# Boeing Says Integrated Air Traffic Management System Could Save Billions of Dollars Annually

Integrating air traffic control systems on the ground with airline operation centers and the flight management systems aboard aircraft in flight could produce direct benefits to airline operations in the United States alone ranging from $4 billion to $8 billion annually, according to Boeing [NYSE: BA]. Globally, Boeing estimates the annual direct benefit to airlines could be as much as three times that amount.

"There's little question that the benefits of deploying a large-scale, network-enabled air traffic system are huge," John Hayhurst, president of Boeing's Air Traffic Management business unit, told reporters attending the Paris Air Show. "It's time we deployed such a system to deal more effectively with congestion and weather problems in the air traffic system."

Boeing has been working for the past two years on a design for a next-generation air traffic system with far more capacity than today's system and new safety, security and environmental benefits. Part of that effort included the development of a suite of software simulation tools for validating operational concepts and conducting cost-benefit analyses. The data on annual benefits to airlines are Boeing's first pass at quantifying the gains from increases in air traffic system capacity and efficiency. Boeing ATM will continue to refine these numbers as it refines its operational concept, architecture and transition plan.

"While air travel currently is down, traffic was at record levels only three years ago," Hayhurst said. "The system was overwhelmed, and it will be overwhelmed again in the future if we don't take decisive action now. By 2020, even by conservative estimates, we will have twice as much traffic as we have today."

To define a future solution, Boeing is following a systems engineering process - the same process it has used successfully to develop new airplanes and other complex systems. The process starts with defining future system requirements, which Boeing recently completed after 18 months of work with more than 100 aviation stakeholders around the world. The requirements document produced by the Boeing "Working Together Team" is global in scope and the first of its kind.

Now Boeing is defining a future operating concept and the system architecture needed to support the concept - all based on the stakeholder-established requirements. At the heart of this concept of operations is a network of networks that, for the first time, would give all stakeholders real-time, secure access to a vast amount of relevant data and other information that currently is "stove-piped." Such a common information network (CIN) would enable greater automation of routine tasks and more rapid, collaborative decision-making.

Controllers, pilots, and flight operation centers would all be plugged into the CIN. Security personnel also could be plugged in. Although each performs a distinct task and operates on a different timeline, all would have access to the same real-time, precision information and would be linked together for optimal performance.

Information flowing over the network would include up-to-the-minute weather information merged from multiple sources for a better weather picture than is currently available, flight plans, precision 4-D traffic information, airport and system status and security alerts.

The system would utilize a combination of ground and space assets to link the flight management systems aboard aircraft with the CIN so that data would flow freely between airplanes in flight and systems on the ground, either directly or via satellite. Satellites would make the system truly global, enabling communication, navigation and surveillance anywhere in the world.

"Much of this infrastructure already exists, which is why we're confident that this system is very affordable," Hayhurst said. "We are committed to finding a way to use existing satellite systems and ground systems to minimize costs to users and providers alike. We are confident that the benefits of the new system will outweigh the costs by a long shot."

Hayhurst gave several examples of the kind of operational changes possible with a network-enabled system. They include the more efficient procedure of climbing straight to cruise on takeoff and continuous descent to landing rather than the step-up and step-down profiles typically followed today. The satellite-enhanced system of the future also would enable curved, rather than straight, approaches to landing, and closer spacing in oceanic environments similar to spacing in radar environments over or near land. Other examples cited were the use of precision weather and 4-D traffic information to safely and efficiently route aircraft around and through storm systems, and the full utilization of parallel runways in instrument meteorological conditions.

"These and many other safety-, security-, and capacity-enhancing changes are possible if we put forward-looking, precision information in the hands of the professionals who fly in and manage the air traffic system," Hayhurst said. "What is needed, and needed urgently, is a collective will to proceed with the planning and implementation of such changes. For the health of our industry, and for global economic growth, we need to get on with the job."

Boeing Estimate of Direct Savings to Airlines

| Benefit category | How achieved | Metric | 2020 vision target | Annual benefit in U.S. could range between |
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| Flight path efficiency | • Ascent to cruise<br>• Wind-optimized routes<br>• Continuous descent | Time saved per flight due to flight path efficiency | 4-8 minutes per flight | $1.5-3B |
| Delay reduction (Capacity) | • Precision procedural control<br>• RTSP spacing<br>• Integrated services<br>• New runways | Delay reduction percentage | 25-50% | $2-4B |
| Airplane utilization | • Reduce VMC delay<br>• Increase flight path efficiency<br>• Reduce block pad | Block time saved per flight | ~10 minutes per flight | $.5-1B |
| Total annual savings | | | | $4-8B |

## Forward-Looking Information Is Subject to Risk and Uncertainty

Certain statements in this release may constitute "forward-looking" statements within the meaning of the Private Litigation Reform Act of 1995. Words such as "expects," "intends," "plans," "projects," "believes," "estimates," and similar expressions are used to identify these forward-looking statements. These statements are not guarantees of future performance and involve risks, uncertainties and assumptions that are difficult to predict. Forward-looking statements are based upon assumptions as to future events that may not prove to be accurate. Actual outcomes and results may differ materially from what is expressed or forecasted in these forward-looking statements. As a result, these statements speak only as of the date they were made and we undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Our actual results and future trends may differ materially depending on a variety of factors, including the continued operation, viability and growth of major airline customers and non-airline customers (such as the U.S. Government); adverse developments in the value of collateral securing customer and other financings; the occurrence of any significant collective bargaining labor dispute; the Company's successful execution of internal performance plans, price escalation, production rate increases and decreases (including any reduction in or termination of an aircraft product), acquisition and divestiture plans, and other cost-reduction and productivity efforts; charges from any future SFAS 142 review; an adverse development in rating agency credit ratings or assessments; the actual outcomes of certain pending sales campaigns and U.S. and foreign government procurement activities, including the timing of procurement of tankers by the U.S. Department of Defense; the cyclical nature of some of the Company's businesses; unanticipated financial market changes which may impact pension plan assumptions; domestic and international competition in the defense, space and commercial areas; continued integration of acquired businesses; performance issues with key suppliers, subcontractors and customers; factors that could result in significant and prolonged disruption to air travel worldwide (including future terrorist attacks); any additional impacts from the attacks of September 11, 2001; global trade policies; worldwide political stability; domestic and international economic conditions; price escalation; the outcome of political and legal processes, including uncertainty regarding government funding of certain programs; changing priorities or reductions in the U.S. Government or foreign government defense and space budgets; termination of government or commercial contracts due to unilateral government or customer action or failure to perform; legal, financial and governmental risks related to international transactions; legal proceedings; and other economic, political and technological risks and uncertainties. Additional information regarding these factors is contained in the Company's SEC filings, including, without limitation, the Company's Annual Report on Form 10-K for the year ended 2002 and the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2003.

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