

# Portfolio of Financial Industry Projects

## Garban InterCapital (ICAP), Rehosting and Enhancing Legacy Systems

Garban InterCapital (ICAP) is the engineering and IT infrastructure arm of ICAP PLC, well known in the financial Industry for their bond, money, and derivative brokerage business. Garban ICAP has been developing and implementing systems for its brokering operations for over 25 years including screen-based price distribution systems and sophisticated pricing models. Dot4 has been a trusted and valued partner of Garban's for over six years, assisting this client in the development of real-time, on-line, brokerage systems.



Dot4 has completed several ports of legacy real-time applications from various generations of Concurrent Computer Corporation's proprietary OS/32 product line and Data General's Unix-based Aviiion product line. A significant aspect of the maintenance problem presented by these aging and obsolete systems, was the large amount of assembly code used to develop the real-time application software. Dot4 migrated the trading system from these aging and obsolete platforms to POSIX-compliant Solaris 8 UltraSparc systems from Sun Microsystems. Dot4 translated the assembly code to ANSI 'C' using sophisticated translation tools developed by Dot4 engineers. The new trading system is implemented in a combination of C/JAVA/FORTRAN.

Having successfully rehosted the trading system to Sun platforms, Dot4 was asked to enhance it by designing and implementing an automated Order Book system. This system would eliminate the need for brokers to manually track prices. Dot4's design included a set of applications and libraries that coexist with Garban's realtime trading system. The "back-end" of the Order Book system utilizes communication methods based on TCP sockets to communicate over TCP/IP ethernet networks to a high speed, optimized relational database application running on another Solaris system. The relational database stores off-market orders for restoration to the current market in the event that the current market becomes vacant. Dot4 developed the Order Book system using POSIX-compliant thread and process level interfaces and communication mechanisms, thereby increasing the platform-independence of the source code.



This project required extensive attention to the design and implementation of locks and locking strategies to prevent multiple simultaneous accesses to financial instruments. It further required strategies for data integrity across system and application failures; orders "lost" due to a failure, or orders processed at incorrect priorities, would result in very large financial losses.

This project required uncompromising project management from Dot4 to coordinate remote resources in our Massachusetts, New Jersey and New York locations, and successfully deliver this crucial software.

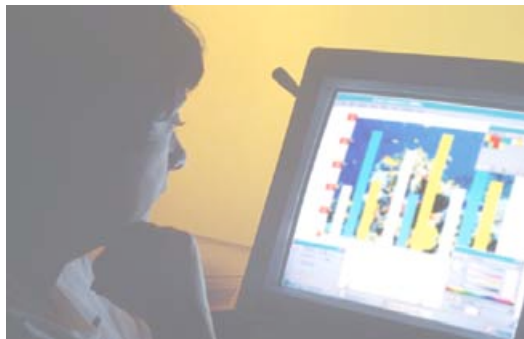
## Win Capital, Trend Alert

Access to real-time data is only half of the problem for brokers engaged in day-trading; the process of analyzing and identifying the stocks that are likely to make money is the other half. Dot4 is developing Stock Alert, a solution for both halves of the day-trader's problem.

The Stock Alert application consists of two independent yet linked components. The first component contains sophisticated, proprietary, algorithms developed by Win Capital and Dot4, to perform historical analysis and data trending on all available stocks to recognize the stocks that are currently within any of a set of predetermined trends. Stocks that are behaving within a trend are most likely to generate a profit, assuming the trader is instantly notified when those issues cross pre-determined price and/or volume thresholds.

Therein lies the role of the second component.

Having identified stocks that are in a trend, Stock Alert then monitors, filters, and processes real-time satellite feed. When a within a predefined software alert is desk. This relieves the watching charts (as is trending applications) time for other for the automated



“tick” data from a watched stock is traded tolerance band, a delivered to the trader's trader of the burden of the case with other and frees the trader's activities while waiting real-time alert.

Stock Alert uses an unmodified web browser (i.e., Internet Explorer or Netscape Navigator) to provide traders with alerts, list of stocks currently trending, type of trend, the difference from the pre-determined threshold, and even historical performance data in the form of graphs.

Dot4 designed and implemented Stock Alert as a fully outsourced project using its vast real-time experience and state-of-the art technologies to deliver a highly customizable solution for the Financial Industry.

Stock Alert will soon be available to the trading community through Win Capital and Dot4, Inc.

## Reuters

In Interbank Market trading, opportunities come and go in seconds. Each investment bank has its own strategy for isolating and exploiting opportunities. Reuters developed the D3000 Keystation system to assist and support their strategies.

The D3000 Keystation is the client site (front-end) terminal to the Reuters Dealing Transaction System (RDTS) Foreign Exchange global market. It is a large scale, highly componentized, Windows NT-based package. Dot4 engineers were members of the D3000 Keystation development team.

Specifically, Dot4 worked with the credit sub-system, which is an administrative component enabling a client bank to filter their view of the market based on a set of bilateral credit ratings. Dot4 designed and implemented the Credit Mediator component, which is at the core of the credit sub-system. It communicates with the matching server through the message routing sub-system and exposes a COM-based interface to the Graphical User Interface (GUI). The GUI interface utilizes XML to provide generic compatibility and facilitate the future implementation of browser-based clients.

Dot4 also performed a moderate level of application profiling to determine the cause of memory leaks and examine other performance characteristics of the D3000.

## Angles

Angles™ is a specialized financial application that enables risk managers to assess price risk and opportunities for stock, bond, foreign exchange and commodity markets in a customizable graphical environment.

Based on algorithms and correlations conceived by a Wall Street trading professional with over 15 years of risk management experience in various financial markets, Dot4 provided the complete software engineering expertise to develop and implement Angles on several different hardware platforms.

Angles helps the user to see the series and spreads over any given time period. The data is not bound by a rigid database prescribed by someone else; the user decides how to best view the information. Angles employs data from various sources including cash or futures price history of various instruments (stocks, bonds, foreign exchange, or commodities) including custom series collected or created by the user. In addition to price histories, Angles can format other economic topics such as inventory levels or governmental statistical series.