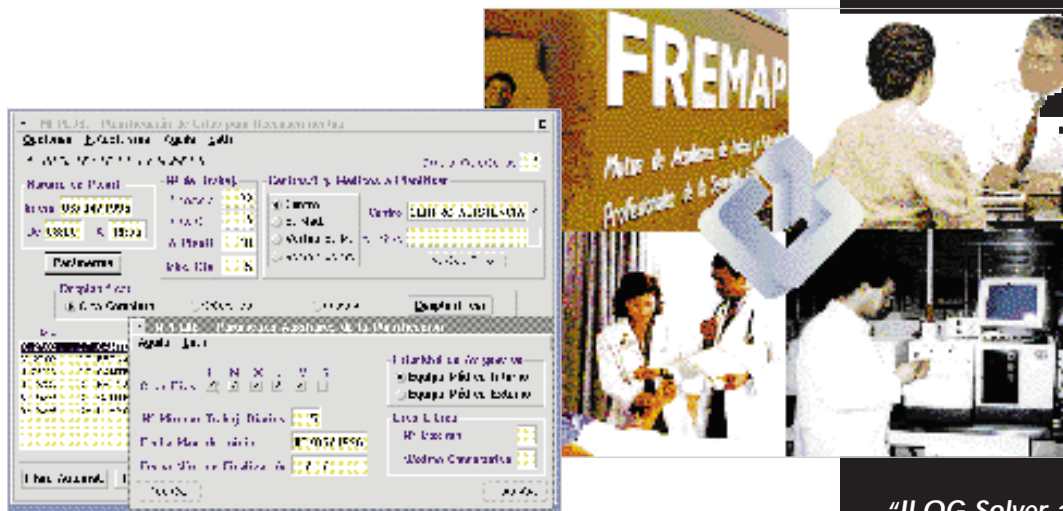# FREMAP

Planning of Medical Appointments

T he main focus of Spain's Mutual Benefit Association, FREMAP, is to ensure against injuries in the work place. Founded in 1933, FREMAP occupies 25% of this sector with 1995 revenues reaching 80,000 million pesetas ($660 million). FREMAP activities are divided into four areas: injury prevention, healthcare, financial support and rehabilitation.

In addition to these activities, FREMAP also manages a preventive medicine program which requires extensive planning and scheduling.

Client companies specify their timetables for health checks. Then the availability of medical staff, equipment and mobile and fixed health centers must be matched against that of the clients' employees.

Since the number of appointments is constantly increasing, it became urgent to optimize the planning of medical examinations and the procedures for equipment allocation. ILOG Scheduler helped FREMAP handle this problem.

"ILOG Solver and ILOG Scheduler proved to be extremely powerful products. Not only were they intuitive to use but they also enabled us to find new approaches to solving our problem. They contributed enormously to a successful object-oriented planning application."

■ *Mario Alvarez FREMAP Project Manager*

FREMAP

FREMAP works with over 250,000 companies that employ a total of almost two million people. It operates four hospitals and 120 dispensaries throughout Spain and employs over 2,000 people.

ILOG Solver and ILOG Scheduler

ILOG Solver is a software development tool to implement resource allocation, planning and scheduling applications. ILOG Solver is designed to produce optimum and reliable solutions for resource allocation problems while satisfying industry-wide and enterprise-specific constraints and objectives. ILOG Solver is based on constraint programming and provides state-of-the-art and ready to use optimization algorithms. ILOG Scheduler is its extension module for scheduling applications. ILOG Solver and ILOG Scheduler are C++ libraries available on both Windows and UNIX platforms.

ILOG DB Link

ILOG DB Link is a portable C++ interface to standard RDBMS. It significantly reduces the amount of time required to connect C++ applications to RDBMSs such as Sybase, Oracle, CA-Ingres, Informix and SQLBase. ILOG DB Link automatically passes standard SQL requests from C++ applications to the RDBMS, and supports transaction management, data manipulation, and access to the data dictionary.

About ILOG

ILOG is a leading provider of advanced software components for graphics and resource optimization. ILOG's products enable: high-performance data-visualization for 2D and 3D user interfaces; constraint-based reasoning systems for resource optimization, scheduling, logistics and planning applications; dynamic rule systems for intelligent agents and real-time data flow control; and component services for integrating C++ modules with real-time and relational data sources. ILOG S.A. was founded in 1987, now employs approximately 260 people worldwide, and is traded on NASDAQ NMS under the symbol ILOGY.

ILOG is a registered trademark of ILOG S.A.
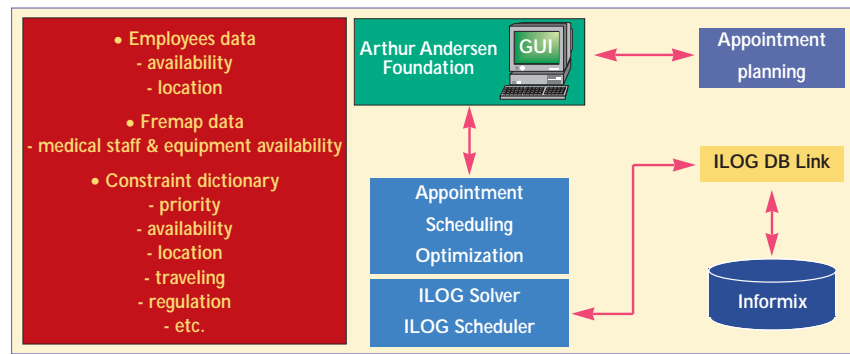
Automatic Appointment Planner

The Challenge

As it sought to expand its preventive medicine program and reach a record of 600,000 completed appointments before the end of 1996, FREMAP realized it would have to abandon its manual approach to scheduling and switch to a computerized planning system instead.

FREMAP chose to develop its planning application with ILOG software components. The new system, the Automatic Appointment Planner, takes into account criteria such as the time and day at which the employees are available for visits, the location of the appointment, the traveling time, and the availability of medical staff and equipment. Based on ILOG Solver and ILOG Scheduler, the Automatic Appointment Planner enables FREMAP to optimize its resources' usage while improving its ability to react to unforeseen events.

The ILOG Solution

ILOG Solver and ILOG Scheduler provide the constraint programming engine for the Automatic Appointment Planner, and ILOG DB Link maintains the connections to the databases. The GUI application is built using Arthur Andersen Foundation,and is integrated into a client/server architecture distributed over 60 Unix workstations based in Spain. These workstations are used as data servers and are connected to 1,500 486 processor PCs via an X.25 network across 50 regional zones throughout Spain.

Benefits

ILOG Solver can schedule and optimize appointments for 100 people in a few seconds whereas it used to take hours to produce similar plans manually. The Automatic Appointment Planner can optimize resource allocations for each plan produced, regardless of the number of individuals to be scheduled - something which was just not possible using manual scheduling techniques. Further, operators are able to modify existing plans and immediately recompute examination schedules.

Although the Automatic Appointment Planner was FREMAP's first object-oriented application, the developers found the ILOG software components easy and intuitive to use.

By developing a powefull planning application with ILOG Solver, FREMAP is now able to reduce its costs while offering a better service to its customers.