

Accelerating the Integration of Unmanned Aerial Vehicles (UAV) / Unmanned Aerial Systems (UAS) into the National Air Space (NAS)

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Abstract

The American Institute of Aeronautics and Astronautics (AIAA) recognizes that the potential commercial utilization of Unmanned Aerial Vehicles (UAV) and Unmanned Aerial Systems (UAS), also referred to as drones, has greatly increased in the last few years. With commercial applications ranging from search and rescue to monitoring of agriculture and natural disasters, the biggest barrier lies in restrictions on UAV/UAS in the national air space (NAS). While issues over “sense and avoid” technology remain, cumbersome approval processes and the limited duration of Certificates of Authorization (COAs) make sustained testing and utilization difficult. With a worldwide UAV market projected to hit \$90B, the restrictions placed on UAV manufacturers and users in the United States will result in slowed technology development, denying critical capabilities to first responders, as well as driving jobs, skills, and dollars to manufacturers outside of the U.S. Accelerating the integration and acceptance of UAV/UAS in the NAS will serve to not only benefit the aerospace and defense industry but will help stimulate the economy as well as allowing for wider use and adoption of beneficial technology in such areas as law enforcement, search and rescue, and border security.

Issue Background

For most people, the mention of Unmanned Aerial Vehicles or “drones” conjures up images of missile-carrying vehicles or the recent Congressional hearings over CIA programs regarding terrorists. However, these vehicles have growing commercial, non-military applications domestically that are of great importance. While some of the vehicles are commercial derivatives of military born platforms, their role leverages the technology and autonomous advancements in support of such vital missions as search and rescue, crop monitoring, and tracking fires and other natural disasters.

While the United States has been at the forefront of UAV utilization in military related applications, the overall global pace of development of drone technology means that U.S. platforms face competition not only from other UAV manufacturers, but also from countries looking for ways to defeat our systems. To be able to stay one to two generations ahead of other countries, it is imperative that the U.S. UAV community have the ability to easily develop and test the next generation of UAV/UAS platforms. But to do that, the process for evaluating the vehicles through flight testing must not require a rigorous “one off” approval for a Certificate of Authorization. Instead, dedicated test ranges, where UAV and command and control technology can be refined, will be crucial to UAV advancements.

When the 2012 FAA Reauthorization Act was passed, it contained a 2015 date for the development of an integration plan for UAV/UAS into the NAS. A key step in that process was the release of a request for proposal (RFP) in support of establishing six test sites to study the integration of UAV/UAS into the NAS. The original FAA plan called for the RFP to be released in mid-2012 with the first test range operational in January of 2013. However, it was not until February 15, 2013 that the FAA released the test site RFP, slippage of almost a year in the FAA’s own schedule relative to UAV integration.

In addition to facilitating military advancements relative to UAVs, opening up the NAS to UAVs will allow for a wide variety of commercial applications to be filled with unmanned vehicles.



Commercial use of UAVs has the potential to greatly overshadow the military use of drones; indeed, a recent Teal report noted that there is an estimated \$89 billion worldwide UAV market, with many of the applications being commercial in nature (<http://tealgroup.com/index.php/about-teal/teal-group-in-the-media/3/79-teal-group-predicts-worldwide-uav-market-will-total-89-billion-in-its-2012-uav-market-profile-and-forecast>).

While there are privacy concerns over potential law enforcement use of UAVs, the benefit to public safety in helping reduce the danger to law enforcement officers cannot be overlooked. Additionally, the ability of some platforms to remain on station long term is a great advantage when conducting search and rescue operations, monitoring wildfire growth, as well as surveying areas damaged through flooding or other natural disasters. The delay in issuing the test site RFPs highlights the potential for additional milestones, relative to an integration plan, also being missed. While there are many legitimate technological, operational, and ethical questions still to be agreed upon, further delays will impact manufacturers as well as those looking to utilize this beneficial technology to the advantage of residents across the U.S. Privacy concerns should be addressed as well as concerns over the effectiveness of “sense and avoid” technology. But further delay in having some of those difficult discussions is only going to further hinder attempts to field some of the military platforms becoming available in a commercial application and hampering the U.S. UAV community as it attempts to compete with an ever growing UAV presence and offering around the globe.

Considering the benefits that UAV/UASs can bring to areas such as disaster relief, imaging, resource monitoring, and law enforcement, efforts should be made to accelerate their integration into the NAS. As spending by U.S. companies on UAV and UAS technology is expected to be the major portion of global UAV spending, adequate support for the industry will be key to being able to remain the global leader in UAV/UAS technology.