



AN ACTIONABLE STRATEGY FOR AERONAUTICS RESEARCH IS REQUIRED TO MAINTAIN AMERICAN LEADERSHIP: An AIAA Information Paper

ABSTRACT

The American Institute of Aeronautics and Astronautics (AIAA) – the world’s forum for aerospace leadership – recognizes that aeronautics (the science of flight) is a cornerstone of U.S. economic prosperity and global security. This nation’s achievements in aviation have been decades in the making and have been driven by significant investments in research and development. While we are thankful for the recent National Aeronautics R&D Policy and Plan, we remain concerned that the goals and strategy outlined in the plan lack a timeline, assignment of agency responsibility and, most importantly, funding to achieve the required results.

ISSUE

A strong national program of aeronautics research and technology contributes to the vitality of the United States’ aeronautics industry, the efficiency of the U.S. air transportation system and the economic well-being and quality of life of our citizens. In order to maintain America’s leadership role in aeronautics research, the U.S. must create an actionable strategy to fully implement the National Aeronautics R&D plan of December 2007.

BACKGROUND

America became the first to master powered flight over 100 years ago and in the years to follow, developed technologies that allow us today to literally fly anyone to anywhere at any time. Continued investment by the Federal government and private industry have provided the research and development that has led to increased mobility for our people and security for our nation. But lately, U.S. government investment in aeronautics R&D has become inconsistent and insufficient while international governments have developed long-term strategies to increase their leadership in aeronautics. The European Union created their 2020 Vision and have dedicated funding to achieve its goals. The U.S. had no comparable national vision or research strategy.

Air travel is projected to triple over the next ten years and, while that is good news for the economy, this nation’s outdated air transportation system is facing gridlock. In 2005 Congress mandated the creation of the Joint Planning and Development Office (JPDO) to develop and implement the Next Generation Air Traffic Management System (NextGen). The plan they created is stalled in the yet-to-be passed FAA Reauthorization bill.

But progress has been made. In December 2006, an Executive Order established a National Aeronautics Research and Development Policy. This was followed in December 2007 by an implementation plan and in December 2008 by a technical appendix setting forth additional technical content and providing a gap assessment. In November 2008, an Executive Order mandated transformation of the National Air Transportation System. AIAA supports the President’s vision for science and innovation¹ which identifies three research and development areas that require immediate attention:

- Supporting Fundamental Research. Industry relies on government investment in developing basic technology to the level of maturity where Industry can then adopt and adapt it. Over the years, there has been a strong partnership between



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- the Federal government, industry and academia. NASA has reduced aeronautics funding by more than 59% since 1994. With fewer funds, NASA focused on very basic research, in-house or with academia. The Aeronautics R&D Plan identifies technical goals but the plan contained either budget nor prioritization of projects. The 2008 technical appendix provides a gap analysis and sets forth critical areas for prioritized research. However, it does not contain a roadmap of how goals will be achieved, nor does it provide agency accountability and the necessary budget.
- **Advancing Future Transportation Needs:** The challenges that the current air traffic management systems faces are enormous. The air traffic control architecture is antiquated and unable to accommodate the current level of traffic, let alone what is projected for the future. Attention must be directed to expanding capacity and solving delay problems which are at the heart of consumers' dissatisfaction with the air travel system. Additionally, environmental impact and continued safety must be addressed through increased research and development.
 - **Promoting Aviation Fuel Efficiency:** Our dependence on fossil fuel has severely impacted both civil and military aviation. Airlines have lost vast sums of money or even gone bankrupt because of rising oil prices. Reducing our dependency on foreign oil mandates an investment in advanced aeronautics research to develop alternate sources of energy and to improve fuel efficiency for propulsion. Development of alternative fuels would have a dramatic impact on the sustainability of the aviation enterprise. However, continuous and sustained research is required to identify and develop alternative aviation fuels. These advances will also reduce the impact of air transportation on the environment.

Recommendations:

- AIAA applauds President Obama's stated plan to appoint an Assistant to the President for Science and Technology Policy, reporting to the President; and to reconvene the National Aeronautics and Space Council. AIAA commends Congress for authorizing language in H.R. 6063 which creates a Joint Aeronautics Research and Development Advisory Committee.
- We recommend that the first priority of these oversight bodies be a detailed implementation plan and formulation of a budget to address the three areas detailed above. These bodies should utilize the 2005 study, "Responding to the Call: Aviation Plan for American Leadership," developed by the national Institute of Aerospace, as a starting point in addressing technology gaps, in developing agency responsibilities and budgets, and in developing a strategy to ensure aeronautics facilities are current and available when needed.
- AIAA recommends that Congress support the Executive Order for Transformation of the National Air Transportation System by ensuring that affected agencies have sufficient resources and specific timetables to achieve the stated policy goals.

¹ Investing in America's Future: Barack Obama and Joe Biden's Plan for Science and Innovation