



THE COMPUTERWORLD HONORS PROGRAM

CASE STUDY

LOCATION:
*Washington, DC,
United States*

YEAR:
2006

STATUS:
Laureate

CATEGORY:
*Government and
Non-Profit Organizations*

NOMINATING COMPANY:
Software AG

ORGANIZATION:

The Export-Import Bank of the United States

PROJECT NAME:

Financial System Update

Summary

The Export-Import Bank of the United States (Ex-Im Bank), the official export credit agency of the United States, assists in financing the export of U.S. goods and services to international markets. Ex-Im Bank embarked on an effort to upgrade its insurance, loan-processing and other financial related systems. The goal was to extend the bank's loan processing and other financial systems to comply with lease receivables guidelines mandated by the Financial Accounting Standards Board (FASB) and to present financial portfolio data in foreign currencies, not just U.S. dollars. The combination of business savvy dedicated Government and Software AG analysts and programmers and the implementation of configuration management processes and technology tools moved the organization beyond the haphazard, "we can always fix it later" mentality that plagues so many development efforts and achieved truly noteworthy results for Ex-Im Bank

Introductory Overview

Adding discipline to legacy application development

The Export-Import Bank of the United States (Ex-Im Bank) is the official export credit agency of the United States. Ex-Im Bank's financial products help U.S. companies to compete in today's challenging global marketplace. Ex-Im Bank assumes the credit and country risks that the private sector is unable or unwilling to accept. The Bank also helps U.S. exporters to remain competitive by providing financing to counter the export financing provided by foreign governments on behalf of their competitors. More than 80 percent of Ex-Im Bank's transactions in recent years have been made available for the direct benefit of U.S. small businesses. In FY 2005, Ex-Im Bank authorized \$13.9 billion in loans, guarantees and export credit insurance which support U.S. exports to markets worldwide.

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The lengths and processes that the organization went through to complete the task and modernize the systems not only implemented financial mission critical requirements but also ensured the future success of IT development efforts and operations of the financial systems. Today, Ex-Im Bank has a more precise picture of its financial position and can easily validate the accuracy of the financial data in its reports, pulling data from a wide array of applications and databases, and often involve complex programming interactions.

Lease Receivables - Financial Accounting Standards Board (FASB) in FIN 46 provided guidelines for accrual accounting by institutions that make loans to organizations that buy and then lease the equipment. This implementation required extensive analytical and financial analysis of the requirement by the CFO staff, extensive changes to 85 Ex-Im Mainframe modules, design and development of a large number of data entry screens and a phased deployment to support audits and closing of financial records. The work also included the development of operational enhancements to save the Bank from entering 16,000 records.

Foreign Currency - In order to better reflect the Bank's financial position, the CFO's office will carry guarantees in both US dollars and Foreign Currency. This work required extensive requirement definition and analysis by the CFO staff and changes to almost every module used by the financial systems at the Bank. It also required parallel changes to six large partially integrated application systems (Major development and quality assurance efforts were needed to incorporate the tracking of foreign currency transactions in the Application Processing System, the Loan and Guarantee Accounting system, the Electronic Compliance System and the Integrated Information Reporting system.)

This implementation required establishing partnership with the CFO, CIO, and Software AG development staff, discipline and processes, extensive auditing and testing, use of appropriate technology, and focusing on results.

The dedication to this project moved the organization beyond the haphazard, "we can always fix it later" mentality that plagues so many development efforts and achieved truly noteworthy results for Ex-Im Bank.

Benefits

The Ex-IM team has successfully updated Ex-Im's financial applications and reports, and enabled the bank's analysts to gauge risks more precisely.

Benefits:

Compliance with the Financial Accounting Standards Board (FASB) guidelines for accrual accounting

Strong Partnership with customers, management, and SAG contractor

Promotion of practices designed to add structure, discipline and predictability to IT projects by developing and scoping a project plan, mapping out how team members interact, documenting requirements and decisions, defining which members are responsible for what tasks, and following System Life Cycle Development and Configuration Management processes.

The project established new processes that have fundamentally changed the way the IT group works with the business users it develops applications for, and with outside consultants. The



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project's successful completion provided Ex-Im's IT group with a disciplined, reliable, repeatable process—a clear roadmap to guide all future application development efforts.

The implementation of a disciplined approach along with modern software engineering and configuration management principles provide a roadmap for those responsible for maintaining and enhancing legacy systems, deployed to old and outdated platforms, to use and to benefit from technology tools and modern techniques to ensure quality and repeatable processes.

The use of the technology portfolio (a set of integrated tools) in different environments to best suit the objectives, scope, and constraints of different projects (not limited to programming projects). The same tools and processes can be used to accommodate different projects such as audits, IT infrastructure deployments, and records management initiatives.

The Importance of Technology

Through the combination of a set of integrated software tools and modern software engineering processes and configuration management principles this project provided the foundation for a disciplined and repeatable approach to future IT projects at the Bank.

Ex-Im Bank uses Software AG's Adabas database for high-performance transaction processing, as well as Software AG's Natural and EntireX products for application development and integration with Lotus Notes applications. Over the years a large body of code was developed without any effective source code management resulting in extensive problems with multiple versions of programs as well as programs deployed to the production environment but no longer used.

Ex-Im Bank integrated Software AG Predict Application Control (PAC) and IBM's Rational Clear Quest to provide effective source code control linked to defect and enhancement management. The Bank also introduced Software AG's Natural Engineer into the mix to help analysts identify relationships between modules and identify modules that are no longer used.

System Development Life Cycle (SDLC) methodology provides Ex-Im CIO management guidelines and processes to effectively manage change. The legacy world has seriously lagged beyond modern development technology leaving it open to classic IT problems like costs overruns, scope creep, similar functions being developed over and over, and limited tools for measuring the development process.

One of the byproducts of this large initiative was the selection of the most effective tools to support this effort in a small agency environment. The Bank already had IBM Rational tools (Rational Rose and ClearQuest) to support their Unix, Linux, and Windows development effort. But these tools do not directly support legacy software (Mainframe and ADABAS). The Bank researched and implemented an interface between Clear Quest and Software AG's PAC product. By programming user exits in PAC, modules checked into PAC are automatically updated with change request values (such as priority and release information) kept in Clear Quest. Program migration events in PAC are now tracked directly to Clear Quest managed change request.

The Bank uses IBM Rational's ClearQuest to track defects and change requests on all of its systems. Through the integration of PAC and ClearQuest, the Bank's has a single location for tracking all IT development. All legacy program and job control language changes are tracked down to the module and line of code level.



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Auditors can easily trace all Change Request (CR's) from the users' inception, through the standard SDLC steps:

- Feasibility for large efforts and enhancements,
- Functional requirements and user acceptance,
- Impact Analysis and management approval,
- Design requirements and user acceptance,
- Detail design
- Test Plan development
- Development and Unit test (checking modules in/out of PAC)
- QA functions
- User Acceptance Test
- Migration to Production on a Controlled Releases

Originality

The development effort for this project was complex and extensive. Three mainframe legacy systems were impacted as well as a Lotus Notes application that interacts with a mainframe application. Hundreds of modules located throughout three different systems had to be modified and tested. The Bank had no choice but to implement the new software tools, configuration management and software engineering techniques to ensure that such a large undertaking could be accomplished. Despite all of these challenges the Bank was able to make the necessary software modification, test them and implement them under a very tight deadline. At the end of this project not only had the Bank successfully implemented changes to support FIN 46 in the financial system but it was able to inventory the software that constituted the legacy system portfolio, put it under effective source code control, institute disciplined Quality Assurance and release management techniques and provide for effective defect and enhancement management and reporting.

This project represents the most effective application of configuration management and software engineering tools and techniques retrofitted to an undisciplined environment lacking in even the most rudimentary of management controls. The legacy world has seriously lagged behind modern development technology leaving it open to classic IT problems such as costs overruns, quality assurance issues, scope creep, similar functions being developed over and over, and limited tools for measuring the development process.

Success

The project exceeded its goals. The system changes and upgrade are operational and were used for closing the financial books in FY2005. All Bank financial and analyst staff and auditors (over 250 people) benefit from the changes to the financial system. In addition, a large number of external financial auditors and congressional staff are using the reports provided by the system.

Ex-Im Bank has achieved compliance with FASB regulations, which stipulate accounting guide-



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lines for institutions that make loans to organizations that buy, and then lease, equipment.

Ex-Im Bank has a more precise picture of its financial position. Prior to the update, reports used by the bank's analysts to assess risk presented financial data only in U.S. dollars. Now that data is also provided in the currency of the country to which the loan was extended.

The goal was not only to respond quickly to demands made by top management, federal regulators, and outside auditors, but also to establish a rigorous, repeatable process that would ensure the success of this, and as well as future, development projects.

The project is in compliance with the laws. The bank received a "clean" financial audit from an independent auditor: "In our opinion, such financial statements fairly, in all material respects, the financial position of Ex-Im Bank at September 30, 2005 and 2004, and the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America"

Along with a more disciplined approach comes additional work for developers and their customers. Developers must follow a process that includes peer reviews, design walkthroughs, software checking and checkout, and similar such tasks. Users must review and sign off on requirements, prioritize change requests, and rigorously test changes during user acceptance testing. Despite the additional burdens imposed on both the IT staff and the customer, all stakeholders have enthusiastically embraced the innovation. This is due to the fact that they've seen immediate and tangible benefits. The users get a managed list of changes they've requested along with target releases for getting the changes. Changes implemented in production are almost always "defect" free and provide better quality services.

Difficulty

With just six months to complete the foreign currency and lease receivables projects there were two major obstacles; 1) reassuring the customer that the new approach would ensure that the deadline was met and 2) managing all of the change that had to occur over such a short period of time.

Ex-Im Bank adopted a disciplined, SDLC based approach to developing and updating its core applications, resulting in on-time delivery and greater accuracy. The process improvement initiative provided a roadmap for future projects, fundamentally changing the way the bank's IT professionals interact with the bank's financial analysts, for whom they develop applications.

Initially, the idea of adding processes and technology tools at the inception of a large and time sensitive project was looked at as high risk. Although tangible results don't appear to be progressing as fast as with earlier projects, adding rigor to the process results in a better product, and that ultimately saves time.

Ex-Im Bank assembled a "dream team," which included Ex-Im's IT staff, financial analysts who work for the bank's CFO, as well as Software AG's experts. To foster communication and build trust among the members, the dream team met every day. They worked together, taking ownership, reporting back to one another and putting in long hours.

The dream team's first order of business was to bid goodbye to the old way of working, and usher a new set of principles that guide how the project should proceed. To get team members to accept the new principles and tools, training was provided. Ex-IM Bank instilled the notion



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that success results from adhering to rule; documentation; risks and measurable milestones. The programmers quickly grasped the scope of this effort, and saw the new, more rigorous approach as an opportunity to get things right—to deliver in a timely fashion the application capabilities financial analysts needed to do their jobs.

Ex-Im's CIO and CFO office played a key role in enforcing that mindset. Everyone had input and accepted the outcome. It's worth the time to get buy in and commitment. The Bank forged a true partnership among management, IT, and outside consultants.

The project's successful completion has given the bank's analysts, executives, and auditors a more precise picture of the financial risks associated with loans. And it provided Ex-Im's IT group with a reliable, repeatable process—a clear roadmap to guide all future application development efforts. That's the proper way to do things.