



Airline Operations Aid

Founded in 1988, American Airlines' Knowledge Systems is a group of software engineers who develop systems utilizing artificial intelligence technologies for such applications as aircraft maintenance, aircraft scheduling, fare administration, flight operations and computer operations.

The group employs a variety of knowledge based and expert systems tools, among them CLIPS (C Language Integrated Production System), a NASA-developed software package that was originally modeled on Inference Corporation's Automated Reasoning Tool. CLIPS was supplied to Knowledge Systems by NASA's Computer Software Management and Information Center (COSMIC)[®], NASA's mechanism for helping industrial, government and institutional organizations to improve automation efficiency and cost-effectiveness.

CLIPS is used by Knowledge Systems for three purposes: as a rapid prototyping tool, to develop production prototypes, and to develop production applications. An example of the latter is CLIPS' use in the airline process known as "Hub SIAAshing", a knowledge based system that recommends contingency plans for American Airlines' System Operations Control (SOC) during inclement weather or other airport disruptions where severe schedule reductions must be made.

Prior to the introduction of Hub SIAAshing, SOC (*below*) used printouts of flight operations transactions to locate contingency plans manually, used colored markers to highlight candidate plans, weeded through the possibilities and ranked them manually. This labor intensive process has been automated by Hub SIAAshing, which integrates

the CLIPS shell with more traditional technologies.

With Hub SIAAshing, the search for appropriate patterns is accomplished programmatically, saving time and allowing SOC coordinators to handle more difficult situations. Hub SIAAshing locates the candidates for schedule reductions and assimilates much of the information necessary to facilitate educated decision-making, thus minimizing the negative impact in situations where it is impossible to operate all flights. •

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NASA SOFTWARE IS
CONTRIBUTING TO
NEW EFFICIENCY IN
AIRLINE SCHEDULING

