

Wall Street Runs on Java

By Eckhart Beatty

JP Morgan's EMSTaR (Emerging Markets Sales, Trading, and Research) derivative options trading unit recently debuted Random Walk Computing, Inc.'s Java-based intranet system. It provides the latest data on pricing of derivatives instruments. Confidently, RWC's co-founder and CEO Joel Scotkin prophesies that "Java could have as great an impact on the distributed computing model as its first two incarnations (i.e., the host/terminal design of the mainframe and client/server computing) combined." Moreover, he continues, "Java reinvents the way applications are distributed to clients and executed. It creates a world where business applications can be shared with clients without the security risks, where small snippets of code can be sent along with raw data to create dedicated information filters, and where universally portable code allows for new kinds of computing devices." Java takes client-server computing to the next dimension.

It All Started with a Vision

In effect, it was a Wall Street technology veteran who recognized the opportunity inherent in this unique situation, long before most of his peers in the business. Working in advanced computing development in the financial services industry, Scotkin had acquired a wealth of experience analyzing various systems on related roll-outs on Wall Street over the years. RWC was one of the earliest contenders working with Sun in defining the rules of the Java game, and its first true champion on Wall Street.

Lower Distribution and Support Costs

Java transforms the way business is conducted on the computer. Since it is a cleaner language to work with, development time is drastically reduced. Given its cross-platform nature, Java code can run on almost any operating system (OS), obviating previously required parallel support for applications relying on widely varying architectures. Its network-centric design allows the client to distribute program applications (applets) across the network to any client user, without using sophisticated software---just a basic Web browser. This lets you add a virtually infinite number of other users worldwide at a drastically reduced cost. Software updates merely have to be loaded to the Web server instead of to the desk of every user worldwide.

A properly implemented Java application can execute instant and invisible distribution and updates of an application. A Java program embedded in a Web document is transparently downloaded and executed by anyone viewing that document. Software updates need only be copied to the Web server in order to be automatically integrated into the application. Java in effect obviates the use of floppy disks and CD-ROMs, and the associated cost of installation support.

At EMSTaR, RWC's Lowell Kaplan explains that the Java applets he has devised replaced older, more expensive and less functional systems, e.g., systems employing Excel spreadsheets and UNIX-based, client/server C application. It is the broad

consensus in the IT community today that open standards are practically *de rigueur* in order to operate efficiently in corporate finance and other fields.

According to Kaplan, the hardware and software requirements for users of these systems have been revolutionized by the Java conversion. He explains that in the old systems, each user had to separately install memory-hogging application suites such as Microsoft Office on a Windows-based computer. To make matters even worse, if the user required the use of both systems, she needed a second computer because the Windows machine cannot run the UNIX-based C portion of the application. In the new Java-based scenario, she requires just one computer, and it can be either UNIX- or Windows-based. Says Kaplan, “regardless (if) it’s an NC (network computer), an PC, or a UNIX box, the cost per user has been cut in half, at a minimum. This is the most intuitively obvious cost benefit of moving from older systems, even modern client/server ones, to Java.” The development of the Java applications and integration for EMSTaR took only a couple of months. “That sort of time frame is unheard of in a traditional environment,” says Steven Beal, VP of emerging-markets derivatives technology at J.P. Morgan.

Java is comprehensive, yet flexible in design; this makes it unique. Certainly, other cross-platform languages exist, e.g., COBOL under CICS, as well as other Web technologies that allow for cheap scaleable deployment of front-end interfaces, such as HTML/CGI technologies, and other languages that can be compiled cross-platform. However, nothing except for Java provides every one of these benefits, in a far more robust manner, and simultaneously provides for a cleaner, quicker development cycle.”

In any properly designed application, Java is employed as part of a three-tiered architecture. These three layers are the server, the transport layer, and the front-end (or client) which provides a user interface. The server handles calls to databases, libraries, performs calculations, and controls the user access; one can write Java applications for the server. The transport (or middle) layer manages the communication between the server and the front-end, while the front-end (the “client”) provides a user interface. Applets are typically created to function as a front-end, as well. This three-layered “division of labor” based on components provides an orderly way to distribute applications or to securely write Java prototypes upon existing applications. Together, these three tiers enable one to distribute processing tasks more efficiently and securely over a network, and make it possible to design each tier according to its unique requirements.

ISVs like RWC are convinced this new Java model brings with it many features that allow it to work more efficiently than its predecessors do. How does Random Walk make this theory of Java work for its clients in actual practice? Lehrfeld points out that, “the key to unlocking (its) benefits is to have our team work closely with both the client’s business and technology people in making sure that the solution we present fulfills the goals and strategies of both departments.

Java-Run Derivatives Move Emerging Markets

Derivatives options play a key role in financing burgeoning emerging market economies, such as those found in South America and Southeast Asia. Derivatives are contracts, whose purchase and sale take place on the open market. "The contract is usually an agreement to buy or sell some asset, such as stocks, bonds, commodities, currencies, other derivatives, or a basket of any of these, i.e., an index," explains Lehrfeld. "The world of derivatives is extremely complex mathematically speaking, and the modern derivative markets owe quite a bit to the advances in computing made over the last twenty years." The emerging markets derivatives are characterized by three attributes: volatility, very complex business rules that vary widely around the world, and global reach. The technologies associated with the Web bear the inherent potential of guaranteeing seamless and secure flow of vital data globally. The control over this increasingly accessible information is optimized by the broad-based nature of Web architectures for which Java has evolved as an essential tool.

Random Walk could see early on in the game that this was a job for Java, that it would prove to be instrumental in handling the high demands of a mission-critical environment, and yet allow for flexibility demanded by such a complex and unique application serving the exacting needs of JP Morgan employees and clients) in offices around the world. Lehrfeld continues, "any reliable institution, such as JP Morgan, can improve the general execution of their trading strategies through improved access to data. Java accomplishes this far more cost-effectively than any other technology does." To the degree Java enables the delivery of ever-more current information, it is responsible for making financial decisions increasingly more precise. Naturally, this higher level of accuracy means a safer way of conducting an inherently risk-sensitive business.

JP Morgan Demonstrates Industry Leadership

As one of the oldest and most traditional investment banks, JP Morgan was founded on the belief that clients would be served most appropriately using the best available information and technologies. And when the folks at JP Morgan discover a new way to improve their services, they naturally take a leadership role in defining the shape of the industry as a whole. Lehrfeld emphasizes that JPM always carefully investigates every such opportunity before embracing a new technology. JavaSoft is there to help ISVs. Eric Lehrfeld points out, "Everyone I have talked to and worked with at JavaSoft has always taken an extra effort to listen and to work with us in addressing issues or questions that we need resolved. It's really very refreshing to see a company so responsive to its ISVs."

Wall Street Wakes Up and Smells the Java

For clients such as JPM, ISVs like Random Walk Computing are leading the way. For the systems analyst and financial analyst alike, Java is proving itself to be essential to staying on top of far-flung markets with a strong appetite for capital infusions on which to sustain their development models. Java has proved to be responsible for hastening the transition to an evolving paradigm of commerce, from local to truly global.