Spectrum's *Technology*

ROBUST, DYNAMIC AND STATE-OF-THE-ART

- **Built Using Microsoft .NET Technology**
- **Programming Languages are C# and C**
- **4-Tiered Architecture for Speed, Reliability and Scalability**
- **Choice of MS SQL Server or Sybase for the Database**
- **Comprehensive Data Publishing**
- **Horizontally Scalable**
- **Seamless Integration via XML, with Standard Interfaces to Trading and Accounting Systems**
- **Highly Secure for Internal Operations and for Web Publishing**

Overview

Built on Web service standards, Microsoft .NET–connected software makes the "real-time" enterprise a reality by enabling information to flow seamlessly, from Front- to Back-Office. Real-time processing delivers incredible value for on-line Portfolio Analytics, comprehensive Credit Limits and Collateral Management, and Desktop Alerts, all without having to wait while the system is updated. Using .NET-connected software also means users work more efficiently through the use of highly automated processes, with less time devoted to manual intervention or reconciliation.

4-Tiered Architecture

Spectrum's four tiers are comprised of a Data Presentation Layer, a Calculation Engine, Data Distribution Services and a Relational Database. Having four separate and distinct tiers provides the most flexibility, allowing the system to be highly scalable and highly available.

Older client-server systems centralized financial data but distributed critical calculations (such as P&L and Limits) to the systems' programs. The old client-server systems were inherently slow and unreliable since to get the needed calculations, large amounts of data had to be pushed across the network.

Spectrum's unique Calculation Engine means that all critical calculations are centralized in one powerful, multi-threaded, program. Since data is cached in the engine, and since the critical calculations are centralized, large amounts of data do not have to be passed across the network. Rather, the critical calculations are made once in one program (the Calculation Engine), and then Spectrum's unique Data Distribution Service connects end-user programs with the Data Engine for the simple display of the critical data in the end-user programs.

Robust Underlying Database

Spectrum is built on a single database with a single transaction record. Transactions move through Spectrum's front-office, middle-office and back-office in a well-defined life cycle. The database provides a rich source of information for analytics, data-mining and reporting. Spectrum supports MS SQL Server and Sybase.

Intuitive and Easy-to-Use Interface

Since Spectrum is built on Microsoft's .NET technology, the user interface will be familiar to

everyone that has utilized a Microsoft desktop. Similar to Microsoft Explore, Spectrum utilizes hierarchical folders to organize the hundreds of system functions. The graphical interfaces adhere to Microsoft .NET standards, and feature drop-down menus with speed-search. Users can customize and save their desktops, and a "Favorites" toolbar allows users to quickly select their often-used programs.

Data Publishing

Information generated by the Spectrum is readily available for Web reporting as-well-as for Web portals. Spectrum provides real-time updates using XML Web Services. This information, made available via Web 2.0 technologies (AJAX) and updated in real-time, allows banks or broker-dealers to provide value-added services to their customers, such as P&L reports, margin calls or client statements.

Fast Execution and Volume Scalability

Spectrum can be scaled both horizontally and vertically, allowing IT departments to address and control bottlenecks. In its basic configuration Spectrum can easily process over 100,000 transactions a day. For institutions generating higher daily volumes of trades, horizontally scaled transaction importers, data engines and data publishing services allow users to easily process trade volumes in excess of 250,000 transactions per day.

Seamless Integration and Interfacing

Users can realize the benefits of Straight-Through-Processing whether they choose Spectrum's front office services, or by interfacing to one or more of the commonly available Trading Systems.

Spectrum has been interfaced to the following trading platforms (listed alphabetically):

- Autobahn
- Barx
- Bloomberg
- Cognotec
- Currenex

- EBS
- FENICS
- FxALL
- HotSpot FXi
- Lava
- TraderTools
- RBS
- Reuters (RET – AD and Reuters Dealing)
- UBS

Spectrum has also been interfaced to the following General Ledger accounting systems:

- Coda-Financials
- Equation
- Globus
- Hogan
- Oracle Financials
- PeopleSoft
- SAP
- Silverlake
- Systematics

Spectrum is completely SWIFT and CLS compliant, and has been interfaced with the following SWIFT providers:

- Alliance
- Logica
- Merva
- Montran

Highly Secure

The Spectrum platform has a flexible authentication framework that allows rapid integration with an Enterprise Single Sign-On Server. Alternatively, Spectrum users may leverage the built-in authentication engine to support stand-alone portals. All data is encrypted end-to-end, and web server communication with a browser is further encrypted using HTTP over secure sockets (HTTPs).