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Cross-Asset Trading

Special Report

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Waters (ISSN 1068-5863) is published monthly (12 times a year) by Incisive Media. Printed in the UK by Wyndeham Grange, Southwick, West Sussex.

Confusion Reigns

Typical. You come up with what you assume is a well-defined and therefore universally understood topic for a virtual roundtable, only to find that due to semantics and our propensity to generalize, confusion reigns … again. So, before we get down to business, for the purposes of this special report, "cross-asset trading" refers to the ability of a single trading platform to support the trading and processing of multiple asset classes, and by so doing, better manage risk and position-level reporting. It very definitely does not refer to the much maligned—and illegal on some exchanges—practice of "cross trading," where a broker offsets buy and sell orders of the same size and the same stock without recording them on the exchange on which the trade is executed.

Whereas in the past, financial services firms could afford to specialize in a single asset class traded on a single market or geography, that scenario is no longer the case due to shrinking margins and therefore returns. As a result, firms have been forced to diversify their portfolios to include asset classes that typically they wouldn't have considered appropriate in the past due to their complexity and the lack of internal technology they had in place to support the trading of such instruments.

This challenge, however, is being addressed by a growing community of third-party technology vendors providing firms with front-, middle- and back-office technology with the requisite extensibility and flexibility to support the trading of a wide range of assets from a single, integrated platform. Naturally, data plays a crucial role in this endeavor, as we will see in the Q&A on page 7, but then it pretty much does for just about every trading-related business process across the buy and the sell side. That much hasn't changed. ■

Victor Anderson
Editor-in-Chief

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RealTick Unveils Mobile and TCA Enhancements

> "The first step will be a 'rip-cord' button, or 'cancel-all, get-me-out-of-the-market-now' button. What we hear with most of the major hedge funds that we deal with is that the compliance officers or CTOs don't actually want their traders trading outside of the office. But it's pretty safe from the outset to have a 'get-me-out-of-the-market' button." **Stuart Breslow, RealTick**

In light of ongoing turbulent market conditions, ConvergEx Group's RealTick is adding "cancel all trades" functionality for mobile devices.

Stuart Breslow, RealTick's CEO, explains that while most hedge funds don't want traders to be able to trade outside of the office, they are open to having a fail-safe that can take a trader out of the market immediately if conditions deteriorate.

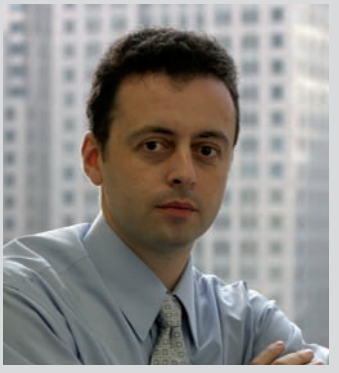
"The first step will be a 'rip-cord' button, or 'cancel-all, get-me-out-of-the-market-now' button," Breslow says. "What we hear with most of the major hedge funds that we deal with is that the compliance officers or CTOs don't actually want their traders trading outside of the office. But it's pretty safe from the outset to have a 'get-me-out-of-the-market' button."

Currently, clients can use their Apple iPad or iPhone, or Android mobile devices for assessing market conditions, and checking their overall positions and profit-and-loss (P&L), but these applications are only available in a "read-only" format. Breslow adds that the firm will add functionality that will allow retail and day traders to enter orders. He says these upgrades will be live sometime before the end of 2011.

RealTick is also developing new transaction-cost analytics (TCA) tools, according to Breslow. As a result of increased regulatory requirements, RealTick is seeing a lot more demand for end-of-day (EOD) or end-of-month (EOM) transaction cost analysis (TCA) functionality so that users can compare their broker performance and execution performance.

Breslow says that EOD and EOM TCA upgrades will be available in the fourth quarter for its RealTick 11 release, currently slated for sometime this month.

InfoReach Debuts Hosted EMS Platform



> "With some hosted systems, each client gets dedicated servers. With Prelude, all the users are sharing the same hardware. That's how we are able to reduce the cost." **Allen Zaydlin, InfoReach**

Execution management system (EMS) provider InfoReach is looking to expand its customer base by offering a light version of its enterprise Trade Management System (TMS), Prelude. The new service targets institutional investors and prime brokers that are looking for access to a trading system, but that only want to invest on a month-by-month basis or annually, explains Allen Zaydlin, CEO of InfoReach.

Users wanting to connect to the new platform will need to make a FIX messaging connection to InfoReach's Secaucus, NJ or Amsterdam datacenters, which are hosted by Equinix, using version 4.0 to 4.4 of the messaging protocol.

Prelude uses the same technology as the TMS platform, but has three primary differences, according to Zaydlin. First, the hosted version does not include programming interfaces. "If clients are looking to connect the system by an application programming interface (API), they we will need to get the enterprise version," he says.

Second, InfoReach has pre-configured the graphical user interface (GUI) and locked it down so that if clients want to design custom macros or GUIs, they will need to contract InfoReach independently for the services. Finally, Prelude caps the number of single-name and basket trades to 100 and 1,000 names respectively per account.

"With some hosted systems, each client gets dedicated servers," says Zaydlin. "With Prelude, all the users are sharing the same hardware. That's how we are able to reduce the cost."

Solutions for Derivatives

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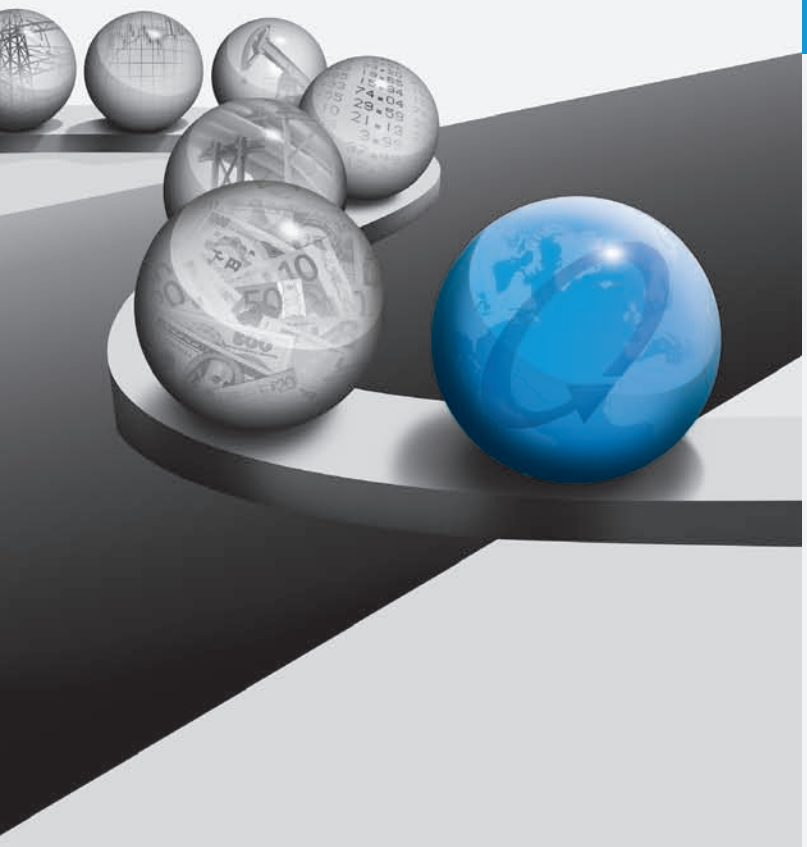

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Norway's Folketrygdfondet Selects Charles River

Folketrygdfondet, the fund manager in charge of the Norwegian Government Pension Fund and Bond Fund, has chosen the Charles River Investment Management System (IMS) for its outsourced operations. The managed services solution provides for portfolio management, compliance, and trade and order management. It includes software-as-a-service (SaaS) provision and data management, backed up by datacenters in Europe and North America.

Folketrygdfondet will utilize the IMS platform across its equities, foreign exchange, fixed income, derivatives and money markets businesses. Folketrygdfondet manages assets totaling 133.7 billion krone ($23.3 billion) in the pension fund, and capital of 50 billion krone ($8.7 billion) in its bond fund.

Thrivent Taps SunGard for Multi-Asset Accounting Support

Thrivent Asset Management, a subsidiary of Thrivent Financial for Lutherans, with $30 billion under management, has selected SunGard's Asset Arena Investment Accounting as its mutual fund accounting platform. Asset Arena provides investment operations processing and support for a wide range of assets, countries and investment activities.

By employing rules-based exception management processing using Asset Arena, Thrivent will be able to bring a higher level of automation to its accounting functions and help reduce the number of peripheral applications. It will also enhance Thrivent's internal reporting by providing enriched data to the operations staff and fund managers.

Thrivent will use Asset Arena on an application service provider (ASP) basis to manage its operations and reporting at both its Appleton, Wis., and Minneapolis, Minn. locations.

According to Gerry Vaillancourt, vice president, mutual fund accounting, at Thrivent Financial, the firm selected SunGard's Asset Arena because it is a functionally rich and scalable solution that can help it maintain its business growth and contain costs.

SunGard's Fox River Algos Available via Moxy OMS

Software and services vendor SunGard and investment management and trading technologies provider Advent Software have announced an alliance that will allow buy-side firms to access SunGard's Fox River algorithms through Advent's Moxy order management system (OMS), which has approximately 850 implementations globally.

Fox River has set specific parameters to create certified order tickets for Advent Moxy, providing traders with customized flexibility, control, and strategies that assist them in achieving their specific execution needs.

According to a report on US equity trading from consultancy Tabb Group, algorithms account for 30 percent of total share volume and will increase nominally, continuing to be at the forefront of electronic trading, with three quarters of US firms employing algorithmic trading on their desks.

According to SunGard, integrating Fox River's algorithms with Advent's Moxy OMS can help buy-side firms achieve best execution and overcome market fragmentation; they will also have access to trading strategies that seek and secure the best possible price.

ConvergEx Unveils Eze OMS iPad App

ConvergEx has released an Apple iPad app linked to Eze OMS, its order management system (OMS). The app, already available from Apple, incorporates most of the analytics functionality included in the desktop version of the platform, with exposure measurement, profit-and-loss (P&L), and benchmarks across multiple portfolios and strategies.

It also includes compliance measures, with pre- and post-trade alert management and other areas.

"Unlike other mobile financial apps, data from the customer's Eze OMS is continuously sent directly to the user's iPad app for up-to-date portfolio data," says Rob Keller, managing director and head of global product management at ConvergEx's Eze Castle Software in Boston. "With the release of Eze Mobile for iPad, users will find it easier to view aggregate, position-level and drill-down data, slice data and configure user-defined grids in all the ways they can on their desktops."

Where Is the Data?

There is no shortage of obstacles standing between financial services organizations and the successful implementation of cross-asset-class systems. It involves more than building or acquiring a new trading platform and marshalling the correct data to make the system operational—it requires attacking those individual challenges with a combined solution. By Neil McGovern


Neil McGovern

Though implementing a cross-asset class trading platform is one of the more onerous challenges facing trading organizations today, its potential value is inspiring firms to develop solutions to meet and vanquish those challenges. The good news is that many organizations have built enterprise-wide risk reporting systems to overcome some of the obstacles encountered when building a cross-asset-class system. The need to improve risk reporting since the market turmoil of 2008, coupled with new or more onerous regulations, has forced many organizations to confront cross-silo analytics challenges with the view to generating fast, comprehensive cross-asset class and cross-geography reporting. The move to intra-day on-demand risk reporting has also ensured that the central analytics platforms not only roll required data up from many underlying systems, but do it continuously, rather than have large overnight data-consolidation processes.

Multiple Streams

The challenges of handling streaming data can be legion, even in a single-asset-class system. In many cases, multiple streams of market data must be simultaneously cleansed, enriched and merged in real time to provide the trading platform with the information required to make timely trading decisions. The market data also needs to be combined with data from internal systems, such as customer data, position data, and so on. Cross-asset-class trading obviously compounds this problem, and also introduces the challenge of merging very different types of market data and internal data into a coherent whole, required to trade effectively. Also, depending on the trading strategies, data from multiple asset classes may have different latencies, and the trading strategies may need to understand these latencies, as market data coming from many different sources with different structures, quality, volume and velocity need to be matched to give a current view of the overall market. Add to this the need to be faster than the competition, and the challenge further compounds. You get the idea.

But multi-asset-class system builders face challenges that do not stop with trading. Post-trading activities, such as risk analysis, clearing and so forth are also onerous, especially as the reporting and post-trade requirements differ by asset class. There is the strongly recommended approach of leveraging existing systems for many of these tasks, but some activities, such as counterparty risk analysis, often need to run across asset classes and geographies. So, if this has not been implemented already, considerable effort should be budgeted for in order to aggregate the data from different sources—including, of course, the cross-asset-class system.

A proven solution to these data challenges is the creation of a data management and analytics system that is dedicated to the task, rather than trying to leverage data from multiple systems at once. This approach adds redundancy (and therefore complexity) to the data management, as well as additional hardware and software license requirements, and overhead costs of maintaining an additional system. But the advantages of having a data solution dedicated to a cross-asset-class trading platform outweigh the costs in most circumstances.

Data management solutions for cross-asset-class systems have to overcome the same hurdles that face most trading applications: more data, moving faster, and the need to perform more complex analytics on the data in real time. Though traditional data management solutions, such as relational databases, struggle in these circumstances, one architecture has shown promise—a data analytics platform consisting of a complex-event processing engine layer, an in-memory database layer, and a vertical-storage persistence layer. It is possible to buy these layers separately, but companies such as Sybase have already combined these layers into a single platform that handles the data movement between the layers automatically, providing a simplified interaction capability for data retrieval across the layers.

Advantages

A pre-built platform like this offers the simplicity of a single database with the advantages of individual products. The complex event processing layer can consume very high-velocity data and offers low-latency alerting as well as data cleansing and enrichment, combining multiple streams of data into a single, filtered data stream. The in-memory layer allows for very high-performance analytics that requires the latest market data as well as operational and reference data. Using a vertical storage layer for data persistence allows for data compression, high-speed historical analytics and the ability to store decades' worth of information for trading strategy development, compliance requirements and risk reporting.

Implementing a cross-asset trading system can tax the most capable IT department, especially when overcoming data management and analytics obstacles. But combining some of the latest technologies in a single platform can mitigate these obstacles, increasing the performance and capabilities of the complete trading platform. ■

Neil McGovern is director of marketing at Sybase, an SAP company.

Bloomberg Launches Derivatives Swaps Trading Platform


Ben Macdonald

Bloomberg has announced the launch of ALLQ Derivatives, a fully integrated trading platform for over-the-counter (OTC) derivatives swaps that aids with regulatory compliance. Vendor official say ALLQ Derivatives is the foundation for the development of a swap execution facility (SEF), allowing buy-side institutional investors to access indicative prices and execute directly with dealers on the Bloomberg Professional service.

"Bloomberg is the largest independent trading platform for OTC derivatives and we have been actively working with regulators to develop the mandatory clearing and post-trading reporting requirements," says Ben Macdonald, global head of Bloomberg's fixed-income business. "The challenge now is to get the market ready, when we don't know exactly what the regulations will entail. The development of the ALLQ Derivatives platform is a crucial step toward SEF-style trading and the support we are getting in the marketplace is strong."

Under the Dodd–Frank Act, those trading in credit default swaps and other derivatives must do so through SEFs. US regulators are currently finalizing the rules relating to this.

Alliance Trust Takes Charles River for Equities, Fixed Income

Alliance Trust, the largest generalist investment trust listed on the London Stock Exchange, and Alliance Trust Asset Management, have selected the Charles River Investment Management System (IMS) as a single, consolidated platform for their equity and fixed-income operations. The system will be used by Alliance Trust's investment teams based in its offices in Dundee, Edinburgh and London, supported by Charles River's Application Management service.

Following the expansion of Alliance Trust's investment capabilities into fixed-income instruments, Alliance Trust sought a single system to manage both equity and fixed-income portfolios. Charles River IMS provided the solution with a single upgrade cycle to be dictated by Alliance Trust.

Alliance Trust will also be using Charles River Compliance across all asset classes to achieve real-time, pre-trade compliance as well as position level/start-of-day compliance. The platform will provide real-time monitoring of overall exposure across the entire organization.

Bell Asset Management Rolls Out Bloomberg AIM

Bell Asset Management Ltd., a Melbourne-based investment manager, has taken Bloomberg's Asset & Investment Manager (AIM) order management system to support its front-office and middle-office activities. Bell, which has over AUD$3.5 billion ($3.6 billion) under management and administration, already uses Bloomberg AIM for order management.

Now, the asset manager will also use AIM for its order management, and the complete Bloomberg solution for compliance, risk, and performance analysis.

The added Bloomberg technology will help Bell manage its global equity mandates for domestic and offshore-based institutional clients.

Ned Bell, Bell Asset Management's CEO, says the firm needed to upgrade its portfolio management system and it was vital to get the right system in place to support that growth. Having used Bloomberg for its core research, Bell decided to look at Bloomberg AIM for its order management, risk and performance.

Ruffer Adopts Fidessa's SaaS Buy-Side Workstation

London-based investment manager Ruffer is live with Fidessa's software-as-a-service (SaaS) Buy-Side Workstation. Ruffer, with around $12 billion under management, will use the software to support its execution management processes.

> The Workstation allows access to cross-asset detrended moving average tools and algorithms, and includes market data and integration via the Fidessa network as well as low-latency FIX connectivity.

The Workstation allows access to cross-asset detrended moving average (DMA) tools and algorithms, and includes market data and integration via the Fidessa network as well as low-latency FIX connectivity. "As a growing company we periodically review our systems," says Guy Shirley, business projects manager at Ruffer. "We knew Fidessa's system is widely used by both buy-side and sell-side firms. The Buy-Side Workstation, combined with the strength of Fidessa's network, has provided us with a single point of access to our equity broker community. The scalability of Fidessa's solution means we can continue to grow our business without compromising the service."

Cross-Asset Game Plan

Firms looking to engage in cross-asset trading need to negotiate the often onerous technology and data-management challenges. But as the responses in this virtual roundtable illustrate, the business benefits far outweigh the technical hurdles.

Q Does the primary challenge in this space relate to data management practices or is it more of an application/systems challenge?

Stephen Temes, founder, Lincoln Capital: It's probably a little bit of both. I'm speaking for myself, obviously, but when you are trading more than one asset, as long as they are exchange-traded, the electronic connectivity is easy.

Patrick Myles, CTO, Caplin Systems: In most cases, it's more of an applications and systems challenge. In our experience, unless you really are starting from scratch, the challenge of trying to implement a cross-departmental coherent data management strategy is just too large, unpredictable, risky and often politically sensitive. The essence of offering a trading system, whether single- or multi-asset, is to be able to get it to market quickly, and to be able to modify it to offer new products, new workflows and new sources of pre-trade data to respond to market demands quickly and effectively. Your application and systems implementation should include some form of abstraction layer that will apply data normalization and integration rules to the disparate pricing and trading data coming from, and being returned to, each of the separate systems. We have implemented several such systems; one particular example in a global tier-one bank includes more than 150 inputs from different data sources within the bank.

Neil McGovern, director of marketing, Sybase: This is a combined challenge. But you have to solve the underlying data problem in order to have effective applications that address business processes, as well as add trading strategies and risk management engines. Trying to consolidate databases is futile in most circumstances. So the current thinking is to leave intact existing operational data sets, as well as the applications and processes that depend on them, while using technology such as replication and complex-event processing to create a combined view of the data required for cross-asset class operations. The replication technology is typically targeted at the internally generated data, while the complex-event technology can filter, cleanse and enrich streaming data from other sources (both internal and external). This combination of technologies can be architected to result in a central data capability, that is partially static data in the form of a data warehouse, and partially transitory data.

Michael Kurzrok, director, equities, Woodbine Associates: The challenges are many-fold as providers have been competing to create best-of-breed management and execution systems for single-class assets. The challenges in that space still exist as most asset markets continue to convert and advance electronically. Tying them all together in a single multi-asset trading system has many challenges that could leave the final product far from the best-of-

breed systems trading desks desire. There is also the need for pre- and post-trade analytics involving measures such as market impact, benchmark tracking, or real-time profit-and-loss (P&L), as well as volatility analysis across a broad range of assets.

Ken Knowles, executive vice president, financial and risk solutions, OpenLink: The answer depends on the initial conditions and legacy infrastructure. A key challenge/goal is to choose a strategy that fits your strategic goals and current starting position. In general, firms face both sets of challenges at some level. The relative importance obviously depends on your starting perspective and requirements. If you're starting from an environment with many disparate systems, combinatorial interfaces, and multiple sets of similar data, you've got 1) system challenges to connect multiple systems to the repository and 2) data challenges to synchronize and scrub the data and to resolve issues with duplication and inconsistencies. Data synchronization issues could be extremely challenging during transition phases.

Our experience is that most firms tend to have data management strategies and goals sorted out well enough to meet their needs. These strategies are significantly influenced by risk management and compliance. This isn't surprising given that pure risk management and compliance roles are traditionally consumers and analyzers of large data sets from disparate systems, so they would logically prefer greater levels of consolidation and consistency.

Tim Dodd, head of product management, Front Arena business unit, SunGard: It's not a question of "or" but of "and." Both data management and applications are fundamental challenges. For example, cross-asset trading requires traders to be able to assess their current position, identify the best opportunities to change it, and execute on those changes (in many cases using electronic connectivity). Traders also need to be able to manage their exposures (put on or rebalance appropriate hedges), monitor their positions for any special future events that will cause jumps in valuation (such as barrier crosses, fixings and instrument expiries) and, finally, know that their trades will be processed and cleared effectively. Moreover, managers and risk managers need to monitor the firm's global exposures, limits and collateral across assets and across the enterprise. All of this requires strong data management practices and applications.

There are also nuances within each asset class that require built-for-purpose workflow. For example, foreign exchange (FX) options are quoted in volatility, while bonds are quoted in spread points over the London Interbank Offered Rate (Libor) trade, and both are processed via completely different networks. So any cross-asset trading applications need to be flexible and customizable.

In the end, these differences between asset classes boil down to handling relative valuations appropriately. Such valuations help the user differentiate the cheap from the dear and understand their positions. They determine exposure to different risk factors and support performance tracking on an ongoing basis. The ability to understand exposure is not unique to an asset class but a common need for all financial instruments—it's critical for any cross-asset trading system.

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Q Can you roll out a cross-asset platform without having a proper enterprise data management (EDM) strategy in place first?

Myles: Absolutely, yes. It may be easier if you do have an enterprise data management strategy in place first, although the resulting trading system may be less flexible than you might expect. A cross-asset trading system has only to appear to be integrated to the users. That integration can take place at the data management level, if you have implemented it like that. However, in our experience, trying to coordinate that to meet every requirement from each separate application or department can be complex and time consuming. A better approach can be to implement data integration and normalization within the application platform.

Assuming you implement this with a suitable application data architecture, it's entirely feasible to subsequently design and implement an enterprise data management strategy—without impacting the trading system which can keep running. And then when regulations change, or new products are introduced that were not predicted by the data model, the changes can be flexibly handled without disrupting the entire trading infrastructure.

Kurzrok: In today's environment and with pending regulatory changes, it is best to ensure these go hand-in-hand. The platform could be implemented, but enterprise-wide data management must not be far behind. Enterprise-level cross-asset risk management can be challenging. It's a matter of smoothing out the apples-to-oranges comparison between classes and boil down the metrics—value, arbitrage, risk, and so on—into a single comparison, as well as the delivery of the information in order to do so. But for an enterprise

risk management solution, firms can turn to external alternatives to expedite implementation, control costs, accommodate the need for specialized expertise, mitigate risk, and adapt to regulatory requirements.

Knowles: Yes, as long as the cross-asset platform addresses the needs and data requirements of the key stakeholders of the user community. In fact, if the cross-asset platform is the key enterprise trading platform, it naturally may fulfill many of the EDM requirements and simplify the tasks and scope of implementing the EDM solution. For example, the cross-asset platform reduces the need to have separate systems for each asset class, thus much of the data (e.g., counterparty, legal documentation, market data) is managed on a unified and consistent platform across desks and products. An EDM strategy is certainly not a pre-condition for rolling out a cross-asset platform.

Dodd: No. It is essential that every trader uses consistent data when marking to market, trading the same products, or generating events on trades such as fixings, barrier crosses, and accounting events. A single repository for data across instruments should be implemented, and procedures to manage underlying risk factors such as yield-curve point values, equity prices, and FX rates should be proscribed.

Stephen Temes
Lincoln Capital

Temes: It really depends on what assets you're talking about. If you're talking about US equity futures versus the yen, that's a cross-asset trade; however, it's a very liquid market and there is pure data available—data isn't really an issue. It becomes a challenge when one of your trades is less liquid—less out in the open or traded over the counter. That's where you have to input one of the sides into your front-end manually; that's usually the easiest way to do it—dump in a Microsoft Excel spreadsheet manually or have someone physically type it in.

McGovern: It may be possible to implement a cross-asset trading facility leveraging services from underlying trading systems, creating an application layer that relies on the data management capabilities of those systems. But there are some major shortcomings to this approach. Firstly, it would require a services layer to be enabled on top of many underlying systems, most of which may not lend themselves to easy exposure of a services architecture. Secondly, the combined system would need to rely on the underlying systems to expose market data in a manner equitable with cross-asset trading decision support. Lastly, a sophisticated integration capability would be required to roll up the data required for risk reporting, compliance analysis and other post-trade processes. The effort to overcome these challenges, coupled with the development of a cross-asset class system, is likely to be a larger task than consolidating the data into a single, cross-asset class repository and building the system on top of that.

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Q Considering the siloed natured of legacy applications that most firms have, is there truly a choice between buying and building a cross-asset trading platform?

McGovern: A vendor-built cross-asset class system is viable where a data management structure is in place that can quickly and easily combine the data required by the system.

Dodd: There is no one answer that will be right for every institution. It is certainly true that today's off-the-shelf cross-asset solutions are very capable of providing infrastructure for an entire institution across all lines of business. This eliminates the need for integrations and reconciliations between systems, which are often the majority of the cost of the installation or the upgrade of a silo system.

That said, partial or complete replacement of legacy applications is no small task. Regardless of how modular the new solution is, processes will need to be adapted. It is essential that vendors are "good citizens" when it comes to open integration and customization to help ensure swift deployment and keep total cost of ownership to a minimum.

Myles: There is a choice. However, only those firms with significant development resource, substantial budgets and who don't mind taking years to get the system to market should really contemplate building one completely from scratch. Often the costs significantly outweigh the benefits you might gain from doing so. In reality, very few firms really have the technical resource, the budget and the commitment to be able to do this. Most firms would be best advised to buy in a technology framework specifically designed to support multi-asset trading. This saves the time

and effort of re-inventing all the real-time data systems, normalization models, trading models, tiering and spreading capabilities, fail-over, roll-back, load-balancing, authentication and permissioning systems that everyone else has to build, too. The firm will then have the resources to implement the products, multi-asset trades and workflows that make that firm unique, and so differentiate themselves in an increasingly crowded market.

Temes: We have our own application for some of the things we trade. For instance, if we trade credit and we want to hedge the credit, as soon as it's inputted into our front end, we have a system that runs the exact hedge that we would need to do. So for that situation we have a personal touch for it.

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Knowles: From the biased perspective of a vendor selling a cross-asset platform, the obvious answer is that firms should look to buy. The most talented and sophisticated firms have demonstrated these benefits over and over. Our recommendation is to buy and then extend incrementally to address custom and evolving requirements, thus avoiding the substantial cost, effort, and timeline for the internal development effort. Having said that, extremely large players with deep pockets may still favor building solutions in-house. The buy decision also provides other intangible benefits, as vendors provide unique business and technical knowledge as well as design and implementation perspective that many firms often cannot provide themselves.

Kurzrok: Like most scenarios, an individual firm's resources will be what drives this decision. As the market moves toward cross-asset trading, furthering the revolution of the markets and its technology, trading firms must adapt to the marketplace as it advances. Firms that have the capacity and personnel to adapt their own systems will do so. But either way, at some point there may be major overhauls of systems within firms, which will do more than just provide for cross-asset trading, but include necessary adaptations for regulatory requirements and risk controls, for example. Today's trading environment is increasingly breaking down silos, ending the traditional separation of asset classes into distinct business activities with incompatible trading systems.

Q What key technologies should firms have in place to act as the foundation for a cross-asset platform—e.g. an enterprise service bus or service-oriented architecture (SOA)?

McGovern: The decision on the mixture of technologies will depend on each individual situation. However, the goal developing a system that requires data and services from multiple other systems will be to minimize the total work and complexity required. In many cases, exposing processes from single-asset class systems will be valuable. The more powerful these services, and the better they handle an individual asset class's unique requirements, the less complex building and maintaining the cross-asset class system will be. Where a process cannot be exposed, or a required capability does not exist in underlying systems, the data will need to be marshaled to allow this process to be built from scratch. At this point, a range of data-handling technologies will be valuable, such as replication of data from existing systems into the centralized cross-asset-class database, attaching the database via CEP to a message bus to allow access to low-latency data etc., to assemble the complete dataset required.

Mitch Stonehocker, director, Americas sales, Front Arena business unit, SunGard: Open technology is the key: Complex integrations must be made as easy as possible and business processes must be easily customizable to meet the needs of the purchaser. Enterprise buses and SOA architecture help, but they are nothing if the organization cannot build on them without constant vendor interaction.

Kurzrok: It would be important to maintain an open-ended system to interact with desired providers and solutions, while understanding the possible counterparty limitations. Managing multiple-asset trading conditions would require a variety of high- and low-touch trading strategies, the need to merge risk, cash management and cross margining, as well as pre- and post-trade analytics (market impact, benchmark tracking, real-time P&L, and volatility analysis, for example), which all become more difficult to deliver for multiple asset classes, while still providing traders friendly visual displays, simpler workflows, and smart order-routing that would satisfy various products. Specialization of tools and applications for traders should not be overlooked. The technology would be required to have the ability and flexibility to respond to infrastructure changes. FIX messaging that would extend to all products and regions would be a necessity, but it would not provide a complete solution.

Knowles: Firms should adopt and utilize standards-based technologies for their foundation. By leveraging standards-based technologies, firms typically can extend their cross-asset platforms and interface with other systems with greater ease, speed and also benefit from the extensive industry support. For example, XML, FIX, Swift, JMS, MQ, and web services are all industry standards-based protocols and

technologies for interfacing to other systems and external parties. Java and .Net are the industry's enterprise programming languages. SQL Server and Oracle Database are the de facto standard enterprise databases. We recommend to our clients that they choose the technologies they want to use, based on what makes best sense for their planning and rollout of their cross-asset platform. The chances are high that we will support their selected technologies, such as all the standards-based technologies mentioned above. If we happen not to support a specific non-standard technology, then there is the option of building the necessary support for the technology through the built-in extensibility points we have in all our products.

Myles: A good, decoupled interface-based architecture is important when building a cross-asset platform. As previously discussed, a typical approach involves pulling together information and workflows from multiple evolving systems, so it's important to prevent any kind of tight coupling between back-end and front-end GUIs or distribution channels. SOA and ESB both facilitate this type of approach, as does the concept of domain-driven design (DDD) and frameworks such as Caplin Xaqua, which provide domain-specific abstractions, normalizations and common data structures to help with managing the complexity of such an extensive system.

Q What issues can third-party trading platforms eliminate for financial firms?

Knowles: Vendor platforms can dramatically improve the probability of successfully implementing the desired business functionalities, at a lower cost than in-house solutions. Third-party platforms can also eliminate much the technical infrastructure costs, especially if using a hosted solution.

Such platforms also offer features obtained from a broader perspective across a larger client base. Features in the software reflect the broader needs, many of which are applicable to the firm—immediately or in the longer term.

By adopting third-party platforms, firms can reduce their learning curve and minimize R&D and maintenance costs. Firms developing on their own dime are funding the full R&D effort and any future maintenance, whereas the vendor's costs are funded across a substantial client base.

In addition, third-party vendors focus on continuity in terms of domain expertise in maintaining and improving their platforms. Contrast this with internal systems where expertise is often concentrated with a few individuals within the firm, which introduces additional risks.

Finally, the cost of ownership is usually lower with a vendor solution when you add up all of the applicable cost components. A vendor solution provides training programs/materials, user/technical documentation, security, reconciliation, control, integration and other tools. If you build the solution yourself, you need to fund 100 percent of the cost and timeline of all of these needs.

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Myles: Frameworks can provide lots of building blocks for a cross-asset capability: real-time data systems, normalization models, trading models, tiering and spreading capabilities, fail-over, roll-back, load-balancing, authentication and permissioning systems. These can eliminate a lot of risk in architecting the trading system. However, you need to be sure that the third-party system allows your firm to include its own differentiators—classically these have included customized products and pricing, pre-trade information and market analysis/research. The actual user interface is becoming increasingly important: Most of the global tier-one banks have now appointed heads of user experience (UX). Those firms without access to such expertise should look for a third-party solution that enables them both access to such expertise and the flexibility to implement systems with their own unique look, feel and workflow. Simply implementing a "me-too" system with the logo changed may get you to market quickly, but won't attract and retain customers in the long term.

Kurzrok: Third-party trading platforms provide a focus that some firms cannot achieve on their own. If done properly, they could provide for and stay on top of changes in the marketplace, regulatory requirements, access to new markets, and connectivity to providers that a financial firm may not be able to establish. Mostly, though, a third-party software provider should be current on all changes and requirements in the marketplace. The hope would be to work toward best-of-breed in both system functionality and execution quality across all assets.

Temes: Cost, for sure. Cost is the biggest issue. To build that exact interface would cost me a lot of money. And, in fact, I can probably get it for free from whoever I'm doing business with. That's probably the way most people go. There's enough of a third-party market out there, particularly offered through brokers who you "prime" with or trade through. We have probably three different systems on our desk that do this that are just there given as a service through the brokerage community.

Stonehocker: A third-party system can and should provide a strong foundation on which to build a complete infrastructure. It should offer numerous battle-tested elements: the data model,

presentation layers, and workflows for traders, risk managers and operations staff across all asset classes. The best need little added and come with thousands of man-years of user experience baked in.

Michael Kurzrok
Woodbine Associates

Q What typical changes need to be made to legacy risk management and compliance systems when rolling out cross-asset trading systems?

Kurzrok: Other than what's noted above, special attention needs to be given when dealing with varying assets. The more layers we put on a transaction, the more complicated it is. The risk parameters and correlations between the assets may be quite particular and difficult to address in aggregating and correlating the risks between those assets. Components for control systems, growth and operations, trade surveillance, fraud and position-limit monitoring, and regulation and risk management are all crucial. To the trader, the ability to reflect dynamic change across a variety of transparent fair-value calculations and across asset combinations in an immediate basis would be paramount.

Temes: The key is the timing of the entry of the trades. If you're trading something on an electronic exchange that is readily accessible, then it's easy because everything populates as you do a trade. When we do a trade, it calculates our risk immediately. But if we do trades that are more of an illiquid nature or that trade over the counter and there isn't an electronic market and someone has to input the data, then that opens us up to timing and also there's input error. So you need to have double and triple checks.

Myles: If a firm does not have a good cross-asset, real-time risk capability it can hinder its ability to offer the full credit lines to its clients across multiple products or, worse, expose them to excessive counterparty risk. Therefore, it's important to have the ability to feed real-time trading data for multiple assets into these systems. This enables better visibility of correlated risks, better visibility of the firm's overall exposure and positions, and better feedback.

McGovern: Implementing a cross-asset class system places many of the same demands on data, underlying risk, and compliance systems as are necessary to implement enterprise or portfolio-level risk-reporting systems. Organizations that have strengthened their counterparty credit risk (CCR) systems since 2008 may have already solved many of the challenges faced by a cross-asset class system developer. Many organizations have used a combination of replication and CEP technology to build central analytics repositories to enable enterprise-wide risk reporting. The challenge faced is compounded by the need to analyze risk intra-day, and thus the marshaling of the data has to be continuous to ensure that risk reports (or cross-asset class processes) can run on demand. This requires a combination of data management capabilities: 1) CEP to consolidate multiple sources of data, filter the data, cleanse and enrich the data. The CEP technology can also perform real-time analytics on the data that is valuable in cross asset class trading; 2) an in-memory database that can store valuable streaming data as well as keep valuable operational data required for real-time analytics, enrichment, cleansing, and so forth, beyond the simple rules embedded in the CEP engine; and 3) a dedicated analytics store that can deal with very large data sets for larger reporting and more complex decision-making requirements.

Knowles: Most legacy risk management systems weren't designed for the full range of assets required in a cross-asset trading system (e.g., they don't natively handle physical commodity deals), so they need to be adapted to handle these deals, or more than likely, they transform the previously unsupported deals to simpler proxies that don't naturally reflect their true risk characteristics.

In addition, legacy risk management systems may not be designed to handle the evolutionary aspect of risk mitigation practices, making assumptions that distort the true risk metrics. For example, views of credit risk and mitigation have changed over the last few years, along with the transformation in OTC derivatives clearing, collateral, margin, and netting. If legacy systems cannot distinguish between some of the nuances of these risk mitigation strategies, they tend to overstate or understate risk. The existing compliance framework may still apply to the cross-asset trading systems, though the various rules, measures, and controls will likely need to be adapted to handle the nuances of the specific asset classes. If these are cross-asset structured products, the rules may become even more specialized, though many clients have been (or should have been) incorporating compliance into the process already.

Stonehocker: Legacy risk and compliance systems need to be fed with the right exposure and risk data from all systems in the right formats to enable their essential processes. That helps to limit exposures and manage counterparty risk centrally, which is the key to minimizing risk. But this needs careful data marshaling so that continuous position and exposure monitoring, limit warning and breach notification, and interrogation workflow to investigate incidents can be accomplished in near real time. ■

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