

AT&T Bell Labs, ADSS, Operations Research Area - 1989 to 1991

Participated as lead architect and developer on the Schedule Planning project. This was a large scale, leading edge, operations research project designed to increase airline profitability by improving aircraft fleet assignments while monitoring thousands of constraints and optimizing many objective functions. Designed the architecture of the final product that used combinatorial techniques instead of linear programming. Improved the real time performance of the swapping algorithms several orders of magnitude. Implemented a number of the mathematical models in C for feasibility checks that provided statistics regarding the flyability of the changing schedule. Developed an in-house object oriented CASE tool that supported data base I/O, spreadsheet style editing, referential integrity checking, feasibility analysis and math module interfacing using a lex and yacc parser and g2. Developed a proprietary technique for obtaining initial solutions to the fleeting problems. The final version of this program made use of a new SAP algorithm and still derives better solutions in hours than the large LP based methods. System was purchased by Delta and Northwest airlines in multi-million dollar contracts. It paid for itself within the first year.