NAS OPS Subcommittee Findings and Recommendations

FALL 2015

Findings: UAS Integration in the NAS

The Subcommittee recognizes the significant effort and substantial progress that the FAA has made since 2011 in establishing a concept of operations for routine UAS access to the NAS. This activity has explored important nominal and off-nominal operational scenarios and the critical ATC regulatory and procedural structures necessary to ensure safe and effective inclusion of UAS in the NAS. The Subcommittee was very pleased to see the degree to which the FAA has demonstrated significant flexibility in its concepts for small UAS certification and segregation of airspace for operations. The Subcommittee has the following findings:

- 1- While the work described above sets the stage, the FAA has yet to substantially engage the UAS stakeholder community on the development of the vision and expectations for operating in the NAS. As UAS markets continue to emerge and technology capabilities accelerate, it becomes increasingly important for the FAA to reach out beyond their capable set of internal subject matter experts and include these new airspace users. These new entrants largely come from the IT community not traditionally experienced in aviation. Their business cadence is much faster, and they are more comfortable with uncertainty and risk-based implementation approaches. This cultural difference must be addressed with early and substantial discussion.
- 2- The three focus areas chosen for exploration and prototyping (i.e., small UAS within visual line of sight, extended visual line of sight in rural areas, and beyond visual line of sight in rural areas) all contain significant limitations (i.e., through the amount of airspace that can be allocated to these operations and the numbers of UAS that can simultaneously operate within that airspace). With the projection of explosive growth in UAS operations, these limits will be quickly reached and the FAA has not yet established a method by which the limited resources inherent in the concepts will be allocated to users.
- 3- The FAA has not yet substantially explored future UAS operational concepts that offer significant potential to mitigate the fundamental limitation of the near term focus areas described above (e.g., the NASA UAS Traffic Management concept).
- 4- In its most recent marks of the FY16 budget, Congress increased the amount of RE&D funding for UAS research and development. However, these RE&D efforts are focused on airframe safety and certification, not the development of operational concepts and procedures that is necessary for UAS operations in the NAS, particularly in the near term. This latter work is contained within the FAA

F&E budget request which was reduced by Congress. This apparent mismatch in funding priorities will likely further delay the integration of UAS in the NAS.

Recommendations:

The Subcommittee has the following recommendations:

- 1. The FAA should move aggressively to engage the broadest set of external stakeholders of the UAS business community to explore market opportunities, innovative technology developments and implementation paths, and flexible and transparent airspace resource allocation schema. This should be initiated as soon as practical.
- The FAA should employ the effective Research Transition Team structure to include government entities engaged in UAS R&D and bring the best of breed technologies and operational approaches to safe and effective UAS integration. Include the NASA UAS Traffic Management (UTM) activity in this effort. A near term focus for this effort should be how such future concepts should be designed and certified.
- 3. During its budget process, the FAA should clearly articulate the relationship between the research and development associated with UAS platform safety and certification and the development and validation of operational concepts, procedures, and systems required for UAS integration in the NAS. This should be presented as an integrated program to enable budget decision makers to avoid potential budget disconnects that could unintentionally delay this integration.

Background:

Runway Incursion Reduction Program - The Subcommittee received a briefing on the Runway Incursion Reduction Program (RIRP) and had findings and recommendations relevant to three projects: Low Cost Ground Surveillance (LCGS), Runway Safety Assessment (RSA), and Small Airport Surveillance Sensor (SASS). The LCGS project is intended to develop a low cost surveillance system for small airports for which a cost benefit analysis does not justify more costly surveillance systems such as ASDE-X. Similarly, the SASS project is intended to provide a secondary (beacon) surveillance system to provide improved controller situational awareness and safety and efficiency at smaller towered airports. Finally, the RSA project is intended as a small airport solution to address the NTSB recommendation A-00-66 (July 6, 2000), which states:

"[The FAA should] require, at all airports with scheduled passenger service, a ground movement safety system that will prevent runway incursions; the system should provide a direct warning capability to flight crews. In addition, demonstrate through computer simulations or other means that the system will, in fact, prevent incursions." The FAA reported to the Subcommittee that their Joint Resources Council had made a decision to not go forward with the LCGS project because of an unfavorable cost benefit ratio and that an estimate of the safety benefit of LCGS was not included in this ratio.

The FAA reported to the Subcommittee that they were proceeding with technology assessment and development for the RSA and SASS projects in anticipation of a future investment decision.

Findings:

Runway Incursion Reduction Program - The Subcommittee has the following findings:

- 1- The NTSB recommendation fails to address the cost/benefit assessment that should be considered in any investment decision. It falls to the FAA to make this determination.
- 2- The FAA has not performed a benefit analysis of either the SASS or RSA project and therefore cannot accurately estimate the potential safety or efficiency benefit pool available to offset the life cycle cost of the SASS or RSA projects. Without this estimate, it is impossible to evaluate the subject technologies for their implementation feasibility.
- 3- The decision to not include an estimate of the safety benefit in the LCGS investment decision appears inconsistent with the investment decision associated with other safety systems such as Runway Status Lights or ASDE-X, where the benefits were largely attributed to safety.

Recommendations: The Subcommittee has the following recommendations:

- 1- The FAA should establish and consistently apply a clear policy with regard to investment decisions on airport surveillance and safety systems that establishes what benefits (e.g., safety, efficiency, etc.) will be included and how those benefits will be calculated.
- 2- The FAA should use this policy to estimate the benefits pool available to the RSA and SASS projects and compare this to a life cycle cost estimate of the RSA and SASS technologies. Further technology development in these projects should be contingent upon a positive cost/ benefit estimate.