ADP

REDUCING CONGESTION AT PARIS AIRPORTS

CONGESTION is a constant problem for airport operators. Whether its airliners circling to land or travelers crowding check-in areas, congestion slows travel time, adds to the wear and tear on equipment, and tests the patience of everyone involved.

In Paris, the local airport authority controls congestion with a powerful resource allocation system. With ILOG Solver and its C++ optimization engine, Aéroports de Paris (ADP) built the application, called SAIGA, to manage the resources at the Orly and Charles de Gaulle international airports. The application processes tens of thousands of constraints to provide optimal solutions that can be further refined through an ILOG Views graphical user interface (GUI). Furthermore, using a distributed architecture based on ILOG Server and ILOG Rules, the system enables users to monitor the execution of a plan and react to unforeseen events in real time.

Put in service in October 1997, the state-of-the-art management system has reduced planning time and heightened efficiency at the two airports through an intuitive, user-friendly application environment. Now the more than 1,500 flights handled per day by the airports are accommodated more smoothly, with check-in counters allocated to keep passengers moving and parking slots assigned to place planes where and when they are needed.

"Our application is extremely powerful, and its intuitive interface helps users make decisions more accurately and in real time. Moreover, code reuse makes it very maintainable. We couldn't have achieved such efficiency without ILOG."

Hervé Nicolas & Jean-Pierre Torres
ADP
Resource Allocation
Project Manager
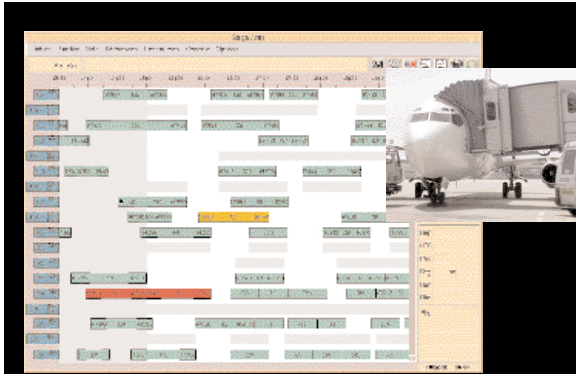
ADP

ADP (Aéroports de Paris) is a publicly owned company under the authority of the French Ministry of Aviation. It has grown tremendously since its creation in 1945, and today handles an average of 60 million passengers a year. The company has launched a program to modernize Orly's terminals, build another terminal at Charles de Gaulle, add extra runways and optimize its scheduling systems.

ABOUT ILOG

ILOG is a leading provider of advanced C++ and Java® software components for graphics and resource optimization. ILOG products deliver high-performance data visualization for 2D and 3D user interfaces; integer, linear and constraint solvers for resource optimization, scheduling, logistics and planning applications; dynamic rule systems for intelligent agents and real-time data flow control, and components for integrating modules with real-time and relational data sources. Founded in 1987, ILOG now employs more than 470 people in seven countries. Visit www.ilog.com for additional information.

KEEPING THINGS MOVING WITH OPTIMIZATION

Every day ADP must allocate resources to arriving and departing planes. These resources include gates, parking slots, check-in counters, luggage conveyor belts and various other ground facilities. They must be assigned to give every plane full support and its airline full access to it, with the goal of quickly and efficiently moving through more than 150,000 air travelers a day.

SAIGA optimizes the process by using ILOG Solver to compute the best solutions. Initially introduced to handle plane parking, the application takes the 240 parking slots at Orly, for example, and assigns them to 850 to 900 flights per day. ILOG Solver allocates the slots by weighing constraints that include airline preferences, security concerns, fuel and luggage handling, and departure and arrival times. Once a solution has been found, it is shared among the planners through ILOG Server and can be fine-tuned with the ILOG Views GUI. It can also quickly accommodate unexpected constraints such as equipment breakdowns and flight delays through real-time planning.

The system also allocates such ground resources as buses, gates, check-in counters, luggage carousels and conveyor belts, and arrival and departure lounges. It performs long-term scheduling as well, guaranteeing continuity in its planning. Airlines and their personnel can rely on the system to assign the same resources throughout a given period, avoiding delays and confusion resulting from unexpected changes.

PROJECT

SAIGA is run on an IBM RS6000 computer with a UNIX operating system. The entire project took three years to complete, but development of the optimization engine took only two months. The application is currently in full operation at both airports.

BENEFITS

Under the old system, it took planners more than four hours to manually allocate parking stands. The SAIGA application does the same job, while also assigning other ground equipment, in three minutes, with airport staff checking and fine-tuning the results in about 30 minutes. The system has improved service at both airports, increasing the satisfaction of the customers and the airline companies. With the number of passengers growing every year, exceeding 60 million in 1997, ADP considers SAIGA an invaluable logistics tool.