

# ACCESS FOR UNMANNED AERIAL VEHICLES (UAVs) IN THE NATIONAL AEROSPACE SYSTEM (NAS)

## An AIAA Information Paper

### ABSTRACT

The American Institute of Aeronautics and Astronautics (AIAA) recognizes that the issue of Unmanned Aerial Vehicles/Systems (UAVs/UASs) being integrated into the National Air Space (NAS) is complex and, in some cases, contentious. In June 2013, a Teal Group Corporation report estimated "...UAV spending will more than double over the next decade from current worldwide UAV expenditures of \$5.2 billion annually to \$11.6 billion, totaling just over \$89 billion in the next ten years." While these estimates for UAV spending are comprised mainly of military and nation state dollars, the commercial applications and economic impacts cannot be overlooked. In its March 2013 report, the Association for Unmanned Vehicle Systems International (AUVSI) concluded that the integration of UAVs/UASs into the NAS, allowing for expanded commercial applications, would result in an economic impact of \$13.6 billion dollars, over 34,000 new manufacturing jobs, and over 70,000 new jobs in the first three (3) years. Considering the significant economic and technological benefits that expanding access to the NAS by UAV developers and operators could provide, it is imperative to pursue all efforts to maintain, and even accelerate, FAA implementation of a comprehensive plan that considers both technical and policy issues, especially privacy.

### ISSUE BACKGROUND

While the release of the FAA's integration roadmap and the naming of the six (6) test sites were important first steps, recent statements by both the Transportation Department inspector general and the director of civil aviation for the General Accounting Office (GAO) indicate significant challenges for the FAA to meet its congressionally mandated integration date of 2015.



The FAA's planned schedule, based on the 2012 FAA Modernization and Reform Act, called for site selection by early 2013 with a self-imposed date of the end of 2012. Considering that the application process wasn't even opened until February 2013, and missed the 180-day deadline for site selection, it's no surprise that the test site announcement didn't come until December 30<sup>th</sup>, 2013, nearly a year late. Additionally, no timetable for the actual start of operations of the test sites has been announced.

The roadmap that the FAA released on November 7<sup>th</sup>, 2013, calls for a phased approach to UAV introduction to the NAS in the stages of Accommodation, Integration, and Evolution. The FAA's own wording in the roadmap—*“These three perspectives—Accommodation, Integration, and Evolution—transcend specific timelines and examine the complex relationship of activities necessary to integrate UAS into the NAS.”*—highlights the limited schedule rigidity when it comes to the substantial milestones necessary for moving forward with NAS integration. The roadmap assigns timeframes as follows: less than 5 years as the near-term, 5-10 years as the mid-term, and greater than 10 years as the long-term. Significant aspects of integration not being online until 2023 or later could be a deterrent to smaller and newer companies from coming into the market. Furthermore, delays in full policy and technology requirements could delay the adoption and deployment of existing platforms into formal commercial applications like crop monitoring, natural disaster monitoring, etc., as operators choose to avoid the COA process and instead wait for finalized regulations from the FAA and RTCA SC-228 developing the “Minimum Operational Performance Standards for Unmanned Aircraft Systems” recommendations.

Progress has been made toward establishing a plan for integrating the UAS into the NAS. But the yearlong delay in meeting the first milestones intended to support the 2015 date indicate the possibility of additional delays as more technologically challenging issues are addressed. While the U.S. works to address both technology and privacy issues, there are several international examples of UAS integration that can be used for reference. Israel has been conducting UAV operations within its limited airspace for several decades and in 2007 the Israeli Air Force turned over operations to the CAAI (Civil Aviation Authority of Israel), the equivalent of the FAA, which certifies aircraft, ground operators, and technicians for flight in Israel's civilian airspace. In the European Union, efforts to integrate UASs into their NAS have been conducted under Project DeSIRE (Demonstration of Satellites enabling the Insertion of Remotely piloted aircraft systems in Europe). Several flights involving satellite data being used to transmit radar telemetry from the UAV as well as interacting with flight controllers have already occurred in both military and civilian airspace in Spain.

The inclusion of UAVs/UASs into the NAS stands to create significant commercial and economic benefits to multiple communities, not just big aerospace and defense companies. Significant technology and policy challenges already exist so every effort needs to be made not to add any self-inflicted delays to a sometimes politically charged hot potato topic. Specific actions that need to be taken to avoid people fearing it will never be resolved include:

- Clear definition and acceleration of FAA milestones, beyond near-term, mid-term, long-term ranges, with annual reports by Transportation Department inspector general and Government Accountability Office on FAA progress.
- As security of downlinks and command and control is a key aspect of UAS operations, Congress needs to require the FAA, within 180 days, to issue a report on the security of NextGEN to address Control and Communications (C2).
- Utilizing international examples of already existing or in-work examples of UAS integration into other NASs.

- TCRG and RTCA SC-228 should accelerate the definition of required sensors and approved approach methods to allow for concurrent refinement at the six (6) test sites as well as outside development.