

MiNX™

Mindwell-NumeriX Host Integration Accelerator

MiNX™ is a generalized integration platform for the NumeriX® analytics library. MiNX™ introduces a completely new approach to the complex challenge of exchanging market data and valuation results with an external valuation library. The graphical studio environment allows financial engineers and quantitative analysts to incorporate NumeriX® valuation in their trading and risk host systems with a minimum of programming efforts. This innovative approach together with pre-packaged product templates and the proven track-record of Mindwell's implementation team, allows you to dramatically reduce the time-to-market for engineered and structured products.

Integrating 3rd party analytics – challenges

Integration of external pricing libraries with host systems for trading and risk management comes with many challenges and potential pitfalls. The basic interfacing requirements include a mechanism for exporting the necessary market data and other relevant parameters from the host system to the pricing library at the moment of valuation. Another basic requirement is a mechanism for capturing the valuation result in the host system API.

For a limited and fairly static set of exotic products requiring external valuation, the logic for passing data to the pricing library and handling the return values can be implemented within a custom made interface itself. This means that for each valuation call from the host system, the interface would determine which product type it is requested to price and subsequently would pass the relevant instrument parameters and market data to the pricing library. The interface could also use its own centralized logic to determine how the result should be fed back to the host system, if it would need to be scaled or converted to the correct quote type, exchanged into the accounting currency etcetera.

For a more extensive set of exotic products that change over time, reflecting constantly shifting market opportunities for engineered structures, the interfacing logic becomes increasingly complex. The very nature of object based pricing libraries such as NumeriX® makes it inherently difficult, if not impossible, to build a completely generalized host interface, simply because of the infinite number of different structures that can be created through the NumeriX® object model. Consequently, interfaces need to be constantly upgraded and thoroughly tested introducing extensive lead times for new product structures.

MiNX™ concept

In order to reach the full potential of an object based pricing library, MiNX™ transfers the interfacing logic from the interface itself to the product definition. This means that the structural definition of the product also embeds the necessary logic to populate itself with the relevant market data and resolve the return data to match the data model of the host system API. This approach dramatically reduces the need for constant interface upgrades, and at the same time significantly improves the time to market for structured products.

Detachment of the instrument data model

The storage and representation of highly structured products requires an equally flexible data model, both in terms of the number of data fields required to represent exotic features, and in terms of hierarchical depth needed to manage nested structures with complex data types, such as vectors and matrices. Such flexibility is intrinsically difficult to reconcile with a table structure in a traditional database. Moreover, the data model for structured products may require continuous change and complete flexibility to accommodate new structures and to seize windows of opportunities as they appear in the market. It is often difficult to achieve this within the typical release cycle of a host system.

MiNX™ takes another route, and directly reflects the virtually unlimited flexibility in NumeriX® allowing its users to combine financial data objects in an infinite number of structures. The entire instrument representation is detached from the host data model in an XML object. This XML object is stored, either inside the host system database as a text-object, or outside the host in a separate database.

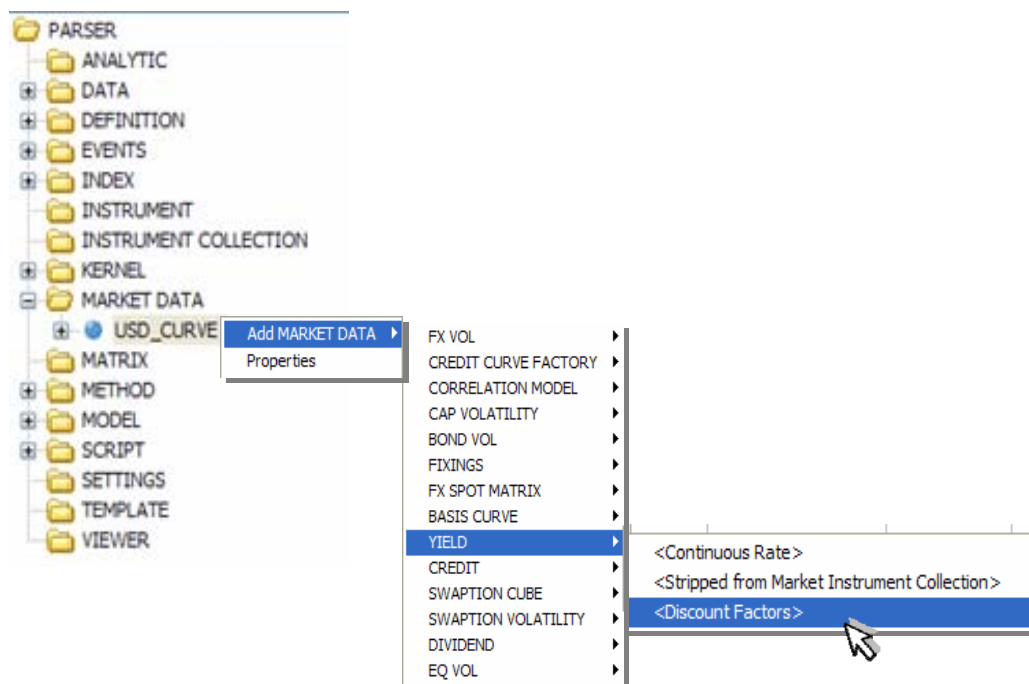
MiNX™ Engineering Studio

The Engineering Studio (MiNX™ ES) is a user studio environment, giving Financial Engineers and Quantitative Analysts a versatile tool for developing product structures with embedded data objects from the host system, or any other data source.

The studio provides a tree representation of the underlying (NumeriX®) data model and a context sensitive menu system, allowing the user to add, remove and configure individual data objects from the data model with a simple mouse click.

Embedded dynamic expressions

The Dynamically Evaluated Expressions (DEE) concept introduced in MiNX™, allows users to embed valuation-time data in the NumeriX® object structure. The DEE is based on the Python scripting language and creates a link between a particular NumeriX® object and a data source – inside or outside the host system. When the NumeriX® valuation is called from the host system, the DEE's are responsible for fetching real time market data and other parameters into the valuation from the relevant data sources.



MiNX™ Engineering Studio provides a user friendly, intuitive environment for developing NumeriX instrument structures

Valuation consistency

A key challenge when integrating an analytics library with a host system is to ensure valuation transparency through all applications of the system. In addition to a correct price based on consistent market data, the integrated solution should also provide correct sensitivities and simulation results in real-time when pricing parameters change.

Considerable time has been invested in ensuring that the MiNX™ solution is flexible enough to support valuation in applications as well as customized reports. This allows the user to maintain a consolidated view of the entire portfolio, containing NumeriX® priced as well as core-priced products in a common view, based on the same underlying market data. This consistency extends through the entire life cycle of a transaction including processes, such as daily MtM, fixing procedures and other automated tasks.

Mindwell Implementation Services and Support

Mindwell provides expertise and advisory services combined with development support and training as part of the MiNX™ implementation. Following the implementation, Mindwell provides qualified help desk support services during regular business hours

Visit us at www.mindwell.se for more information about our service lines.

Integrating NumeriX® with Sungard FRONT ARENA® using MINX

The MiNX™ solution is particularly well positioned to incorporate the power of NumeriX® analytics in combination with Sungard FRONT ARENA due to its use of Python as a scripting utility for dynamic expressions. This allows FRONT ARENA users to implement NumeriX®-priced products in FRONT ARENA applications, reflecting both theoretical prices and risk figures e.g. bucket sensitivities, scenario simulations and other derived measures, as well as complete cashflow structures generated by the NumeriX® valuation engine.

Mindwell has extensive experience and a proven track record from implementing

external valuation libraries in FRONT ARENA. MiNX™ is a condensed and generalized packaging of this experience in the form of supported integration software, allowing users of FRONT ARENA and other trading and risk management host systems to dramatically reduce the time-to-market for integrating NumeriX® analytics.

MiNX™ solution overview

MiNX™ Engineering Studio

- Visual development and configuration environment for the NumeriX® object model
- Embedded NumeriX® script editor
- Method wizard for adding Dynamically Evaluated Expressions (DEEs)
- Import facility for NumeriX® XML structures defined NumeriX®/Excel.
- Storage facility for storing NumeriX® products to file or database

MiNX™ Runtime Services

- Component model for rapid integration with the host API (Python, C/C++ and Java).
- Extensive set of DEEs for embedding inbound data such as yield curves, volatilities, correlations, price history, fixings, dividends etc from the host system or other data sources.
- Extensive set of DEEs for returning prices, greeks, call probabilities, bucket sensitivities, projected cashflows etc.

Contact

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