

Accretive helps the Milan Stock Exchange overcome capacity problems to sustain rapid growth.

Overview

Challenge

The Milan Stock Exchange introduced a comprehensive new market trading system. The initiative was very successful and led to an increased workload. Listed and quoted securities increased nearly tenfold, in a very short period of time. The system's construction had given rise to artificial trading halts, known as black periods.

Solution

Accretive was contracted to help solve the problem. During an initial 6 week project, the system was stabilized, capacity was improved and black periods were eliminated. One year later system stability was such that management felt it had the breathing space to embark on a more ambitious redesign in anticipation of changing business needs. Accretive returned to assist in the re-architecture and re-engineering project.

Results

Through use of the X-Act™ product, the Milan Stock Exchange was able to avert a significant business crisis and has subsequently been able to develop a system with comparable performance and availability to both the London and Paris Exchanges at a cost less than 10% of the competitors systems.



Initially the Milan Stock Exchange started with a relatively small number of securities. As it grew, it undertook an initiative to create and deploy a comprehensive new market trading system. Largely due to the success of this initiative, the exchange's number of listed and quoted securities increased rapidly from 40 to 80 and almost immediately some degradation of system performance started to occur. The number of listed and quoted securities quickly jumped to 200 and finally 700 in a very short period of time.

At these volume levels, system performance was compromised to the point that the exchange had problems properly trading Fiat, Italy's most active security. In addition, the systems construction had given rise to artificial trading halts known as "black periods." These performance issues were unacceptable to the business community. Another performance related issue was the cost of the infrastructure. The Milan Stock Exchange was using four times as much hardware to trade roughly 10% of the volume of similar European exchanges.

"The product came to our rescue at a difficult time. I am delighted with the results and I am very pleased to have been able to use the product to take our system forward with confidence into the future."

- Senior Milan Stock Exchange Executive

Management had to take immediate action in order to ensure the future of the Stock Exchange. Discussions started with Accretive and the Stock Exchange. As a result, the stock exchange hired Accretive to undertake investigative work and model the new market trading system and licensed the X-Act™ solution.

Objectives

The project started with specific success criteria expressed in business terms:

- Guarantee rapid response time for order processing, notification, inquiry and broadcast
- Increase order processing capability from 20,000/day to 350,000/day
- Guarantee capability to execute 200,000 trades
- Guarantee up to 70,000 for the most active stock
- Be capable of carrying out 3 trades per second in any single stock
- Provide ongoing performance and efficiency measures to anticipate and avoid any recurrence of the crisis
- Eliminate situations of unfairness arising from discrepancies in system behavior and performance
- Attain levels of performance in-line with internationally competitive standards

Approach

Accretive's approach for this type of project has two distinct phases:

- Phase 1, Construction of reference model and validation
- Phase 2, Results analysis and implementation

Phase 1

Accretive does not view IT systems in isolation (although we can). Ultimately, all information technology projects are designed to serve the specific and changing needs of the business. Accretive's approach is to model systems in layers starting at the top with the business process, then moving through applications, networks, hardware and databases and mathematically describe the complex relationships through. Using this methodology, a reference model was created and its accuracy was benchmarked against actual system performance.

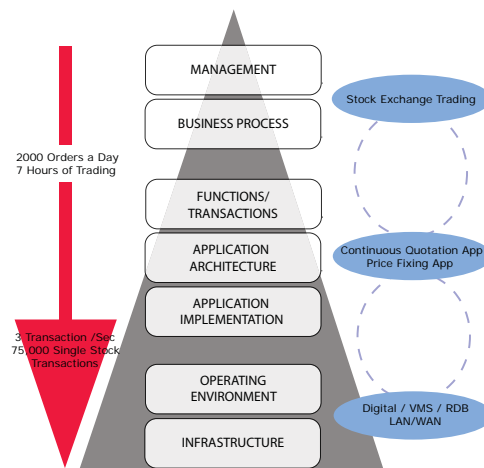


Figure 1.0 Accretive's top-down approach across 3 domains; business, application, infrastructure

Phase 2

Accretive was then able to use the reference model to identify throughput constraints and experiment with different configurations (in a virtual world) to find the most efficient and cost effective fixes. After this assessment, it was agreed with the client that due to their complex business environment, the least intrusive changes necessary to stabilize the system should be performed first and then more substantive changes should be made at a later date.

Based on this plan Accretive:

- Tuned and optimized the production systems.
- Customized and optimized the relational databases
- Eliminated artificial trading halts

From this minimally intrusive work, the following results were achieved:

- The Number of securities that the system could handle increased by 200%
 - Transaction capacity increased by 350%
 - Response time improved by 250%
 - System Resource Utilization improved by 260%
 - A 30% savings on the annual hardware procurement expenses was realized.
- Accretive returned six months later to perform the more intrusive and substantive aspects of its changes based on the models findings. Here is what was done:

- The reference model was updated to reflect the changes made previously.
- Production was optimized based on current business drivers and findings in the reworked reference model
- Certain code modules were re-engineered and re-developed.
- Service modules were re-organized
- Securities were distributed across 2 processing periods

These new changes produced the following results:

- The number of securities that the system could handle increased by 1250%
- Transaction capacity increased by 700%
- Response time improved by 400%

The system was now performing as it was originally intended and the exchange was very satisfied with the work Accretive had done.

New Horizons

Now that the immediate threat was relieved, management was able to look forward and anticipate new business challenges and growth opportunities. One year later Accretive was asked to return to help the exchange in its move to a completely new architecture that designed to provide new business opportunities for the exchange and enable it to sustain growth for years to come.

Accretive helped with this project by:

- Creating a new model that separated real time transactions from background activities.

- Evaluated implementation alternatives and recommended the best course of action.
- Put processes in place to use modeling throughout evolving development lifecycle to ensure that target performance was achieved

Results

- The new architecture was chosen and the target system was modeled
- There was no inconsistency, as before, between planned results and actual results
- The new system has 17 times the transaction capacity of the originally implemented system
- Response time has seen a 10 fold improvement
- System resource utilization was reduced by 50% over the previous configuration

Business Commentary

Through use of the X-Act™ and Cascade™ solutions and the services of Accretive, the Milan Stock Exchange was able to avert a significant business crisis and has subsequently been able to develop a system with comparable performance and availability to both the London and Paris Stock Exchanges at a cost less than 10% of their systems.



The Americas

330 Madison Avenue
6th Floor
New York, NY 10017
United States of America
1 (212) 653-8895
www.acrttek.com

Europe, Middle East and Africa

330 Madison Avenue
6th Floor
New York, NY 10017
United States of America
1 (212) 653-8895
www.acrttek.com