



Scheduling On-time Aircraft Deliveries

Software saves prime aerospace manufacturer time and money.

by Joe Singleton/jsingleton@nttc.edu

Building next-generation aircraft may be a daunting task logistically, but using new software developed with MDA funding could save manufacturers time, cost, and labor, ensuring quicker deliveries around the world.

Stottler Henke Associates, Inc. (San Mateo, CA), originally developed its Aurora™ scheduling technology for NASA to use in managing the timing of International Space Station construction. After serving NASA, Stottler Henke upgraded Aurora's capabilities with new algorithms developed for missile defense engagement planning. The enhancements were funded through an MDA SBIR Phase I contract in 2006 and a Phase II contract in 2008.

The upgraded Aurora system is a proven success story, gaining not just the attention of Government agencies, but also a prime contractor. Stottler Henke was awarded a multimillion-dollar contract from the Boeing Company following the release of a benchmark study conducted by the aerospace behemoth. The study concluded that Aurora is more efficient in managing resources than the one used by Boeing for almost two decades. Stottler Henke's technology is now the primary scheduling tool for production of Boeing 787 aircraft, of which the first deliveries are scheduled for late 2009.

With the contract in hand, Stottler Henke's challenge was to improve the manufacturing efficiencies of Boeing's 787 project by optimizing aircraft assembly schedules through the use of software designed for better resource management—from equipment to personnel. Richard Stottler, the president of Stottler Henke, said the problem could be tackled only after fully realizing the scope of Boeing's operation.

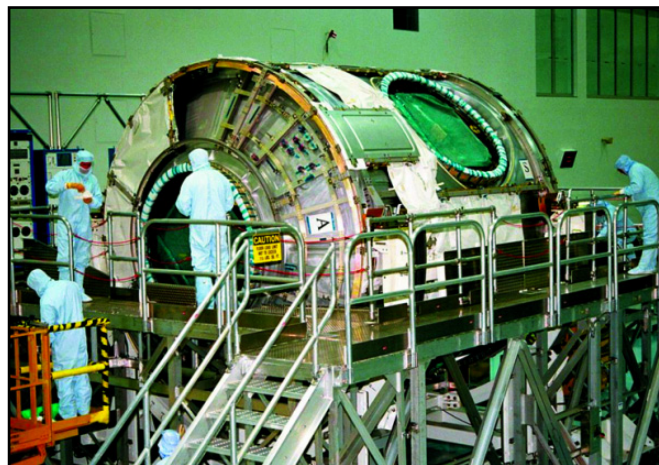
"[Boeing's] plan is to pump out an airplane every three days. That's 10 a month, and 120 a year," he said. "That turns out to be worth \$14 billion a year. They have two assembly lines, and each assembly line turns out one every six days. There are about 3,000 activities; the average activity has about five different resources. The resources are manpower, work-space, and specific tools."

Boeing's internal tests showed that Aurora was the best technology to effectively schedule worker assignments

throughout the assembly hangar. In operational tests, Aurora reduced the amount of time needed on Boeing 787 construction projects through a more efficient use of resources by 10 percent to 30 percent over other commercial schedulers. Better resource management also allows Boeing to spread out its labor force more effectively, thereby reducing overstuffed areas. And through optimization of time, labor, and resource management, Boeing is likely to save millions of dollars per year, according to Stottler.

Initially, the central problem Boeing faced was a lack of space due to a large number of workers manning stations around the center part of a fuselage where the wings were being mounted, while fewer workers were busy elsewhere on the aircraft. So Boeing first asked Stottler Henke to program Aurora for optimal assignment of workers during production of a generic 787. The programming took into account that only a limited number of people could work in a given area—to ensure safety and to ensure that tasks would be performed properly. Once Stottler Henke had completed the programming for a generic 787,

[continued on page 2](#)



▲ A scheduling system by Stottler Henke Associates, Inc., helped NASA construct parts of the International Space Station. The system, funded in part by MDA, can be used in many other manufacturing applications.

Scheduling On-time Aircraft Deliveries from page 1

Boeing created additional configurations to meet the specifications of purchasing airlines. Such airline-specific scheduling continues today at Boeing, aided by the efficiencies of Aurora software.

Design of the Aurora software is based on the premise that order is the key to success. A company like Boeing might be working on several large projects in its assembly plant—but corporate executives are well aware that each large project requires completion of many small tasks, in a certain order, and within prescribed time limits. Most advanced scheduling systems competing with Aurora can crunch such data without much of a problem. But according to Stottler, none of them uses intelligent breakdowns of data—including variables that can change the entire picture of how time and labor need to be distributed.

Enter Aurora. The software offers companies more than just a simple schedule for best managing a project's tasks. It also can instruct company officials how to best use its workforce. Using corporate data that is input into Aurora, the software can analyze the full potential of the workforce—based on skills, work shifts, staffing requirements for certain tasks, actual working space where a task is being conducted, and perhaps most importantly, keeping the workflow in sync with schedule completion requirements. A company can also use the program to interchange variables—such as the ordering of projects or staffing requirements on certain tasks to develop a production schedule that best suits specific corporate interests. Aurora offers a company maximum flexibility in scheduling, based on the incorporation of as many variables as a user wants programmed into the system.

Stottler Henke continues to look beyond the Boeing contract, seeking to have Aurora in many aerospace manufacturing and repair centers across the country. The company most recently contracted to provide scheduling services for



▲ Stottler Henke's system is being used to improve the Boeing Company's manufacturing efficiency, helping to schedule tasks for workers on Boeing's 787 aircraft assembly line.

a division of Acument Aerospace Technologies, Inc., which makes aircraft fasteners and bolts for many manufacturers, including Boeing.

Outside of the company's aerospace contracts and success, Stottler said he would entertain partnerships with companies that desire high-quality scheduling models as part of their software systems. 

CONTACT INFO

Richard Stottler
Stottler Henke Associates, Inc.
Tel: (650) 931-2714
E-mail: stottler@stottlerhenke.com
Web: www.stottlerhenke.com