

AXA Rosenberg Uses Eiffel ENViSioN! to Deploy Its Powerful In-house System



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AXA Rosenberg Investment Management, LLC, a global, institutional equity investment manager, sought a way to extend its Knowledge Repository, a large system of powerful business objects designed to integrate data from more than 50 information vendors for use in valuing companies around the world, to their internal non-Eiffel language developers. By using Eiffel ENViSioN!, a Microsoft Visual Studio .NET plug-in, and the .NET Framework, AXA Rosenberg is able to extend the Knowledge Repository across the company and make it programming language agnostic.

Situation

AXA Rosenberg Investment Management, LLC was founded in 1985 to manage broadly diversified equity portfolios. As a global, institutional, equity investment manager, AXA Rosenberg's goal is to outperform the market while managing investor risk. To accomplish this, the company's proprietary investment models, developed by the company's founder, Dr. Barr Rosenberg, evaluate the health and value of thousands of companies. These insightful models make it possible for AXA Rosenberg to add value to client portfolios.

Fast Facts	
Number of original lines of code	2,000,000
Number of Eiffel Knowledge Repository business components	5000
Number of lines of code to deploy to the .NET Framework	100

In today's market, investment companies face an overwhelming flood of information from a myriad of sources. A growing challenge for AXA Rosenberg has been to capture, analyze and

distribute this information using the company's investment management software. Most of the company's complex modeling software had been built in-house by AXA Rosenberg's Barr Rosenberg Research Center, resulting in two million lines of code in the FORTRAN and C languages running on a Virtual Memory System (VMS) operating system. The software covered the entire investment process, including underlying models for buy-and-sell recommendations, research, trading systems, portfolio accounting, and back office reconciliation. However, other development groups were unable to use the complex knowledge contained in the legacy code because they were programming in different languages, and new applications required extensive, time-consuming re-writes of the code. In

Solution Overview

Customer Profile

AXA Rosenberg Investment Management, LLC is a recognized global leader in the systematic analysis and management of equity portfolios with headquarters in Orinda, California.

Business Situation

AXA Rosenberg wanted to extend their Knowledge Repository, a system of business object models, to non-Eiffel language developers.

Solution

With the Eiffel ENViSioN!™ plug-in to Microsoft® Visual Studio® .NET and the .NET Framework, non-Eiffel language developers across the company can reuse flexible, robust Eiffel business components to modify or create Windows-based applications.

Benefits

- Non-Eiffel language developers across the company can re-use flexible, robust Eiffel business components to modify or create Windows-based applications.
- Developer productivity increase of by up to 500%, reducing time to benefit.
- The Microsoft .NET Framework helps link disparate data sources and improves employee accessibility.

Microsoft Software

Microsoft® Windows® 2000 Server
 Microsoft SQL Server™ 2000
 Microsoft Visual Studio® .NET Enterprise Edition
 Microsoft Office 2000 / XP
 Microsoft Internet Explorer 5.5

Partners



addition, data was stored in multiple sources on both VMS file systems and Oracle RDB databases.

In order to address this problem, in 1997, the Research Center used the Eiffel language to build a Knowledge Repository, a powerful set of business components that perform sophisticated data processing and that run on Windows NT® 4.0 operating system. During a three-and-one-half year period, the Research Center migrated both processing and data to the new Windows-based platform. But while Windows NT offered AXA Rosenberg a more mainstream solution for their business overall, the Research Center group found it difficult to share the Eiffel-based Knowledge Repository with other developer groups in the company unless they programmed in the Eiffel language.

Solution

The advent of the Microsoft® .NET Framework provided the Research Center with the opportunity to share the Knowledge Repository more broadly across the company. David Stevens, Director of Data Systems & Validity, says, “The Windows platform with the .NET Framework offered unlimited opportunities to share company knowledge from multiple sources with a growing user base as well as to deploy easily across the organization. With the .NET Framework and the Visual Studio® .NET integrated development environment’s support for over 20 programming languages, we have been able to extend the value of the Eiffel Knowledge Repository components to a wider user base for building Windows-based applications.”

Eiffel ENViSioN!™, a plug-in to Visual Studio .NET, provided the Research Center group with the ability to combine Eiffel language features with the interoperability offered by the .NET Framework. Eiffel ENViSioN! fully integrates with Visual Studio .NET, interoperating and sharing code with any other .NET Framework-supported programming. Eiffel ENViSioN! makes it possible for non-Eiffel developers—without acquiring new skills—to use the Eiffel language features of genericity (which allows a class to be written so that it can be reused without changing any code in the class itself), multiple inheritance and Design By Contract (which defines the underlying “how” of a process without affecting other uses of it).

Dr. Mark Howard, Director of Software Engineering for the Research Center says, “The combination of Eiffel, with its emphasis on robust, high-quality software and the interoperability mechanisms of the .NET Framework, may be the perfect marriage for developers who need to create high-quality .NET Framework-based components and libraries, or to increase the quality of existing ones.”

Benefits

Using the Eiffel ENViSioN! plug-in for Visual Studio .NET to program to the .NET Framework, AXA Rosenberg succeeded in its strategic objective of creating a company-wide knowledge base that is easy to access and modify, optimizes software reliability and data integrity, and deploys easily across the enterprise.

Flexible Language-sharing Capabilities Create a Unified, Integrated Development Environment

For AXA Rosenberg, Eiffel’s powerful language has been ideal for creating the complex business components needed for its in-house applications. “Continuing to use Eiffel to create

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Dr. Mark Howard
Director of Software Engineering
Barr Rosenberg Research Center,
LLC

our Knowledge Repository has been philosophically important for us,” says David Stevens. “Because we have been able to create flexible, clear, concise, robust, and reusable components, the Eiffel language gives us the flexibility to extend functionality as our business evolves.”

Mark Howard says, “The .NET Framework is the ideal vehicle for Eiffel, for both producing components and integrating components from other languages. With the .NET Framework, you can choose the best language and tools for each component, and then mix and match components to create the application you want.”

The .NET Framework and Eiffel ENViSioN! enabled developers across the enterprise to directly reuse the business components contained in the Knowledge Repository for new Windows-based applications regardless of their existing programming language expertise.

Increased Developer Productivity Saves Time and Lowers Costs

AXA Rosenberg estimates that using Eiffel ENViSioN! has increased developer productivity by up to 500 percent. Although developing the business objects contained in the Knowledge Repository required considerable time upfront, the robust, flexible nature of the code and its seamless integration with Visual Studio .NET and the .NET Framework enable both Eiffel and non-Eiffel programmers to modify existing or develop new applications very quickly. The results can be fully tested, debugged, and functional applications in days rather than weeks, reducing the time to benefit.

Ease of Deployment and Seamless Interoperability Connects Data and Users

The multi-language support of the .NET Framework allows components written in different languages to interoperate with very little additional code. With the .NET Framework, the Research Center migrated and deployed the Knowledge Repository across AXA Rosenberg on Microsoft Windows Server 2000, requiring only 100 additional lines of code to convert the interface to the database running Microsoft SQL Server™ to a .NET Framework-compatible interface. Now employees across the company can access the system, optimizing opportunities to extend functionality and more effectively use data.

Users are extremely enthusiastic about their enhanced access to the knowledge base. For new employees, getting up-to-speed has been significantly enhanced. David Stevens says, “Our employees now have a better, faster way to learn how to contribute best to the company. Our new ability to share knowledge shortens the learning curve by 50 percent, and takes employees 50 percent further in their understanding of our business.”

AXA Rosenberg plans to continue to use Eiffel ENViSioN!, Visual Studio .NET and the .NET Framework to extend the Knowledge Repository further across the enterprise. New features in an upcoming release will fully integrate the graphical user interface (GUI) development environment, making it easier to build Eiffel GUIs with Visual Studio .NET and enabling even greater extensibility of the software across the enterprise.

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The Microsoft .NET Framework is an integral Windows component that supports building and running the next generation of applications and XML Web services.

For more information about the .NET Framework, go to:

<http://msdn.microsoft.com/netframework/>

Microsoft Visual Studio .NET is the comprehensive tool for rapidly building and integrating XML Web services and applications, dramatically increasing developer productivity, and enabling new business opportunities. In addition, Visual Studio .NET is fully integrated with the Windows .NET Framework, providing support for multiple programming languages and automatically handling many common programming tasks, freeing developers to rapidly create Web applications using their language of choice. Visual Studio .NET includes a single integrated development environment with RAD features for building Web applications and middle-tier business logic, and RAD XML designers for working with data.

For more information about Visual Studio .NET, go to:

<http://www.visualstudio.net/>

To acquire Visual Studio .NET, please see your reseller or go to:

<http://shop.microsoft.com/devtools/default.asp>

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