Siemens Healthineers

How refactoring 30 million lines of RPG/COBOL to Java future-proofed critical systems and reduced costs for providers across an industry.

Siemens Healthineers AG is an American-German medical technology company providing healthcare solutions for markets worldwide. As part of the larger Siemens AG corporation, the company began in 1847 as a small business in Berlin, co-founded by Werner von Siemens. Though it has carried the banners of Siemens Medical Solutions and Siemens Healthcare over the years, in its most modern form, Siemens Healthineers is home to over 65,000 employees across the globe.

Due to the unique circumstances of healthcare in every country, Siemens Healthineers tailors solutions with regional specificity. In the French market, as the leading healthcare Application Service Provider (ASP) for over 400 hospitals, their solutions cover both the public and private sectors.

Many of Siemens Healthineers' administrative tools were developed to run on mainframe and AS/400 platforms. In recent years, organizations who have deployed these administrative systems have encountered difficulties due to high licensing costs and an outdated user experience (UX). In response, Siemens sought to revamp their offering through modernization. To accomplish this, they enlisted the tools and expertise of Advanced's Application Modernization practice.

With over 30 million lines of code in COBOL, RPG, and COBOL/400, the successful transformation of this system stands as a testament to the modernization capabilities of the Advanced toolset, as well as a model for detailed modernization planning and rigorous quality control.

Project overview

The large hospital management application Siemens Healthineers sought to modernize was written primarily in RPG/400 and COBOL/400. The application was built with several modules that covered every issue related to the management (clinical, logistics, device integration, etc.) of medical devices. It was designed to reside on an AS/400 server, the only option for Siemens' clients.

Legacy Environment

> COBOL, RPG/400, COBOL/400

> z/OS, OS/400

> 52,000 Objects

> 30+ million lines of code

Client >
Siemens Healthineers AG

Sector >
Healthcare

Project >
RPG/COBOL to Java

Siemens Healthineers

Target Environment

> Java

> OS/400, Windows, and Linux

> Db2, SQL Server, Caché, and Oracle

However, demand in the market was trending towards web-enabled, platform-neutral applications. The reasons were twofold:

1. Large and increasing volumes of interaction between hospitals, their patients, and external collaborators (doctors, insurance companies, etc.) was creating demand for simple, scalable internet-friendly integration.

2. Increasing pressure from healthcare providers to adopt a platform-neutral approach to ease integration and avoid the expensive proprietary costs of the AS/400 systems.

Prior to engaging Advanced, Siemens Healthineers researched a myriad of modernization options with the aim of re-engineering the RPG/COBOL application into Java. Unfortunately, these efforts failed to meet technical requirements or proved far too costly and were abandoned.

After carefully scrutinizing Advanced's modernization solution, Siemens chose to migrate with us. Together, we were able to transform initial skepticism into enthusiastic trust and a successful application transformation initiative. Our Automated Refactoring solution minimized the financial impact of the migration and eliminated the need for code freezes, ensuring business could continue to operate normally as the project progressed.

The final architecture was optimized for performance, platform-neutral, and flexible. It could be implemented on iSeries, open systems, or in hybrid environments. For example the application could rely on the iSeries as a data server while running the refactored application on open systems. The flexibility afforded by this hybrid option was particularly helpful in cases where hospitals required increased performance at reduced cost.

Project scope

On the surface, the modernization project was relatively straightforward. It included:

> Refactor the entire RPG/COBOL estate into Java

> Modernize the UX to create a more user-friendly look and feel

> Optimize the application to enable integration into the company internet portal

> Certify the exact functional equivalence between the legacy application and refactored, modern result

Client benefits

> Minimized the financial impact of the evolution to Java

> Achieved a modernized application in a short period of time without code freezes

> Enabled integration of their e-Business strategy with the application

> Ensured a solid technical future for the application by integrating modern development practices

> Enabled customers to choose any market-standard platform

More information

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