

.NET Framework Provides Solution for Italian Social Security, Opening AS/400 Applications to Millions of Users

Serving over 40 million Italian citizens, the Italian Department of Social Security decided it needed to provide Web access to many of its applications, originally based on AS/400 machines. Migrating the applications to the .NET Framework using NetCOBOL for .NET was selected as the best solution, giving the desired Webification and an excellent development environment for the future.

Profile

ISTITUTO NAZIONALE PER LA PREVIDENZA SOCIALE (INPS) is responsible for ensuring pensions for most Italian workers and employees, collecting contributions through their working years then, at the appropriate time, paying out the pensions on a regular basis. INPS is also responsible for collecting contributions to provide care for the elderly, disabled and unemployed and for helping workers when their businesses are going through hard times.

The department is headquartered in Rome but has branches throughout the country (approximately 550) to facilitate the collection of pension contributions and payment of pensions and other benefits. It employs 30,000 people and supported them with a cluster of nine IBM iSeries (formerly AS/400, now System i) servers located in the main data center in Rome, supplying an overall processing power corresponding to 15,000 mainframe million instructions per second (MIPS).

Customer Profile

INPS is responsible for providing pension schemes for everyone in Italy as well as help for the elderly, disabled and unemployed. It has around 30,000 employees in over 300 locations.

Business Situation

Need to give public access to products and services of INPS through Web enablement.

Solution

Migrate to Windows/.NET using NetCOBOL for .NET and other in-house solutions.

Partners

Accenture, Microsoft, Bizlogica, Fujitsu Computer Systems

Benefits

- Web-enabled applications
- Centralized database
- State-of-the-art user interfaces
- Access to the latest technologies
- Greater independence from proprietary technologies
- Ease of adapting to changing business needs

Software and Services

NetCOBOL for .NET Visual Studio .NET
 Microsoft SQL Server

Hardware

Windows-supporting servers, exact configurations to be determined.

Around 300 COBOL applications implement the complex requirements of collecting and distributing monies satisfying different rules for employers and numerous categories of workers. It is estimated that these applications comprise 12.5 million lines of code, implementing 260,000 function points. Data is mostly held in standard AS/400 ISAM files with about 30% in DB2/400 databases, corresponding to about 2TB of data. Interaction is through 5250 screens supported by 5250 emulators on Windows PCs.

Figure 1 shows the typical architecture of the INPS systems:

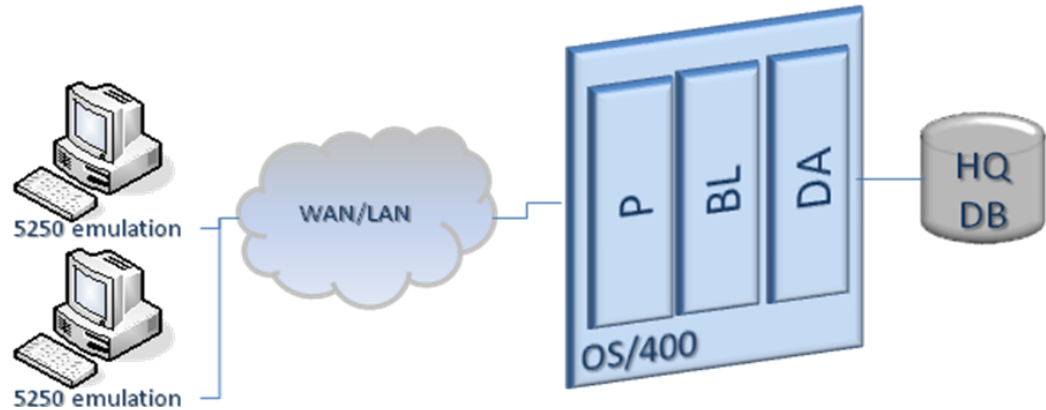


Figure 1. INPS application architecture

Where:

P represents presentation logic

BL represents business logic

DA represents data access logic

The three parts are generally intermingled in the COBOL applications.

Problems

By 2003, INPS decided to increase the efficiency of its branch processes and reduce operating and maintaining costs of the associated applications. INPS could see also that the popularity of the Web and the size of its end-user community (over 40 million Italian citizens) made a strong case for providing Web access to many of its applications. Such a move would require considerable modernization of its large suite of COBOL applications, perhaps even requiring rewriting in another language. INPS determined major criteria that would be desirable for their future application environment, in addition to providing Web access:

- Greater independence from proprietary technologies and systems;
- Ease of reusing existing functions and data for new applications and/or channels;
- Reusability and portability of new code (development by components);
- A new UI as close as possible to the original terminal based ;
- Support of heterogeneous environments;
- Both vertical and horizontal scalability. Here scalability is seen as the ability to maintain an application's performance when the number of users increases, either by increasing computing power and/or distributing the applications over more systems;
- Ease of adapting to changing business needs through productive development and maintenance environments;
- Integration with networking systems;
- Marketplace access to widely used solutions (giving ease of support);
- An industrial strength object oriented environment;
- Ability to distribute business logic;
- Given the scale and complexity of the scenario, gradual migration of applications.

Solution

Both AS/400-based solutions and solutions on other platforms were considered.

Although IBM's WebSphere offered some of the required benefits, INPS determined that the .NET Framework offered far better future potential for its applications and, with NetCOBOL for .NET, offered a means of migrating the code without having to embark on an expensive and risky rewrite.

A Consortium of IT Service Companies led by Accenture won the contract to perform the modernization, taking advantage of NetCOBOL for .NET to migrate the existing code and integrate with any new code written in other .NET languages.

Alfredo D'Amato, INPS Software Infrastructure Manager, describes the migration plan, "The migration (or better re-engineering) process is aimed at transforming present AS/400 COBOL applications so that their functions can be executed on the .NET platform, allowing further evolution based on a consistent multilevel

architecture. The application knowledge (business rules) will continue to be maintained inside INPS, leveraging present personnel skills.”

Maurizio Cortili, CEO of Bizlogica, Italian distributors for NetCOBOL underlines that the adoption of NetCobol for .NET, coupled with the multi-language support of the .NET framework, enables a real iso-functional migration; in fact it allows to preserve the complexity and the stability of all the applications business rules, and to integrate them effectively with new code written in other languages, maximizing the applications quality and significantly reducing the project risks.

Figure 2 outlines the new architecture.

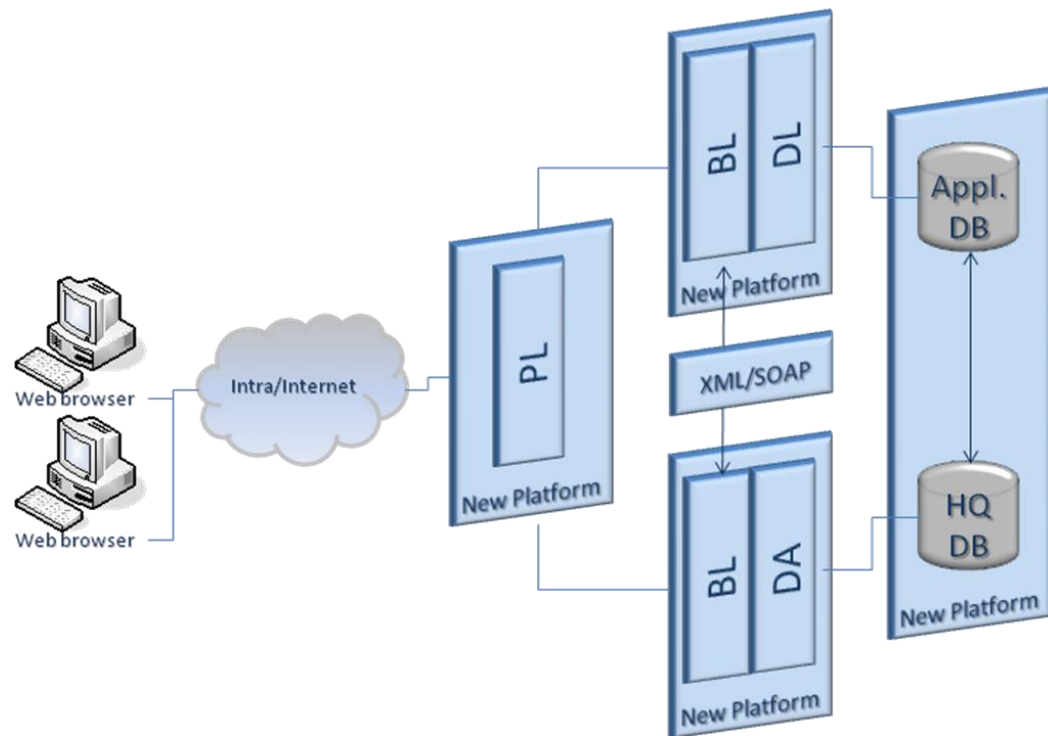


Figure 2. Proposed production environment

Where:

PL represents presentation layer

DL represents data access layer

BL represents business logic layer

DA represents data access logic

The transformation process has taken the following steps:

- Application logic has been maintained in COBOL, migrated to the new platform and invoked by new presentation programs;
- Data access code was intertwined with the business logic within the COBOL programs: where possible and convenient business and data layers have been separated;

- Whether or not it is made into a separate layer, data access has been transformed into standard SQL;
- 5250 screens have been transformed into Web forms (ASP.NET) using automated tools and, when necessary, manual changes;
- Printing functions reuse existing solutions: an in-house tool to create, manage and use printed output in a Web environment;
- Batch programs and CLP (Command Line Processor) modules have been re-written.
- The applications have been split into 12 domains that could be migrated to the new architecture independently from each other.

The transformed applications are:

- Web enabled
- No longer based on proprietary platforms
- Have data portability based on a standard relational database
- Have both migrated and new applications coexisting on the new platform, sharing a presentation layer that is available to users
- Present a homogeneous image to users
- Guarantee the synchronization between the databases of migrated and new applications.
- Communicate between migrated and new business logic, where needed, through standard protocols (Web Services with SOAP, XML).

Benefits

INPS has realized these benefits from the migration:

- Web availability of many existing applications
- More user-friendly, up-to-date interfaces on the applications
- Ability to mix existing COBOL business logic with new business logic developed in whatever language is most appropriate for the purpose
- Centralized database with more flexible reporting options
- Freedom from proprietary hardware
- Option to selected packaged tools or components when appropriate
- Developers working in a highly productive development environment, better able to adapt to changing business needs

Summarizing the benefits, Alfredo D'Amato said, "By adopting an approach that preserves much of the COBOL code, INPS is managing to take a major leap forward in technical capabilities while maintaining the function and value of its legacy systems. This transformation will result in improved information flow and better services to Italian employers and workers."

Why Fujitsu NetCobol?

NetCOBOL for .NET was chosen over competition because it:

- Is much more robust in the development environment;
- Supports all the Visual Studio .NET development features, like the Winforms and Webforms Designers;
- Provides run-time free distribution;
- Came with support from a local distributor that had experience with similar projects;
- Proved itself in a proof-of-concept study testing some of the INPS code in the .NET environment, summarized by the participants as "very positive".

Results

As of September 2007, 11 application domains have been completely migrated to the new architecture. These applications are running on the new platform and are deployed in all INPS branches.

Within the end of the current year it is expected that the entire application portfolio will be migrated and in production.



Fujitsu Computer Systems
1250 E. Arques Avenue
Sunnyvale, CA 94085
Phone: (800) 545-6774 or (408) 428-0300
Email: cobol@netcobol.com
Web: www.netcobol.com

© 2007 Fujitsu Computer Systems. All rights reserved. Updated [September] 2007.

Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and other countries.

Fujitsu and NetCOBOL are registered trademarks of Fujitsu Limited in the United States and other countries.