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Next Generation Cross-Asset Trading Systems

NEXT GENERATION CROSS-ASSET TRADING SYSTEMS

ABOUT THE AUTHOR

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Traders' demands for systems that match the complexity of their strategies have led vendors to begin work on creating the Holy Grail – cross-asset trading systems. Pontus Eriksson, Product Manager, SunGard Front Arena, outlines what functionality these systems should include and how they can become the foundation of traders' future plans.

The most striking aspect of today's trading environment is the range of aggressive, high-speed and sophisticated trading strategies employed by participants. Traders on both the buy and sell-sides are now prepared to tap into a wide array of global markets and are happy to cross asset classes in pursuit of alpha and to exploit arbitrage opportunities.

It is technology that has made it possible for these strategies, products and algorithms to exist and it is the development of electronic trading that has allowed traders' ambitions to be as complex and as globally encompassing as they are today. But in many ways things have come full circle. Such is the rapid pace of development in the derivatives market with both buy and sell-sides constantly looking to cross and blend previously exclusive asset classes in their creation of ever more innovative instruments, that technology providers are being pressured to provide the tools necessary to trade these instruments in any kind of automated manner.

The current focus for vendors is the development of cross-asset trading systems. The demand for these systems was simply not there in the early 1990s when firms operated in strict, self-contained silos. The equities team traded equities from its equities desk and the same for the fixed income team. Consequently each desk used different trading systems. But at around the turn of the millennium, as the

derivatives market continued to grow, financial institutions' customers began to form cross-asset derivatives platforms where traders were no longer restricted to single asset classes and were dealing with all types of instruments. In addition, a sharp increase in the number of hedge funds operating as proprietary trading desks acted as another catalyst in the demand for cross-asset trading systems.

More recently we have seen an unrestrained level of consolidation in the exchanges industry. So while on the buy-side the number of participants continues to grow along with the range of instruments, the actual trading venues have begun to contract. One effect of this consolidation, if not a key reason for it, is that it has brought traditional equity markets together with newer derivatives exchanges meaning that the newly consolidated trading venues are now able to offer multi asset class trading opportunities to their members.

THE CURRENT REQUIREMENTS

So what should a cross-asset trading system comprise? As a starting point it is important to define what exactly is meant by cross-asset trading and what a next-generation cross asset trading system should be able to do. It should be able to cater for several essential trading categories such as over-the-counter (OTC), exchange traded products and high-volume FX/MM trading. As these OTC products become more commoditised they sometimes graduate to an exchange environment so any cross-asset trading system must be able to cater for this change. Also many trading strategies involve a mix of OTC and exchange-based trading and there must be a platform that can cater for this.

Then there is the issue of multi-asset class trading – where a system can cover every major asset class to a great depth and combine these in a single portfolio. Finally there are the cross-asset class products, or hybrid products, which are made up of two or more single asset class instruments which are packaged together as a single product. These products are then contained within a portfolio along with other hybrid products and single asset class instruments, creating the need for customers to be able to see an aggregated view of the risk attached to both types of products.

Before outlining the qualities of a next generation cross-asset trading system, it is sensible to first start with what the minimum requirements of such a system should be. There are a number of building blocks that should form the foundation of any standard trading system.

- Robust system infrastructure and the ability to store a vast array of financial and market data that can be used for risk management purposes. In order to ensure maximum flexibility in creating a risk view against various market variables, the system should be able to treat each financial attribute as an independent component.
- A complete lifecycle management capability. Straight-through-processing is a necessity in today's market and a cross-asset trading system should be able to cater for any external activities that may affect a trade as well as navigating from front to back office through a single database. In terms of processing it must be able to generate and manage confirmations, settlement and accounting that can be controlled through customised workflow.
- Flexibility, particularly as it relates to the financial contract representation of various instruments. The consistent representation of plain-vanilla, commoditised instruments is the lifeblood of any trading system but it must also be flexible enough to cope with the representation of more structured and obscure instruments, which continue to flood into the market.
- A consistent and flexible pricing framework that can cater for today's heterogeneous, cross-asset trading environment and the constant innovation in financial products,

especially in the credit, interest rate derivatives and structured products area. Financial contracts are composed of multiple cash flows, synthetic or otherwise, each with a contingency that could be a call, a default, a corporate action or other such event. The necessity is in linking pricing frameworks to these contingencies thus negating the need to introduce a new formula for each instrument type – a need which would soon render a system unworkable in terms of maintenance and extensibility

- An open architecture with good integration capabilities to other in-house systems, execution venues, broker-dealers, documentation systems and data providers to name a few examples. Full flexibility must be offered to allow for current but also future integration needs, using industry standards such as FIX and FpML, but also allowing for arbitrary proprietary formats. There must be well defined integration points for data and messages, as well as allowing extensions of the formats to accommodate additional data items, such as external identifiers.

Beyond these essential building blocks there are a number of features that must also be present, particularly for any system that purports to cater for cross-asset trading.

- A strong platform to cater for the use of a wide range of individual asset classes, OTC, electronic trading and high-volume FX/MM trading, plain vanilla contracts mixed with complex derivatives, all incorporated into a greater cross-asset solution.
- A desktop that displays full risk management and P&L information. This should include dynamic slicing and grouping of analytics using a vast selection of static data and calculated values. Furthermore the data should be available in real-time, on a triggered basis or as scheduled reports.
- Full integration with key market players in the trading space such as Bloomberg, Reuters and Markit.

MEETING FUTURE DEMANDS

When it comes to developing a compelling cross-asset trading system that will meet future demands, these prerequisites take on a far greater importance. To satisfy the demands

of a trading strategy that traverses different asset classes or includes complex, hybrid portfolios involving multiple asset classes, a system's flexibility will be stretched to the limit. And with the rate of growth in trading volume and complexity, the need for scalability and extensibility will be immense.

But this does not mean that there is an optimum level of extensibility and that it is not possible to go too far. Some systems are simply too extensible where the 'toolkit' architecture leaves the customer to program the system every time they wish to add a new currency or a new instrument. It is a flexibility that few customers will thank their vendor for. The bespoke nature of the development also means that no two installations will be the same making it harder for both the vendor and the customer to maintain the system or easily introduce any upgrades. There is also an additional cost for customers to bear because of the number of consultants needed to install, maintain and extend the system.

At the other extreme is the closed system solution where a customer will pay a fee and get a black box in return. It may be incredibly adept at carrying out its tasks but should you want to amend or enhance your trading strategy in any way, this simply would not be possible without being totally reliant on your vendor and having a black box that is straining under the weight of its many add-ons. It may be a solution that is easy and quick to install but it can just as quickly be classed obsolete with the rapid pace at which trading strategies are developing, and in this age of transparency, the appetite for such opaque products is rapidly diminishing. Indeed, it is important that vendors document their valuation models transparently so that they can be fully validated by independent external replication if necessary.

Where customer demand continues to grow is for a system that can provide both considerable extensibility and flexibility but in a controlled way. Every customer and vendor wants as short a time-to-market as possible for their system and as much extensibility as it will allow but with 'toolkit' solutions they usually have to settle for a trade-off between these two features. The key is to recognise that these two features are not mutually exclusive and there need not be a trade-off.

The key message is; a system can be an out-of-the-box product that is also extensible. For example, it may have a limited number of entry points where the system can be opened up and customers can add new features supplied by the vendor. These features can include proprietary valuations and financial calculations; customised reporting; configured workflow and additional data. This capability enables the customer to have several bespoke elements, but the vendor is aware at all times of the changes made to the system; so is therefore able to maintain it and supply upgrades rather than becoming more excluded from the product each time new functionality is added by the customer. The customer and the vendor can therefore continue to have a strategic relationship and remove any reliance on legacy technology.

PROVIDING DEPTH AND BREADTH

One of the biggest challenges in developing cross-asset trading systems lies in creating a product that is both deep and broad in terms of coverage but does not sacrifice anything in terms of performance or extensibility. The breadth of coverage lies in the creation of a system that can cover all of the instruments and asset classes contained within a customer's trading strategy in a flexible and consistent format. But this will be redundant unless there is a depth of functionality and performance that can be applied to each and every asset class.

The danger that faces any consolidated platform is that it sacrifices performance in pursuit of wider coverage. This is why it is important to retain some of the functionality and principles that underpin the best single asset class systems currently available. A major bank will not even entertain the idea of looking at a new system that cannot attest to being a market leader in at least one or two areas and a leading authority in others. They do not want to get involved in some sort of trade-off where they exchange the high performance and functionality of each separate system for an aggregated platform that loses something in performance.

The term 'performance' covers many areas, some of which should be more clearly defined. Firstly there is the recalculation speed – when

there is an update in the market, the trader's yield curve, price tick and risk calculations need to reflect these changes in real-time. In order to achieve these real-time recalculations, the system needs to have a robust infrastructure.

There is also batch performance – the responsiveness of the system when you start it up at the beginning of each day or if you run a particularly large report. And there is the issue of memory consumption. Even when using a 64-bit architecture there are still limits to the amount of memory that can be used.

In the context of a cross-asset trading system, it is also important to note what 'performance' means for each separate asset class and the ability to execute trades because there is often a big difference between cash or exchange-based transactions and OTC transactions.

In exchange-traded equities, the emphasis is on the speed of execution and low latency, particularly where algorithmic trading is employed. Additionally, in the cash FX market it is about volume and processing as many trades per second as possible during the peaks of daily traffic, where daily average through-put easily can exceed 200,000 trades for a large sized bank. On the other hand, for the OTC derivatives market, the average daily volume may be far less than equities and FX but there is a far greater computational complexity that requires solid and reliable performance. For example, a system that can cater to both calculations of equity basket derivatives over a GRID of processors to deliver prices to exchanges whilst also consolidating all positions in one application addresses both needs.

THE FUTURE

The idea of creating a system with a consistent, extensible and flexible cross-asset trading platform that matches any single best-of-breed solution in terms of performance and functionality may sound 'too good to be true' but this is not to say it is an unattainable ambition for vendors.

In their favour is the fact that banks and other financial institutions want them to succeed. Most banks are trying desperately to reduce their IT costs, leading them to reduce the

number of systems they use and to introduce some consolidation to their trading platforms – something that is exacerbated with the continued consolidation between major banks. But they do not want to do this at the expense of any functionality or performance. The cross-asset trading system of the future must have no weaknesses. Once you can demonstrate that a cross-asset trading system has as much functionality, reliability, asset coverage and performance as all of the individual systems used, then the decision for the bank should be obvious.

Vendors are not quite at this point yet. Cross-asset trading systems do exist in today's market but they do not yet possess the seamless infrastructure and consistent performance that is required. These systems are still in their early stages and have not yet reached their maturity, not least because the concepts that led to their development – cross-asset trading strategies and a consolidated approach to IT - have only been in the spotlight for a relatively short period of time. But the demand is clearly there and with the derivatives market showing no sign of slowing down it is a demand that will not fade away.

For the vendor that can be the first to meet this demand with a truly cross-asset trading system with depth, breadth, extensibility, scalability, straight-through-processing, integration abilities and great performance, the rewards will be plentiful. At SunGard we believe we already are in a great position to succeed in doing so. SunGard Front Arena has many years of experience in this field and has continuously innovated in the art of building cross asset solutions. At SunGard Front Arena we strongly believe that consolidated cross asset trading systems will make standalone systems obsolete. Front Arena is the only STP trading system that can boast full asset coverage of OTC products, high performance exchange trading as well as high-volume FX/MM trading in a single enterprise-ready infrastructure.

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ABOUT SUNGARD FRONT ARENA

A trading solution serving a range of financial institutions, SunGard's Front Arena provides straight-through processing by integrating sales and distribution functions, trading capabilities, and risk management. Institutional asset managers and brokers, traders, and market makers use Front Arena to trade equities, fixed-income, interest rate derivatives, and credit. Front Arena's components can be configured to meet a variety of trading needs and scaled to support operations ranging from local to global. For more information, visit www.sungard.com/frontarena

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