

DWWT

DEALING WITH TECHNOLOGY

Derivatives Trading
Special Report

www.dealingwithtechnology.com

February 11, 2008

Derivatives at the Crossroads



Sponsored by:

**swissrisk**
Financial Systems

ORC

In this report

- S2 Editor's Letter: The Changing Path of Derivatives Trading
- S3 Common Technology Drives Derivatives Success for UBS
- S4 Roundtable: On the Road to Derivatives Automation
- S6 Sponsored Statement: Taking Advantage of New Market Opportunities in Algo Trading
- S7 Derivatives Trading News

The Changing Path of Derivatives Trading

Around the world, derivatives trading desks are changing. It doesn't matter if they are trading listed instruments, such as options or warrants, or the fat-margined over-the-counter (OTC) one-off contracts. Automation is making these instruments far more low-touch than they have ever been before.

For listed instruments, we're seeing the adoption of trading algorithms and direct market access (DMA) offerings to help buy-side traders deal with the shrinking spreads and increased liquidity. On the OTC side, front-office automation is helping dealers generate contracts faster and more efficiently. The down side, however, is that the lifespan of new exotic products is now shorter than ever and getting shorter all the time.

Even the trading venues are changing. Several global dealers have invested in TradeWeb in order to develop its interest rate swap (IRS) trading ability. More recently, a number of similar dealers acknowledged the formation of Project Rainbow, the first publicly announced multilateral trading facility (MTF) that will focus initially on IRS trading.

One wrong turn in IT strategy addressing these issues can lead dealers down a dead-end and potentially costly road.

In this special report, we look at how UBS Investment Bank leveraged its IT infrastructure investments to deploy capabilities developed for its cash markets and integrate them into new listed option offerings and other derivative asset classes.

Also in this report, Orc Software's Jesper Alfredsson and Swiss-Risk Financial Systems' Andreas Wagner discuss and analyze the automation trends affecting the listed and OTC derivative markets and what the dealer community can expect moving forward.



Rob Daly
Editor



Common Technology Drives Derivatives Success for UBS

After a major technology overhaul that began four years ago, UBS Investment Bank is reaping the rewards by rolling out common technology across its various trading desks. So far, the listed equities derivatives desk has been the highest-profile beneficiary of the bank's IT strategy.

"There's a big focus on applying cash technology to our listed options business," says Will Sterling, head of institutional electronic trading with UBS. "We've done quite a bit of it so far, since our smart-routing platform, which had historically been used to route cash products, has been something we've been running for the U.S. options markets for over a year now," he adds.

Applying the smart router technology was more complicated than simply dropping the code into the new environment. Much of its logic needed to be changed to support the different structure and nuances of the listed options market, explains Sterling. "A lot of the core technology—the parts that provide redundancy, messaging and all the sophisticated things that allow you to handle a huge number of orders quickly—are the things that can be reused," he adds.

The bank has also recently introduced other familiar offerings from the cash markets to its clients wishing to trade listed options derivatives. Direct market access (DMA) and market-specific trading algorithms were introduced by UBS in November and December

2007, respectively.

In addition, users of UBS Pinpoint execution management system (EMS) use the same trading front end, says Sterling. The decision to do so was pragmatic since many of the bank's prime brokerage clients and members of the hedge fund community say that these are the two largest asset classes that they care about, he adds.

Sterling is careful to point out that not all cash tech-

of many U.S. listed equities options, has made the re-use of cash technology possible at UBS.

"In Europe and Asia, the markets are much more structured and don't demonstrate the fungible nature and don't have the fungible nature in their listed options market as we have in the U.S.," says Niall O'Brien, head of U.S. equity derivatives business development with UBS.

because derivatives traders traditionally trade far less frequently than cash trades, so the avenue hasn't been necessary," he adds.

The recent interest in rolling out electronic options trading is an industry-wide trend. As recently as 12 months ago, some third-party platform providers lacked support for options, but now they've added it to their offerings, says O'Brien. "Now, all top third-party

"Our ability to do derivative algos and smart order routing didn't just happen in the last few months. The issue is that the institutional market is now ready for it. We expect to see the rapid change we saw in cash trading happen in derivative trading."

John DiBacco, head of U.S. derivative trading with UBS

nologies, such as analytics, can be ported. "At a certain point you don't want to have everything in cash and options look the same and fit into the same box because sometimes they just don't," he adds.

"Our ability to do derivative algos and smart order routing didn't just happen in the last few months," adds John DiBacco, head of U.S. derivatives trading with UBS. "The issue is that the institutional market is now ready for it. We expect to see the rapid change we saw in cash trading happen in derivative trading."

Timing Is Everything

The mixture of increased client demand, tightening spreads due to penny pricing and the fungible nature

Currently, UBS receives approximately 20 percent of its institutional order flow electronically, which could range from a FIX message to a sales desk to a DMA transaction, explains DiBacco.

The orders needing capital commitment still come in verbally, adds O'Brien.

In comparison, Charles Sushi, head of direct execution product management with UBS, estimates that 95 percent of cash trade requests come in electronically.

The difference in the adoption rates may be attributable to the buy side's adoption of order management systems (OMSes). Cash trading buy-side traders adopted OMS platforms a lot faster and have integrated them more deeply than derivatives houses, explains DiBacco. "That's

vendors have some sort of order routing capabilities. Indeed, we have seen an exponential demand from the independent software vendors (ISVs) to connect to us over the past number of months," he adds.

Continuing the shared technology strategy, UBS expects to deliver futures trading support via UBS Pinpoint in the first half of March, say officials. The bank already has some futures trading functionality in production, but the rest will happen over the next six months, says Sterling. The platform will initially support the more liquid and cash-like contracts and the Chicago Mercantile Exchange (CME), but will eventually move into treasuries, foreign exchange (FX), eminis and other contracts, he adds.

On the Road to Derivatives Automation

Whether it's the tightened spreads in the listed derivatives markets or manual nature of the over-the-counter (OTC) derivatives markets, investment banks are looking to automate their derivatives desks. *Dealing with Technology* sits down with Jesper Alfredsson, vice president of trading solutions with Orc Software, and Andreas Wagner, vice president of securities and trading with SwissRisk Financial Systems, to discuss the trends they see from the listed and OTC derivatives trading perspective.

DWT: What is the greatest challenge in automating derivatives trading and how are dealers addressing it?

Andreas Wagner, SwissRisk:

In the special area of issued derivatives, warrants, certificates and structured products—where we are active—the biggest challenge is performance. This is because the number of instruments is growing dramatically. Our customers typically double the number of instruments every nine to 12 months. This means that they also double the number of performance reports, updates and number of calculations that they need to do. This ends up causing substantial performance problems for our clients, especially on hectic trading days, such as Jan. 21 and 22 when customers had noticeable problems with their systems.

At the moment, the key factor in this market segment is to have systems scaled in the proper way so that they can keep up with market performance and the number of products updates that they calculate.

Another issue closely linked to performance is resilience. Systems need to be resilient in case a component or the entire system fails.

The last thing, of course, is transparency in auditing. This means that users need to have the proper auditing and permissioning system in place so that they can record everything and afterward detail and prove

who has been responsible for what trade and at what price in a hectic market.

Jesper Alfredsson, Orc

Software: Today we see two challenges in automated derivatives trading. First is latency.

The latency required to be successful in algorithmic derivatives trading is extremely low and getting even lower. For example, one Orc customer has noted that in March 2007, they required a trading system turn-around latency better than 4 milliseconds to be able to get a trade in their arbitrage strategy between the IntercontinentalExchange (ICE) and the New York Mercantile Exchange (Nymex). By October 2007, the latency required had dropped to 1.5 milliseconds. All of the client's hardware was co-located next to the exchanges to minimize the order turn-around time between the trading application and the exchange.

This latency race is still going strong today and firms are constantly looking for ways to ever reduce their latency. These efforts are forcing firms to spend a lot of money on the latest hardware, improved networks and new development, ultimately bringing up the cost for each trade.

The second challenge is actually a follow-on from the first. At some point in the future, we would expect all firms to have achieved a similar low latency. For firms to stay competitive, the quality of their strategies

versus other traders will be the deciding factor. We expect firms to develop ever more sophisticated trading strategies to find unique opportunities and profit from these opportunities. Traders will need to design strategies that truly do the unexpected or unanticipated to be able to profit. We can expect to see very unique strategies that go beyond the latency game today as firms look for ways to stay competitive in algorithmic derivatives trading.

DWT: How can firms better automate trade capture?

Wagner: The proper way to move forward is by creating an integrated system where all products trade electronically and are connected in real time so that the trades can be entered into a central

It's critical that firms have real-time trade books so that they can derive risk data and calculate such things as hedge trades. At the end of the day, if everything isn't real time, it won't work.

Alfredsson: As expected, today many firms are looking to algorithmic trading solutions to be able to automate trade capture. Because much of the derivatives market has gone electronic, firms are finding that the amount of time it takes to identify and then trade on an opportunity has become the primary concern. Algorithmic trading platforms are being used because they allow a trader or trading firm to automate much of their trading in order to capture the opportunity as soon as it becomes available. To improve auto-

 Andreas Wagner Vice President Securities and Trading SwissRisk Financial Systems www.swissrisk.com	
--	---

trade book and processed in real time. On the other side, for sales trades and traders performing manual trades, it's important that they have a direct link to a trade-entry screen that shows actual prices, limits and similar data when they enter their trades into a central trade book.

mated trade capture, we are seeing firms deploying trading solutions that have extremely low latency and that can process information and respond to market changes fast.

Automating trade capture has become particularly important to options market makers. For example, a

Chicago-based market maker deployed Orc Liquidator, Orc Software's algorithmic trading platform, to be able to quote on the Chicago Board Options Exchange (CBOE). Quoting demands extremely low latency as orders that are not placed or pulled quickly enough can get taken by the market at a loss. With the algorithmic trading platform, this firm found that it was able to place and pull quotes rapidly and earn its trading advantage. Without the algorithmic trading platform, this would have proven impossible.

DWT: How can firms help automate "exotic" trades?

Wagner: This is our specialty. All of the issued markets are exotic products. In this market, traders need a system that allows them to consistently price and evaluate the risk of those products. This means that they need to use the same algorithms for the risk calculation as for the pricing and the trading. That is where we come in with our products. We can integrate their algorithms and calculation methods for exotics into a system that then consistently does the pricing, trading and risk calculations. This is key—the ability to integrate customers' algorithms because there is no standard way to calculate exotics. It's always an individual calculation for the product and the customer.

DWT: Will the industry see a rise in the number of independent derivatives ECNs and multilateral trading facilities (MTFs)?

Wagner: The market needs to be seen from two perspectives. There is the wholesale market where you have standard

contracts—futures, options and that sort of stuff—that needs to focus liquidity. This means you'll have to have large exchanges, such as the Chicago Mercantile Exchange (CME), Eurex and Liffe.

Then you have the retail, or the issued, markets. There you have non-standard contracts where the whole trick of the game is that these contracts are not comparable. You don't want to focus liquidity. There, the opposite will happen.

In the German market, and other European markets, the market diversity is dramatic. There are many platforms and exchanges operating in parallel for these types of products. Even the large customers are thinking about using Web-based platforms to sell through to their clients.

You need to distinguish between the wholesale markets, with standard contracts, and the retail side with exotic products. There is a difference. There is no aggregation of liquidity for the retail side.

DWT: With many dealers pulling back, or out, of the credit derivatives markets, what effect will this have on automating and improving the market's transparency?

Wagner: We focus on the retail, or exotic, market. Here, credit derivatives don't play a major role. They may play a role in formal structured products if at all, which are the combination of a bonds and derivatives. A pure credit derivative is not a very common product in that market. Even structured products aren't exotic there. A majority of that market consists of plain vanilla products based on indexes and equities or certificates. For the wholesale market, it's different, but we don't act in that market.



Jesper Alfredsson

Vice President of Trading Solutions
Orc Software
www.orcsoftware.com



Alfredsson: Automated trading in derivatives is focused almost exclusively on listed products. Much of the pull-back seen in the credit derivatives market is related to over-the-counter (OTC) products, which are typically a lot more complex and are often unique, one-of-a-kind products that are not listed on exchanges. While the OTC credit market certainly appears to be in trouble, the listed market remains active, which means trading opportunities abound.

We are seeing listed credit derivatives trading increase and many automated traders jumping into this space to take advantage of the market environment. Like almost all derivatives products, the greater the volatility in the market, the more interesting the market becomes to algorithmic traders who are constantly searching for trading opportunities. As long as the market continues to be active, you can expect to see an ever increasing number of algorithmic traders looking for ways to get involved and deploy their strategies.

DWT: Which portion of the derivatives markets will implement algorithmic trading first?

Alfredsson: We have seen the greatest interest lying in markets where spreads are tight and markets move fast, such as index, financial, and energy derivatives. During the past one to two years the increase

in trading volumes on CME, ICE, Eurex and Nymex has practically mandated the use of algorithmic trading. The typical derivatives algorithmic trader is looking for arbitrage-type opportunities within a market or across markets. These arbs can be hard to get because the opportunity usually lasts only a few milliseconds. Because the trading opportunities in the derivatives markets are so short-lived, algorithmic trading becomes critical to capture these opportunities because a human is simply incapable of reacting fast enough.

We should note that algorithmic trading in the derivatives space is very different than in the cash markets. In the cash markets, we see a lot of algorithms being deployed to minimize market impact when making a trade. In the derivatives markets, this isn't the case. Instead, derivatives traders adopt algorithms that actually determine when and if to trade, not just how to trade, to minimize market impact. This decision-making logic becomes critical in the derivatives markets where traders are looking for ways to be the first in the market, but without overly exposing themselves to risk. Algorithmic trading becomes the way to profit from the opportunities while mitigating risk and it's for this reason that we're seeing a dramatic rise in algorithmic trading in derivatives markets.

Taking Advantage of New Market Opportunities in Algorithmic Trading

Electronic options market making has always been automated, at least on some level. However, in the last few years economies of scale have become more important, with the result that many smaller market making firms are being forced out of the market. A midsize Chicago-based proprietary trading firm saw this challenge and adopted a fully automated trading solution to make markets on multiple U.S. single-stock equity options exchanges. This firm has sophisticated models built in-house to project volatility and underlying stock prices. At any given time, these models are generating bids and offers based on current market conditions. They have combined this with a vendor-provided algorithmic trading platform for the execution part of the algorithm—i.e. sending bids and offers, or quotes, to the different exchanges. The quoting algorithm decides when to send the quotes based on a complex set of rules. It also packages the quotes in the most efficient way to minimize latency and to maximize throughput. With this technology the firm is now able to make markets in hundreds of thousands of options monitored by two to three traders. Thus the economies of scale available from their algorithmic trading platform have given them a market edge and allowed them to stay competitive.

Futures spread trading is another area where sophisticated algorithms are replacing manual trading. One example is a New York-

based firm trading a variety of commodity futures. The same products are listed on multiple exchanges creating various arbitrage opportunities. Their basic trading ideas are straightforward, even simple, but the execution algorithms used are not. A large part of the logic of the strategy handles how to work orders in the most efficient way to maximize the number of good trades and to minimize getting hung in one or more of the legs of the spread. This style of trading relies to some extent on recognizing market patterns, something that comes naturally to a human trader. The challenge is therefore to translate this trading behavior into an algorithm that can be executed by a computer. The obvious benefit is the dramatic latency reduction achieved with algorithmic trading. For many of these algorithms the turnaround time within the trading platform is down to a fraction of a millisecond. Locating hardware as close to the exchange as possible, or “co-location,” has become the standard to further minimize latency. Because these types of strategies generate thousands of orders each day, full automation is a necessity. As market behavior changes frequently the ability to quickly modify algorithms also becomes very important. In large part, the success of this firm is now tied to their ability to develop and design strategies that can be deployed rapidly, that can be executed by the trading engine fast enough to make money and minimize

risk, and that are deployed in a flexible way to allow for quick changes based on market environment changes.

Market Impact vs. Derivatives Algos

Over the past few years, most of the discussion around algorithmic trading has revolved

and this is changing the rules of the game. Today, more and more firms are using algorithmic trading systems to implement and deploy trading strategies that can no longer be managed or successfully executed manually. Trading strategies such as futures spreading, options market

In an increasingly competitive market, where opportunities may last just a few milliseconds, this ability to increase trading volume and thereby trading profits is now the key to success.

around the algorithm’s role in seeking liquidity and minimizing market impact in cash markets. However, so far this hasn’t applied to listed derivatives trading. Because of this, most derivatives algorithms go beyond determining how to send an order to include an additional component: a decision mechanism for whether or not to send the order. What this means to a trading firm is that a trading operation can be fully automated and the firm can increase their volume and breadth of trading without the typical dramatic increase in traders. In an increasingly competitive market, where opportunities may last just a few milliseconds, this ability to increase trading volume and thereby trading profits is now the key to success.

Most algorithmic derivatives trading systems have been built in-house and a small number of firms have enjoyed a clear competitive advantage. In the last few years, vendors have been able to offer algorithmic trading functionality

making, volatility trading and other arbitrage strategies are some examples of strategies that have been deployed with great success in algorithmic trading.

Conclusions

The challenge for traders starting to trade algorithmically is to systematically understand where the pitfalls of their trading strategy may lie. If they want to make a trade, they need to determine why, then quantify the factors and design an algorithm to produce the trade so that it can be done time and again without error. Traders must apply the same logic to the algorithm that they would use as if they were trading directly themselves. This leap from so-called “intuitive” trading where decisions are seemingly made on gut instinct to trading based on strictly quantifiable criteria becomes the key challenge that traders must address when making the move to algorithmic trading.

Jesper Alfredsson

RTS Sidles up to ICE

Trading software vendor RTS Realtime Systems Group now offers proximity services to the Intercontinental Exchange (ICE), after the exchange relocated its primary data-center to Chicago, vendor officials say. RTS, whose data-center and offering is located in the same building as ICE, has put in place a cross-connect to ICE's matching engine, providing its customers with a faster connection to the exchange's matching engine.

Swapstream Signs 33 Clients

Multilateral electronic trading platform for interest rate swaps (IRSes) Swapstream has 33 buy-side participants committed to the vendor's Early Adopter Program (EAP) for Chicago Mercantile Exchange (CME) Swaps on Swapstream, according to a company spokesperson. The new CME Cleared Swap Product will trade on Swapstream's sPro platform and will be centrally cleared through CME using its over-the-counter (OTC) clearing platform, CME Clearing360.

London Metal Exchange Launches Online Hedging Tool

The London Metal Exchange (LME) has recently launched its own online steel hedging simulator, say officials. The interactive hedging tool is designed to help anyone interested in managing steel price risk to better understand the process of hedging, and the benefits and the financial outcomes of different sector-specific example scenarios, according to LME officials.

The simulator enables those from all aspects of the

steel supply chain, including producers, re-rollers, the construction industry and steel merchants, to select their own requirements and to track the progress of a hedging program through to its financial conclusion.

It incorporates interactive illustrations of different hedging strategies and an explanation of key LME trading terms, add officials. Clients can access the online hedging simulator at www.lme.com/simulator.

Industry Hazy on Project Rainbow

Seven investment banks have put the major derivatives exchanges on notice with their recent announcement that they plan to launch a multilateral trading facility (MTF) for financial derivatives, dubbed Project Rainbow, according to media reports.

Market observers are still uncertain about the impact that the proposed MTF, backed by Barclays, Deutsche Bank, Goldman Sachs, JPMorgan, MF Global, Newedge and UBS, will have in the market.

Rainbow's impact will

depend on the range of derivatives to be offered, says Bob McDowall, senior analyst with industry research firm TowerGroup. "Also, if [they plan to trade] equity derivatives, why do it separately from Turquoise," he says.

The announcement is an expected move, according to Bob Fuller, former Equiduct CEO and who is heading up startup Exchange Axis. Fragmentation in the equities market has just started, he says: "[It is going to take] the same amount of time, effort and cost in the exchange trading derivatives world. It will be interesting to see how peo-

ple react to the additional cost that is going to come up in looking at another venue." It will be a pricing and latency war between the current venues and the new, adds Fuller.

Project Rainbow officials are reportedly close to selecting a technology provider, according to *The Financial Times*. Firms involved in the initiative did not respond to requests for comment by press time.

"OMX is probably the best option, but if Rainbow doesn't go for off-the-shelf technology it's going to be a long road," says McDowall.

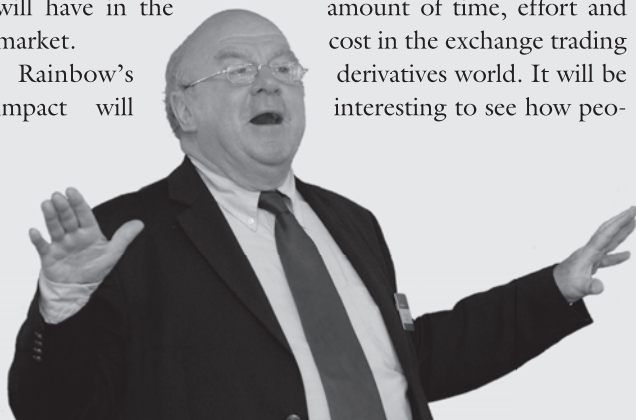
The board of LCH.Clear-

net met Jan. 30 to consider whether to allow Project Rainbow to clear trades through its system. The board will meet again this week to continue with its agenda, says a spokesperson at LCH.Clearnet, declining to comment further.

Fungibility is more important than "attacking the clearing model," according Fuller. "If I was them, I would try to go to the clearing house and get fungible products," he says. "Otherwise, you're forcing people to make a decision to jump from one liquidity pool to another and that's very difficult to do."

"OMX is probably the best option, but if Rainbow doesn't go for off-the-shelf technology it's going to be a long road!"

Bob McDowall, senior analyst, TowerGroup

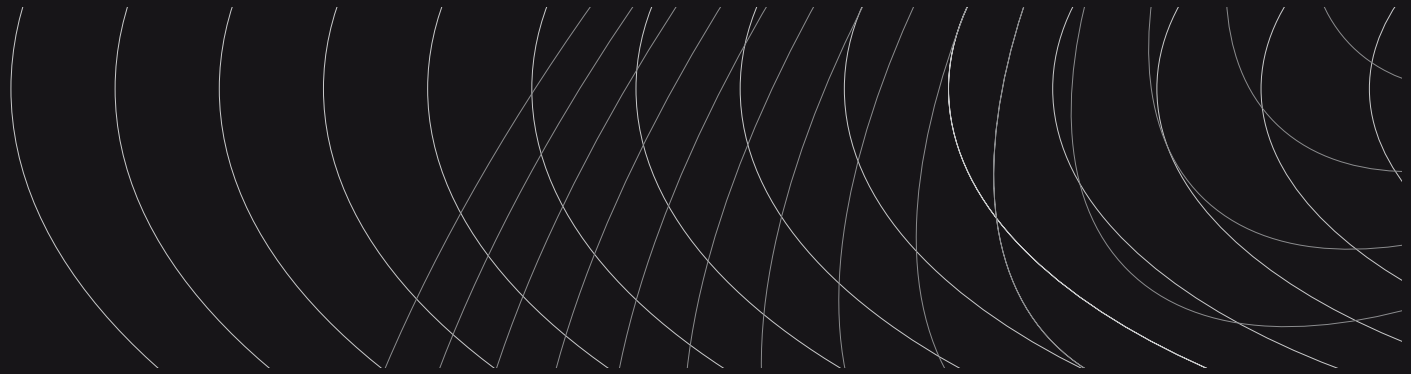




DEALING WITH TECHNOLOGY

EXPLOITING NEW REALITIES IN TRADING TECHNOLOGY

A free* one-day exhibition and seminar programme for front and middle office technology.



▲ Grid Computing

▼ Low-Latency Architecture

▲ Cross Asset Trading

▼ Liquidity Management

EXCLUSIVE SPEAKERS:



Keynote:
Arvinder Mudhar,
CTO – Investment Banking Technology,
MERRILL LYNCH



Keynote:
Peter Randall,
Chief Executive Officer,
CHI-X

Other speakers:

- ▶ **Barry Childe**, Head of High Performance Computing, BARCLAYS CAPITAL
- ▶ **Yomi Abatan**, Technical Architect, DEUTSCHE BANK
- ▶ **Bob Giffords**, Independent Banking and Technology Analyst
- ▶ **Marc Ellis**, Manager – Market Data, JP MORGAN
- ▶ **Karsten Strøbæk**, Global Head of FIX, SAXO BANK
- ▶ **Dejan Polomic**, Architect, CITIGROUP
- ▶ **Christopher Clack**, Director of Financial Computing, UNIVERSITY COLLEGE LONDON
- ▶ **Jonathan Wykes**, Director - European Head of AES Sales for FIX, CREDIT SUISSE
- ▶ **Michael Stein**, Senior Vice President - Emerging Markets IT, HSBC
- ▶ **James Wallin**, Senior Vice President, ALLIANCE BERNSTEIN
- ▶ **Stavros Siokos**, Managing Director and Head of European Alternative Execution Sales, CITIGROUP
- ▶ **Chris Sims**, Head of Investment Operations, GARTMORE INVESTMENT MANAGEMENT
- ▶ **George Andreadis**, Vice President AES Liquidity, CREDIT SUISSE
- ▶ **Peter Van Kleef**, Principal, LAKEVIEW ARBITRAGE
- ▶ **Regis Moneret**, Head of Technology Solutions, REECH AIM HEDGE FUND

14TH MAY 2008
HILTON LONDON
TOWER BRIDGE
TOOLEY STREET
LONDON, SE1 2BY

Register your place today at www.dwt-event.com

Sponsorship contact:

Daniel Morgan
E: daniel.morgan@incisivemedia.com
T: +44 (0) 20 7484 9869

Event contact:

Jianjia Chan
E: jianjia.chan@incisivemedia.com
T: + 44 (0) 20 7484 9825

* Exclusive to genuine financial end-users. The organisers reserve the right to refuse admission at all times.

Lead sponsor:



Co-sponsors:

