Overview

Country or Region: United States

Industry: Financial services

Customer Profile

CME Group, based in Chicago, Illinois, offers futures and options based on interest rates, equity indexes, foreign exchange, commodities, and alternative investment products. It has 2,000 employees.

Business Situation

As CME Group grew, so did the challenge to speed audit processes and enable greater exchange of information among auditors and managers.

Solution

CME Group created a smart client Office Business Application using Microsoft® Visual Studio® Team System and Microsoft .NET Framework version 3.5. The solution lets auditors work in the familiar interface of the 2007 Microsoft Office system, to automate tasks like retrieving supporting documentation, and to synchronize data more quickly and easily between the field and headquarters. The solution was developed 20 percent faster than it would have taken using earlier tools, speeds audit reviews up to 20 percent, and boosts accuracy and collaboration.

Benefits

- Development time cut by 20 percent
- Auditor processes streamlined
- Audit reviews completed up to 20 percent faster

“Using the tools in Visual Studio Team System, we cut 20 percent off the time to develop the Castle audit solution … and included capabilities that we couldn’t have added any other way.”

Roman Benko, Associate Director, Systems Development, CME Group

When CME and The Chicago Board of Trade merged to form CME Group, one of the world’s largest and most diverse exchanges, the company needed a faster, more streamlined way to conduct audits of companies clearing transactions through it, and to share that information among auditors and managers. Its solution: Create a smart client Office Business Application called Castle, based on Microsoft® Visual Studio® Team System 2008 Team Suite and Microsoft .NET Framework version 3.5. The solution lets auditors work in the familiar interface of the 2007 Microsoft Office system, to automate tasks like retrieving supporting documentation, and to synchronize data more quickly and easily between the field and headquarters. The solution was developed 20 percent faster than it would have taken using earlier tools, speeds audit reviews up to 20 percent, and boosts accuracy and collaboration.
Situation
In a world of increasing volatility, customers around the globe rely on CME Group as their premier source for managing risk. Formed by the 2007 merger of Chicago Mercantile Exchange (CME) and The Chicago Board of Trade (CBOT), CME Group offers futures and options based on interest rates, equity indexes, foreign exchange, commodities, and alternative investment products such as weather and real estate. In 2006, the company’s volume exceeded 2.2 billion contracts worth more than U.S.$1,000 trillion.

But with success comes challenges—particularly the challenges inherent in ensuring speed and reliability amid increasing volumes of business. CME was facing those challenges even before the 2007 merger. The exchange guaranteed the creditworthiness of every transaction that it cleared—which required it to audit the companies that were party to those transactions.

While CME had a custom software application to facilitate the audit process, it was a simple, aging application that did little more than organize the files—such as Microsoft® Office Word documents and Office Excel® spreadsheets—that auditors collected and created during their work. Paper copies were still used as final documentation. When follow-up audits were conducted, the auditors had to carry bulky binders containing the previous, paper-based audits into the field.

In addition, there was no automated mechanism to synchronize electronic documentation between the central database and the auditor’s portable computer, or to share documentation among the several auditors who might need it at the same time. They had to share printed versions of files. When it came time to put the completed audit through a review, the reliance on printed copies contributed to delays between the field and headquarters that could add up to a week to the process.

In 2006, the impending merger brought the auditing issues to a turning point. The CBOT was using an off-the-shelf software package to handle the audit process. A single solution would be needed for the combined organization—but management in the CME Audit Department were concerned that the off-the-shelf package would need to be heavily customized, that users would need expensive training on the software, and that continuing licensing costs would be high.

What CME Group wanted was a fast, low-cost development project that would result in a software application that was intuitive to use and that would facilitate the rapid exchange of data among auditors and managers.

Solution
That rapidly developed, low-cost, intuitive, and collaborative solution is exactly what CME Group has in Castle, its custom solution created internally using the Microsoft® Visual Studio® Team System 2008 Team Suite development system and Microsoft®.NET Framework version 3.5. Castle is an Office Business Application that enables easy, intuitive use by presenting auditors with the same Microsoft Office Fluent™ user interface style—including the Ribbon and Mini Toolbar—and file types with which they’re already familiar.

Castle is also a Windows® Forms–based smart client application that works in connected mode to upload and download files, while working in disconnected mode on the auditor’s portable computer when the auditor is at the customer site.

“For us to do what LINQ [Language Integrated Query] does for us would have taken up to a day per table—that alone saved us a month.”

Frank Fieseler, Associate Director, Systems Development, CME Group
Developers used the ClickOnce application deployment technology in Visual Studio Team System to automate the deployment of Castle to auditors’ computers and to enable updates to be pushed to them automatically—an especially important ability as CME Group tested Castle and issued frequent updates to address the inevitable issues with early versions.

Castle stores auditing information in two places:
- On the auditors’ computers, in a database based on SQL Server 2005 Express Edition, a free, easy-to-use, lightweight, and embeddable version of SQL Server 2005

SQL Server Replication Services enables fast synchronization between the databases whenever the auditor is connected to the network, ensuring both that the auditor is using the most current data and that other auditors and managers can share and use the auditor’s information. With complete auditing information available on their portable computers, auditors no longer need to carry bulky binders to customer sites.

The developers used Microsoft Visual Studio Tools for the Microsoft Office system (version 3.0)—which is included in Visual Studio Team System 2008 Team Suite—to create the Office Fluent-like user interface and to add custom properties and controls to files, which gives Castle much of its power. For example, developers easily took advantage of Visual Tools for Microsoft Office and the native XML support in Office Word 2007 to add XML tags that identify the auditor and company for each audit document, enabling documents to be more easily stored, searched, and retrieved.

Auditors use custom controls implemented with Visual Tools for Microsoft Office to add links to supporting documentation to any part of a file. For example, an auditor may add a “cross-reference” based on a custom control at the place in a document where a bank account is referenced. Clicking the cross-reference opens a related document that shows how the auditor tested or confirmed the bank account information.

Additionally auditors use custom task panes to document their tests of sample documents in the related Word or Excel file. When audit files are moved between the central database and the auditor’s computer, all linked documents and testing documentation move with them automatically. To handle the frequent movement of information between the SQL Server Express Edition database and the Castle application, the developers used the new Language Integrated Query (LINQ) support in .NET Framework 3.5.

CME Group developers needed a way to manage the development process among themselves as well as to work with beta testers to refine prerelease versions of Castle. They used Visual Studio 2005 Team Foundation Server to create a portal based on Windows SharePoint® Services that hosted all source code, work items, design documents, and updates. The portal also supported the developers’ weekly meetings with beta users, enabling developers to organize and track user feedback.

Benefits
CME Group met its goals to quickly and cost-effectively create a solution that would simplify and speed the audit process, while...
boosting accuracy and collaboration. CME Group met these goals by taking advantage of capabilities enabled by Visual Studio Team System 2008 Team Suite.

Development Time Cut by 20 Percent

“By creating an Office Business Application and using the tools in Visual Studio Team System, we cut 20 percent off the time to develop the Castle audit solution—compared with what it would have taken with Visual Studio 2005—and included capabilities that we couldn’t have added any other way,” says Roman Benko, Associate Director, Systems Development, CME Group. “For example, without Visual Studio 2008 [tools], we would have had to program the Ribbon feature ourselves. With Visual Studio 2008, we just dragged and dropped the controls and wrote the events behind the m.”

Similarly, Frank Fieseler, Associate Director, Systems Development, CME Group, points to the timesaving benefits of the Language Integrated Query technology. “We created something similar to LINQ for an earlier application, but LINQ was better, faster, and easier to work with,” says Fieseler. “LINQ has more intelligence and object orientation than working with data sets, which means we didn’t write any of the underlying code because we could rely on the LINQ code generator to create the SQL statements for us. It was a very visual way to work, a more productive way for us to work.

“Our application has 50 tables in SQL Server. For us to do what LINQ does for us would have taken up to a day per table—that alone saved us a month. Not only did LINQ automate the code development but, because we knew that the code was accurate, we also didn’t have to spend as much time testing it as we would have testing code created by hand.”

For Benko and Fieseler, the productivity enhancements in Visual Studio Team System cut total development time from eight months to six, enabling them to meet the CME Group goal to get Castle into production as quickly as possible.

Tedious Processes Eliminated, Boosting Accuracy

The Castle developers weren’t the only ones to benefit from the use of Visual Studio Team System; the auditors and their managers benefit as well. Feedback from testers confirms the value of the user interface and other enhancements over the preceding application.

“Testers tell us that the audit process should be both faster and more accurate thanks to this tool,” says Benko. “Tedious tasks—such as uploading and downloading all the information that they need, or searching for supporting data—have been eliminated thanks to the custom controls and other technologies that we were able to include by using Visual Studio Team System. Documentation is easier to work with because auditors use the same interface and features that they know from 2007 Microsoft Office system software. That means that auditors can get to their work more quickly and they can focus on that work more thoroughly, minimizing the potential for error.”

CME Group also uses the custom controls to create an audit trail—that is, to identify who has entered or changed information—further boosting accuracy and security by providing documentation against which to check for discrepancies or errors.

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Roman Benko, Associate Director, Systems Development, CME Group
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www.cmegroup.com

Audits Reviews Completed Up to 20 Percent Faster
Because synchronization between the auditor’s database and the central repository is faster and easier than before, auditors synchronize their data more frequently. That in turn makes up-to-date information more readily available to other auditors or managers who may need it.

The faster synchronization also cuts the time that it takes for managers to review and approve an audit, because the updated audit document shows up in the manager’s Castle home screen for review as soon as it’s uploaded to the central repository; formerly, managers relied on printed version of files that had to be returned from the field. The review of the audits now can be completed up to 20 percent faster.

2008 Launch Wave
Windows Server 2008, SQL Server 2008, and Visual Studio 2008 provide a secure and trusted platform for creating and running your most demanding applications. Combined, the products provide a solid foundation for next-generation web applications, broad support for virtualization technology, and access to relevant information. Advanced security technology, developer support for the latest platforms, improved management and web tools, flexible virtualization solutions, and access to relevant information from throughout your organization enable a broad array of technology solutions.

Software and Services
- Microsoft Visual Studio
  - Microsoft Visual Studio Team System 2008 Team Suite
  - Microsoft Visual Studio 2005 Team Foundation Server
- Microsoft Server Product Portfolio
  - Windows Server 2003 Enterprise Edition
  - Microsoft SQL Server 2005 Enterprise Edition
  - Microsoft SQL Server 2005 Express Edition
- Microsoft Office
  - Microsoft Office Excel 2007
  - Microsoft Office Word 2007

  Solutions
  - Office Business Applications

  Technologies
  - ClickOnce application deployment technology
  - Language Integrated Query
  - Microsoft .NET Framework 3.5
  - Microsoft SQL Server 2005 Replication Services
  - Microsoft Visual Studio Tools for the Microsoft Office system
  - Windows Forms
  - Windows SharePoint Services

Hardware
- HP ProLiant DL385 server computer
- Fujitsu LifeBook T4010 computers