JP Morgan Derives Clear Benefits from Cincom Smalltalk™

JP Morgan

JP Morgan Chase is a leading financial services firm serving capital markets throughout the world. With assets of $1.1 trillion and a component of the Dow Jones Industrial Average, capabilities include investment banking, research, private equities, investment management, private banking and treasury and security services.

As one of the world's leading investment banks, it has extensive relationships with corporations, financial institutions, governments and institutional investors worldwide. The firm provides a full range of investment-banking and commercial-banking products and services, including advising on corporate strategy and structure, raising capital in equity and debt markets, sophisticated risk management and market-making in cash securities and derivative instruments in all major capital markets. It also commits the firm's own capital to proprietary investing and trading activities.

One of the key elements of JP Morgan's success is based on one of its differentiators, the time-to-market of new products. Supporting this is a commitment to use information technology to provide this competitive advantage.

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Overview Goal:
- Leverage JP Morgan's success, which is based on the time-to-market of new products.
- Scale up products in the market to gain significant market share.

Challenge:
Provide a development environment that:
- Accommodates the highly complex nature of JP Morgan's derivative products.
- Provides unparalleled productivity to stay ahead of the competition.
- Has the scalability to be deployed to support extremely high trading volumes.

Solution: Cincom Smalltalk

Results:
- The Smalltalk-developed Kapital system has enabled JP Morgan to be the market leader.
- JP Morgan estimates that Smalltalk is three times more productive than other languages, which allows them to consistently beat the competition.
- Revenues from the business that Kapital supports contribute an extraordinary percentage of JP Morgan's total revenues.

The Project: The Kapital System

JP Morgan has developed Kapital, the world's most advanced financial risk management and pricing system that supports Interest Rate Hybrids and Credit Hybrids trades. It empowers hybrid derivative businesses to trade large volumes of highly complex financial instruments with ease and simplicity. The Kapital System is built on the Cincom Smalltalk development platform.

There are two main differentiators that have set JP Morgan and the Kapital system well above the competition. The two concepts that sound very simple but are vital to JP Morgan's success are the time-to-market of new products and the scalability of the offering.

Time-to-market: Identifying new market opportunities is essential to investment banks. However, profitability, success and giving customers the best return on investment, come from being able to execute on those new market opportunities before the competition. The seamless integration between the financial application framework and the technical infrastructure that Smalltalk provides enables both business and IT staff to prototype and develop new ideas that can be directly promoted into product sets. Individuals creating new products for the business do not have to fully understand how the underlying infrastructure actually works. Allowing financial developers to concentrate on the area in which they are experts finance without having to learn about the intricacies of database management, distribution algorithms, memory management, etc., enables an extremely quick turnaround of new financial products.

With Smalltalk as the engine of Kapital, and the unique design of the system, JP Morgan is able to go from a new product idea to market in what would be considered a very short space of time. Comparable offerings from competitors are typically seen at least several months later.

Scalability: Being able to create new, complex deals quickly is not the only factor required to enable an organization to have the "edge"; many financial institutions create new complex deals. However, as organizations try to increase market share, the technology foundations on which these new products have been developed tend not to scale linearly. This inability to detect and resolve bottlenecks in both the technology and business processes generally prohibits the management of large amounts of highly complex, computing-intensive financial data. However, with the rich financial and infrastructural development tools that Kapital offers, developers are able to identify potential bottlenecks and address them quickly. Many banks use spreadsheets to build derivatives trading models. While using such an approach does not prohibit a company from developing these highly complex trades, it does limit the ability to do a large number of them.

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Many times JP Morgan has seen its competition not wanting to give a price on certain complex deals. One possible conclusion for this is that using spreadsheets to model highly complex trades can lead to such systems being "maxed out" with very few of them, severely limiting the ability to gain more market share. The Kapital system does not run into scalability issues even when the volumes are high. It is this innate scaling provided by Kapital that places JP Morgan beyond most of its competitors.

The Business and Technical Goals

From a business perspective, Kapital's five primary goals are:

- To be the prime record for all credit and interest rate hybrid derivative trades at JP Morgan.

- To calculate the fair value of all of its deals on a daily basis.

- To inform the front office on how much money it will gain or lose in the next business day depending upon changes in the market conditions.

- To support the mid office in managing large numbers of complex hybrid derivative deals.

- To support fast time-to-market for new product development.

From an IT perspective, Kapital is:

- A framework for constructing new financial applications.

- A complete development environment including source code management and debugging facilities.

- A transparent persistence mechanism that enables the storage of any type of financial object.

- A distribution infrastructure that enables the distribution of any type of financial task.

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The benefits: In terms of return of investment, specific numbers are confidential, but it is understood that the Kapital development team currently consists of about less than 1 percent of the overall IT staff at JP Morgan. However, the businesses that Kapital supports contribute an extraordinary percentage of JP Morgan's total revenues. It is a well-known fact that JP Morgan simply dominates the derivatives market.

Why Cincom Smalltalk? Productivity, scalability, portability and flexibility.

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JP Morgan uses the languages and techniques to fit the problem at hand. For the Kapital system, it was clear that "fashion" programming such as C++, Java and C# would not meet all of their requirements. Plus, they were conscious that fashions are seasonal. The derivatives business is constantly changing, and a flexible and complete development environment was needed that could handle the complex requirements while being particularly well suited to a high rate of change.

An executive at JP Morgan, comments, "A key factor that has justified using Cincom Smalltalk, above and beyond the technical capabilities that it offers, is the productivity that it has delivered. The key is that our development resources do not necessarily need to be Smalltalk 'experts.' We have estimated that if we had built Kapital in another language, such as Java, we would require at least three times the amount of resources to develop and maintain the application. Because of the rich toolset within Kapital, we believe we have a truly awesome financial RAD environment. Without Kapital, we would not be market leaders. With such a high productivity factor that Smalltalk gives us, reaction times to market changes have enabled us to beat most of our competitors.

"Finally, portability and stability are big issues for us. Our base system now runs on three different operating systems: Solaris, Windows NT and Linux. The Smalltalk portion of our system requires very little modification across differing operating systems. The power of this portability came to bear when we changed our primary infrastructure from SMP enterprise servers to cheap blade technology. The transition has taken only six months to do; the bulk of the time was in retesting external 'C' calls, which all had to be recompiled. This would have been impossible to do in such a short time span in another language," concludes the executive.