

Cash and Derivatives Trading

Advantages of a Shared Platform



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There has long been a perception that cash markets and derivatives markets are separate. Each is used by different types of participants and serves a different type of investor – there are “cash guys” and “derivatives guys.” And when you look closer, the fragmentation is even more apparent. For example, different markets exist for small-cap equities, blue chip equities, warrants, corporate bonds, government bonds, convertible bonds, equity options, futures for commodities, and single stock futures among others.

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This narrow approach has led to the development of highly specialized vertical business silos, each with its own way of looking at the market, its own vocabulary, its own priorities, its own needs, and its own biases.

Challenging the Silo Trading Model

Unfortunately, this same narrow way of thinking has been followed in the design of capital markets technology.

The consequences are systems that exaggerate the differences between the market silos, focusing on what is special and different, on each constituency's unique requirements and view of the market.

There are trading systems for stocks, futures, options, bonds, repos, and forex trading. Each has its own set of products, community of participants, its own market models and trading styles, interfaces, front-ends, protocols, data models, etc.

A modern exchange may need to serve many or all of these constituencies or silos. The result is a mix of specialized systems servicing each of the different

markets, each on a separate platform with different interfaces, databases and technologies. Many of these systems are inflexible and expensive to change, making it difficult to introduce new capabilities and products cost effectively and when they are needed. As a result, managing these different systems is unnecessarily complex and expensive.



Solution – Multi-Market Trading Model

A well-designed, hybrid trading system built on modern technology can service all of these different silos on a single platform, with common interfaces, common administration, and cross-market supervision and control capabilities.

The benefits of a consolidated, multi-market platform include:

- Reduced operational and technology costs and simpler operations by using a common platform and set of technologies
- An architecture that supports changing business practices and a wide set of different trading mechanisms that can be applied to different products and markets
- Simplified access to the market through a common set of APIs and front-end tools, encouraging participation in the market
- Improved risk management and surveillance through a unified view of the market and participants
- Opportunities to increase liquidity in the market by supporting cross-product trading, execution of strategies across markets free of legging risk, and creation of new synthetic products
- Improved service levels to customers

In view of this need for a simple, common platform, what is required is a horizontal, rather than a vertical, view of the markets and products: a perspective that cuts across the different market silos and creates a new way of understanding.

Rather than focusing on the unique needs of a specific subset of the market or the unique attributes of a specific product, designers need to understand the fundamental requirements and problems of all markets. They need to create a business architecture that supports the different market models and trading styles, products, participants, and order types within each of the market silos.

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Generic Trading Model vs. Multi-Market Trading Model

The following table (over the next two pages) describes the characteristics of a generic, silo-specific trading model and how a multi-market model can deliver all the elements of the generic trading model plus the benefits of a common, cross-platform and cross-trading platform.



Generic Trading Model/Multi-Market Trading Model Comparison

	CHACTERISTICS OF THE GENERIC TRADING MODEL	CHARACTERISTICS OF THE MULTI-MARKET MODEL
PARTICIPANTS	<p>A set of interfaces and front-end tools to provide participants access to the market</p> <p>Equities: FIX has emerged as a global standard interface protocol for equities markets, whose market dominance is growing. This kind of standardization has enormous benefits to the market; it enables the network effect to properly take hold.</p> <p>Derivatives: the front-office tools must provide risk management and analytics capabilities. These are generally supplied by commercial ISV solution providers. The front-end must also support market makers' quote engines and position management systems.</p> <p>Debt: The front-end must include filtering/views for participants to identify products that satisfy yield, credit, and other profiles</p>	<p>The system must support different classes of participants with different interfaces and protocols, different service levels and different information requirements. For example, market makers may require lower-level access to system and market services to ensure that they can quickly and easily update their position in the market.</p> <p>The design of the system must clearly separate, or decouple, front-end and order management functions from the trading engine.</p>
PRODUCTS	<p>Each asset class has different product descriptions and product attributes used for valuation, matching, etc. For example:</p> <p>Equities: value-added information is used for pricing and trading such as inter-listing status, P/E ratios, dividend dates, etc.</p> <p>Derivatives: product specification includes contract generation for expiring series and changes in underlying prices.</p> <p>Debt: a set of analytical information is needed for valuation and trading such as current yield, yield to maturity, duration, and coupon information.</p>	<p>To trade a broad range of different products/asset classes in the same engine, the trading engine must be designed to work with an abstract model of a product, where derivatives series and contracts, debt issues, securities, structured strategies, ETFs, baskets, etc., each resolve to fundamental objects. The trading engine can then deal with all of the products as symbols, which are pointers to a complex set of information including:</p> <ul style="list-style-type: none"> ⇒ product description and “catalog” information – the information that is needed to identify the product and to provide a context to participants, and that is provided to the front-end ⇒ how the product is valued ⇒ classification schemes for creating views, filters and roll-ups ⇒ the attributes of an order that are used for matching products of this type ⇒ control information – limits, state, trading restrictions, over-rides <p>The trading engine does not need to understand that it is trading a single stock future or a corporate bond or a warrant: it deals with symbols as “widgets,” which have associated rules and information that tells the engine how the product is valued, how it is matched, what the state of the product is (i.e., is it available for trading), if there are any limitations or controls over trading the product, and how the product is related to other products.</p> <p>The symbol widget is derived from the product master(s) and other information, through a rules-driven product authoring capability.</p>
TRADING STYLES	<p>Different trading styles and market models are followed in different market silos:</p> <p>Equities: continuous matching with a limit order book, call auctions, and block trading facilities</p> <p>Derivatives: auto-quoting by market makers, request for quote, continuous matching</p> <p>Debt: indicative quoting by dealers, interest discovery and negotiation, counter-party filtering and validation</p>	<p>The trading engine needs to implement the common trading models and trading styles used for trading cash and derivatives products. The result is a business architecture that can be applied across all products, supporting new business practices in the different market silos.</p>



	CHACTERISTICS OF THE GENERIC TRADING MODEL		CHARACTERISTICS OF THE MULTI-MARKET MODEL
I N S T R U C T I O N S	<p>Different order types and other instructions are required for each market and trading style:</p> <p>Equities: market and limit orders, different fill and time-in-force terms, settlement restrictions</p> <p>Derivatives: quoting and support for strategies or combinations for spreads, straddles, etc.</p> <p>Debt: request for quote and interest discovery, ability to trade by yield</p>	<p>As with trading styles, the platform must support the range of different order types, quote types, strategies, and other instructions needed by the different markets. And, as with trading styles, an advantage of a common platform is that these capabilities can now be made available to participants in any of the market silos – for example, allowing cash market traders to use tools for strategy trading, implementing market making in cash markets, etc.</p> <p>Strategy trading is a classic example of narrow thinking and narrow design. In many systems, the different strategies such as spreads, collars, straddles, strangles, butterflies, condors, etc. have all been considered and implemented, separately. But all of these strategies describe combinations of two or more symbols traded together in a single transaction, with ratios between the trading legs, realizing a net price between the transactions (e.g., buy 2 of these and sell 1 of those at a net price of 0).</p> <p>Strategies can be implemented in a general way, creating a common set of instructions that support all strategies for different products and markets through combinations of orders that can also be used for basket trading, basis trading, OCO (one-cancels-other) orders, etc. This generic combination order facility can be made available to participants within and across market silos (e.g., covered calls on equities).</p>	
M A R K E T D A T A	<p>All trading systems must maintain and publish market information to participants to support their trading decisions, including: current quote or best market, trades, depth and aggregate price information, trends, alarms, announcements and trade history</p> <p>Different markets and trading styles have different requires for market transparency (depth of market) and anonymity.</p>	<p>Participants will need different types of information depending on:</p> <ul style="list-style-type: none"> ⇒ the type of product ⇒ the way the product is traded ⇒ the relationships between this product and other products ⇒ the role that the participant plays in the market ⇒ the price that a participant is willing to pay for information ⇒ how liquid or active the market or product is <p>The information model must be multi-level, with different layers, channels, views and filters. The market information model and the supporting infrastructure must be both wide and deep. Why?</p> <ul style="list-style-type: none"> ⇒ wide, to support a very large number of symbols as is common in a derivatives market with auto-quoting for multiple series on each underlying ⇒ deep, to support very high, concentrated data rates against a small, focused number of products, as is common in an equities market (“hot stocks”) 	
C O N T R O L	<p>To ensure market integrity and compliance, the system must include online supervision and control capabilities such as monitoring positions, setting price limits, managing participants, setting the schedule, and managing the state of the market and products</p> <p>For derivatives, this includes monitoring and controlling market maker performance and quoting</p>	<p>One goal of a common platform is to integrate the markets with a common set of controls to provide:</p> <ul style="list-style-type: none"> ⇒ integrated state management: manage underlying products together with their derivatives ⇒ integrated and consolidated position management ⇒ a common set of tools for defining and administering products and participants ⇒ a complete audit trail of trading activity in all markets ⇒ simpler operations and consistent management of service levels to participants <p>In order to manage the large set of different products in the same platform, supervisors and participants need tools and views to work with groups of products in a single command. These “group operations” would allow participants to create different selection filters based on a range of attributes, and include functions to manage orders or quotes for a symbol or related symbols (cancel, amend, withdraw, suspend, etc.), to manage the state of related products or market segments, etc.</p>	



Design Approach

None of the commercial trading systems in the world today were designed as true, cross-product and cross-market platforms. However, some systems are evolving to support a larger set of products and different markets. For example, OM recently announced Click XT, a new release of its derivatives trading platform that now supports cash trading. Other systems, like Computershare's ASTS/X-Stream, started as a platform for equities trading and have evolved to support trading of derivatives products. Whether designed from scratch, or developed incrementally from an existing cash or derivatives platform, a cross-product and cross-market trading system requires:

1. A fast, scalable and resilient infrastructural fabric that is designed to meet the needs of the different markets and can support markets that are both wide and deep. The system backbone and trading engine must have hundreds or thousands of concurrent execution paths, each of which must be extremely fast. High-performance pub/sub messaging based on reliable multicasting (PGM), fault tolerance through active replication, in-memory database (IMDB) technology, and architectural patterns based on massively parallel services, forward object caching, and pipelining can all be used to build the trading engine and message fabric.
2. Abstraction and separation of the trading engine from both the presentation (the front-end) and the data model(s) to support a wide range of different product types and different participants.
3. An extensible underlying object model that accommodates change, that reflects the common requirements of the different markets, and that implements the correct abstractions for: markets and market types, negotiations, participants and participant types, symbols and symbol types, general purpose instructions and combinations, state machines, and rules for allocation, ranking and matching.
4. A common set of APIs to participants to make it easier for participants to access the market. With enhancements in releases 4.3 and later, the FIX/FIXML protocol standard has been extended to support derivatives and debt trading, making it a suitable standard interface protocol for trading of all products.
5. A common set of control and administrative tools including: rules-driven configuration of markets and products; tools for working with groups of products, participants and orders; audit trail recording and analysis facilities; and online event managers and correlation engines for proactive management of the market and service levels.

This design approach builds on the strengths and the ideas from the different market silos. Rather than being a "least common denominator" approach, it offers a superset of functionality and capabilities that are richer than any of the specialized platforms. It also allows new ideas and possibilities to emerge. For example, the opportunity to create a warrants market (warrants being a "cash market" product) that contains the best features of an options market (options are a derivatives product) can lead to a much higher quality of service to the warrants market users, a service which may not have been possible, or at least may not have been considered in a cash-only environment. Conversely, the high performance standards required to handle "hot stocks" in a cash market environment can enable derivatives markets to cope with unexpected spikes in demand for index futures, in a manner that they may not have previously been able to.

Commitment to a Common Platform

Technically, creating a common platform for trading cash and derivatives is not extremely difficult or expensive. The design ideas and technology required are available today. What is required is a perspective that is not constrained by narrow, vertical thinking, and a commitment to understanding the requirements of the total market place. The benefits of a common trading platform are more than just reduced costs and simpler operations: a common platform can serve as the foundation for a more agile, customer-focused business.