an active contributor to the MMT (Market Model Typology) initiative led by FESE.

John Shortt, vice president of research and development, Recognia: Web-based charting is now the predominant means for the broadest base of traders and investors to access analytics. Advances in this form of charting have primarily been in the interactivity of charts, new tools that allow users to add analytical content to the chart (like trends, resistance levels, stops), and tools to analyze what-if scenarios in-chart (like varying stop methods, technical event outcomes). We would characterize this as a migration of the function of the desktop charting tools to the web. Broadly speaking, advances in charting technology have not kept pace with user demands, technology advances and hardware performance improvements (especially display and compute price/performance improvements). Add to this the opportunities for collaboration through social media and the ubiquity of mobile

devices, and we see a renaissance coming in the way that traders and investors interact with analytical tools.

Tim Grant, managing director, Benchmark Solutions: Benchmark's focus is creating market derived transparency solutions for the fixed income markets. For the first time ever, independently generated real-time market derived prices for OTC credit markets have become available and this is a game-changer for the types of charts and analytics which can be offered to market participants.

Market derived prices, rigorously calculated from all available market inputs, have also driven customer demand for key

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transparency analytics like real-time diagnostics for tracking the changes in underlying variables like rates, credit and funding and how these changes affect real-time bond pricing.

Similarly, end-of-day price evaluation can be aided enormously by having analytics to demonstrate which individual market observations, from everything available, have been analyzed to determine a market derived closing price.

This pre-trade transparency sets the stage for next-generation trading tools and features like limit orders that have been already available in other asset classes for many years.

The corollary of this evolution in the fixed income markets is not so much that the roles of consumers will change, but rather that they will have more analytics available to make critical business decisions.

**IMD: What are the most or least useful tools for different job functions and asset classes?**

Broekhuizen: In its role as a market operator, SIX Swiss Exchange is mindful that there is a broad diversity of market participants. Their expectations cover multiple asset classes, multiple currencies and multiple execution modes. That's why we deliver customizable "best of breed" services to our clients.

The market model and technical setup of each trading segment has been fine-tuned and achieves the best mix in terms of quality of price formation and speed of execution.

For asset classes relying on liquidity providers (market makers) such as ETFs or structured products, it is important that the market operator generates neutral and reliable metrics on

## ROUNDTABLE

**“As transparency and connectivity evolve in the fixed income markets... clients are starting to demand the types of value-added analytics that have been more prevalent in equity markets, such as liquidity metrics, transaction cost analysis and quantification of market impact.”**

Tim Grant, managing director, Benchmark Solutions

market quality. SIX Swiss Exchange has been active in promoting comprehensive measurement standards such as MQM (Market Quality Metrics) for ETFs or QQM (Quote Quality Metrics) for Scoach products. The financial community can check the resilience of liquidity for individual securities, thanks to easily available and neutral data.

**Brown:** More sophisticated tools are needed to help the human sift through the onslaught of information and put it in better perspective. Databases that can handle complex data structures as well as delivering rapid results to queries on unstructured data are in high demand, as well as complex event processing systems to handle the real-time interaction of various streams of data. Additionally, advanced visualization techniques are enabling a far more multidimensional approach to data analysis that can be easily understood by humans. In the past, a simple chart showing different quantitative measures was a good leap forward in helping users understand data trends, such as pricing, that existed in a single column of a table. With advances in visualization technologies and humans' ability to assimilate more data visually, users are now combining multiple variables in the same visualization, such as price, volume, volatility, news flow, sentiment, P&L and risk into a common dashboard.

**Grant:** The fixed income markets are becoming smarter. Many different job functions have approached us to build solutions to the problems they face on a daily basis. These solutions are only possible because of the availability of market-derived prices delivered in real time. The corporate bond and CDS markets have been the first to evolve to embrace pre-trade transparency, but it won't be long until we see this in other OTC asset classes.

Already traders and portfolio managers on both the buy and sell side are using independently generated, real-time prices integrated with their other data sources to validate or arbitrage the quotes they see in the market. This move towards automation is starting to complement traders' responsibilities for market making and price quote generation, and we see the first movers launching headlong into this exciting space.

Evaluators have historically only been able to work from one end-of-day price. They now have access to intraday information that will have significant impact on their perspective of changing market values, and will ultimately increase the accuracy of market-to-market valuation processes.

Risk managers can unlock the factors driving asset price movements and hedge risks more effectively. Product controllers can set order boundaries with their trading desks based on the real-time indications of fair mid-market prices.

Pre-trade compliance is a very exciting new space, especially with the increasing fiduciary onus on money managers to achieve best execution on behalf of their customers. An independent, market-derived view of the prevailing market price can help flag potentially problematic trades before anyone says “done.”

As transparency and connectivity evolve in the fixed income markets, we are excited to be developing the next generation of analytical tools. Clients are starting to demand the types of value-added analytics that have been more prevalent in equity markets, such as liquidity metrics, transaction cost analysis and quantification of market impact.



**Shortt:** Focusing on the investor or trader who is a client of an online retail broker (our primary user) we see that equities, exchange-traded funds, options and foreign exchange are the asset classes that get the most interest. These users are focused on analytical tools that generate trade ideas, provide unique research and that manage portfolio performance and risk. Education and training materials are a key requirement for the online brokerage account holder because these individuals are in a state of constant learning.

**IMD: How do the demands of fundamental traders differ from those who need more technical analytics, and how are data providers innovating to address each of these requirements in detail?**

**Shortt:** We predominantly see traders who use a broad set of analytical tools and methods to arrive at their buy/sell decisions. For example, an investor may use fundamentals to make longer-term decisions and use technical analytics to determine when to enter and exit positions. More and more, we see the emergence of a trading style that is composite or hybrid in nature. This is in part possible because of the commoditization of data that has occurred as a result of the prevalence of the web.

**Brown:** In the past, we had two camps—quantitative analysts and fundamental analysts. Traditional market data for quants is be-

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### December

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coming more ubiquitous, and those firms are needing to differentiate their investment and trading models to drive alpha. Meanwhile, fundamental analysts are increasingly looking to diversify their universe of investable ideas and—with their data increasingly digitized—are employing quantitative approaches to advance their screening processes and increase the scale at which they can operate. These two approaches are meeting in the middle, and a new class of “quantamental” strategies are emerging, taking the scale once only available in quantitative strategies and adding the qualitative expertise of the fundamental analyst. This is driving the need for simpler analytic tool interfaces, pre-programmed screens and “out of the box” standard calculations for the fundamental analysts, and the need for more qualitative data, such as news and social media analysis, for the quants.

Basic, low value-added activities are being relegated to the machines, leaving the humans to focus on understanding the greater context of the investment hypotheses and working where the quantitative models may have missteps. For these groups to be more effective, each needs to understand how advanced analytics can help their side of the equation. For example, both a quant and a fundamental analyst might want to know what happened the last time an event like this occurred, or the average reaction to a similar event.

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**“More and more, we see the emergence of a trading style that is composite or hybrid in nature... in part because of the commoditization of data that has occurred as a result of the prevalence of the web.”**

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John Shortt, vice president of research and development, Recognia

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To do this, they might run a simple or complex computational query and come up with the average event response. The quant might calculate the likelihood of it happening again, what the range of impacts might be, and adjust her/his risk models to respond automatically the next time the computer sees this event. The fundamental analyst might look specifically into these apparently similar events to detect a more qualitative pattern and exactly how similar the causes of the events might be in order to adjust her/his future outlook and risk tolerance. In each case, both are requiring far more advanced analytics able to work across both structured and unstructured data. Thomson Reuters provides a robust set of tools around the content, technology and data management capabilities that enable these users to get to market quickly with these strategies, rather than focusing most of their efforts on collecting, normalizing, and managing data and infrastructures.

**Broekhuizen:** Addressing the diversity of customers’ needs is the key element of our strategy. SIX Swiss Exchange supports a wide range of interfaces to its central execution engine, either directly from a broker’s own infrastructure or indirectly via an ASP. Our



technologically most demanding clients can benefit from our recently launched co-location and proximity services. The most advanced setup allows our participants to process 20,000 orders in less than a second. Smaller long-only brokers can leverage existing standards and use our FIX-based STI order entry interface. We’re committed to flexible solutions that fit to the needs and budgets of all our clients.

**IMD: With mobile technologies and data access increasingly becoming an important part of financial professionals’ workflow, are traders and investment professionals looking for mobile access to analytical tools? And is the current generation of analytics able to meet these needs?**

**Shortt:** Mobile will be key. It requires that the performance and coverage being provided by mobile networks continues to expand (think of 4G everywhere) but this is a clear and established trend. There are two interesting developments to watch as organizations roll out mobile trading platforms. The first relates to the choice between building native mobile apps and building web-based (HTML5) mobile applications. Organizations that start by building native apps for a specific mobile platform are discovering two important facts: (1) the consumer-oriented app store model doesn’t always meet their needs for timely delivery and (2) there is limited or no reduction in the functionality that can be delivered in a web-based application. In addition, there’s also a struggle inherent in the desire to deliver a common application to both phones and tablets. This is in conflict with the goal of delivering the best user experience on both mobile platforms. We see the smartphone best used as an initiator of simple interactions that require a small amount of input (e.g. responding to an alert on a price movement and placing an order) and a means to perform some of the tasks of managing a portfolio on a day-to-day basis. Tablets, on the other hand, have the potential to replace desktops and web-tops as the primary interface through which users perform research and other knowledge-related activities.

**Brown:** Mobile technologies’ effectiveness for end users is limited by a number of factors, including bandwidth, computational power, and the form factor. When it comes to advances in mobile computing, technologies and techniques are advancing rapidly. User interfaces are becoming more intuitive for smaller displays,



## ROUNDTABLE

with the computations performed centrally so that only the results are sent back to the mobile device, while access and appropriate bandwidth is becoming far more prevalent and affordable. Custom, user-defined alerts such as price movements, news items, changes in sentiment and trend changes in social media can all be offloaded to servers so that only the items of interest are sent to the users' devices for either an automatic hedging buy/sell or for the display of multidimensional visualizations so that in a single screenshot, a user can understand the greater context of what is happening and react accordingly.

**IMD:** As trading becomes increasingly automated, are analytics more or less important than in the past? And in future, will they evolve to be part of algorithmic trading infrastructures, or focus on specific investor types or certain asset classes, or change in some other way?

**Shortt:** We strongly believe analytics will become more and more important. As the number of asset classes and the number of instruments within those asset classes increases, the need to automate will escalate. This will further increase as access to global markets by the individual investor increases. We also see interest from our customer base in allowing analytics to be used to greater and greater degrees of depth in automated trading strategies. We can foresee the time when our users are using technical events as the basis for making automated trading decisions. For example, the access to derivatives asset classes that is now available to active traders will be one driver of new analytical capabilities. We see simple examples of this appearing on the web as free tools already today.

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**Brown:** Not only is trading becoming increasingly automated, but markets are far more tightly coupled. Information in an asset class such as foreign exchange can dramatically affect the equities market, and equity movements can greatly affect futures. This makes analytics far more important than in the past, particularly due to some of the characteristics of Big Data—the volume, velocity, and variety of data that needs to be analyzed. Humans are not able to comprehend data at that scale, and the need for more sophisticated analytics as well as the ability to massively scale the processing of the data becomes increasingly important. Utilizing cloud computing technologies enables users to look at such large

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Rolf Broekhuizen, head of business and market development, SIX Swiss Exchange

volumes of data and analyze the impact of adding various other datasets to their models, including cross-asset information. Firms are employing analysts with experience of other asset classes to help model interdependencies—and when these studies move to real time, more adaptive algorithms are being developed, such as those that take into account news and how that may affect future trading volume, price volatility, and returns.

**Broekhuizen:** Competition among equity trading venues favored the emergence of market participants relying on complex trading strategies over multiple platforms. Those firms invested heavily in advanced technology. Logically, they have high expectations in terms of data processing speed, latency and throughput from market operators. With the recent upgrade to X-stream INET, the world's most advanced trading technology, and the introduction of co-location services, SIX Swiss Exchange is ideally placed to meet these expectations. By reducing latency to an average of 37 microseconds via our new OUCH trading interface, we achieved a technological breakthrough for our clients.

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**Grant:** Although both automated and algorithmic trading are still very much in their infancy for the fixed income markets, we look forward to the central role that real-time pricing will play in helping these new markets evolve.

One example is that clients are asking for analytics that allow them to aggregate data they get from ECNs to be shown alongside their real-time pricing source to construct both top-of-book and depth-of-book views for any given security. A trader can view the inside market across ECNs and understand where the best bids and offers currently are to help locate liquidity, find where they sit in the order stack, and compare their levels to other market participants. Many find it very interesting to view this aggregated data alongside an independent real-time price.

We also believe that real-time risk for fixed income will soon become a reality, which is very exciting. As clients begin to gain vastly more insight into how markets are moving real time and what factors are moving them, we predict that analytics will evolve to include fully customizable portfolio weightings. ■



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