

National Aeronautics and Space Administration  
Office of the Administrator  
Washington, DC 20546-0001



June 23, 2014

Dr. Steven W. Squyres  
Chairman  
NASA Advisory Council  
Washington, DC 20546

*STEWS*  
Dear Dr. Squyres:

Enclosed are NASA's responses to the recommendations from the NASA Advisory Council meeting held on April 16-17, 2014, at NASA Headquarters. Please do not hesitate to contact me if the Council would like further background on these responses. I appreciate the Council's thoughtful consideration leading to the recommendations and welcome its continued findings, recommendations, and advice concerning the U.S. civil space program.

I look forward to working closely with you and members of the Council in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Bolden, Jr.", with a long horizontal stroke extending to the right.

Charles F. Bolden, Jr.  
Administrator

2 Enclosures:

2014-01-01 (AC-01) Unmanned Aerial System Traffic Management  
2014-01-02 (AC-02) NASA Collaborations with Department of Defense/  
Defense Advanced Research Projects Agency

## NASA Advisory Council Recommendation

### Unmanned Aerial System Traffic Management 2014-01-01 (AC-01)

#### **Recommendation:**

The Council recommends that in order to safely enable widespread civilian Unmanned Aerial System (UAS) operations at lower altitudes, advanced research and prototyping of an Air Traffic Management (ATM)-like system is needed. NASA is currently exploring the functional design, concept and technology development for such a prototype UAS Traffic Management (UTM) system. The Federal Aviation Administration (FAA) and a number of partners have expressed an interest in working with NASA in exploring the research, development, prototyping, testing and possible implementation of such a system. The Council recommends that the NASA Administrator and all NASA organizations involved in the development and sustainment of agreements and partnerships be proactively engaged in reducing implementation barriers and provide any necessary tools to enable the innovative partnerships that will be required for the realization of UTM. NASA should make this a high priority for the Agency given the urgency warranted by such a system.

#### **Major Reasons for Proposing the Recommendation:**

Many civilian applications of UAS have been imagined, ranging from operations in remote areas to congested urban areas, including goods delivery, infrastructure surveillance, agricultural support, and medical services delivery. Class G airspace (up to 2000 feet) is currently uncontrolled (not under the current Air Traffic Control system) and key infrastructure to enable and safely manage widespread use of low-altitude airspace and UAS operations therein does not exist. NASA is exploring concepts and technology development for a prototype UTM system, in close coordination with the FAA and National Oceanic and Atmospheric Administration (NOAA) that will support safe and efficient UAS operations for the delivery of goods and services. Public-private-academia relationships are expected (and necessary) to help define and develop such a UTM system.

#### **Consequences of No Action on the Proposed Recommendation:**

The Council is concerned that without sufficient Agency support and focus from relevant NASA organizations (e.g., procurement, General Counsel, research centers, etc.), the agility and flexibility required for NASA to develop the complex UTM system will be compromised, leading to insufficient progress and ultimately impacting results.

#### **NASA Response:**

NASA concurs with the Council on the criticality of partnerships to the future successful implementation of a system such as the UTM. NASA agrees that this area has enormous potential to increase the utility and safety of unmanned aerial systems if we can address the significant uncertainties surrounding their deployment and certification. NASA's Aeronautics Research Mission Directorate will continue to proactively engage as appropriate with other relevant NASA organizations (such as the Office of General Counsel, Office of Procurement, and the NASA research centers) in the development of innovative partnership agreements which are crucial to this effort. NASA management across the Agency remains committed to fostering partnerships as can be evidenced by the emphasis on expanding partnerships contained within the *2014 NASA Strategic Plan*.

## **NASA Advisory Council Recommendation**

### **NASA Collaborations with Department of Defense / Defense Advanced Research Projects Agency 2014-01-02 (AC-02)**

#### **Recommendation:**

The Council endorses NASA – Department of Defense (DOD) / Defense Advanced Research Projects Agency (DARPA) collaboration on programs of mutual interest and recommends that NASA engage DOD/DARPA leadership to identify and explore opportunities where commercial technology can benefit future military missions and/or where military technologies can benefit civil and commercial applications. Current technology areas of mutual interest include (but are not limited to) hypersonic flight, autonomous/unmanned air systems, vertical lift technology, rocket propulsion development, collaborative vehicle operations for enhanced airspace/mission management, and related data analysis tools.

#### **Major Reasons for Proposing the Recommendation:**

The collaborative relationship that existed between NASA and relevant DOD/DARPA organizations is not as strong as it has been at certain times in the past. Collaborative partnerships have the potential to enable faster progress towards technology advancement in mutual areas of interest. In a constrained budget environment, the Council feels that this relationship should be reinvigorated to provide the most responsible use of Government resources.

#### **Consequences of No Action on the Proposed Recommendation:**

Without renewed emphasis on NASA/DOD/DARPA collaborations, rewarding areas of technology synergy between civil and military applications will remain bifurcated and progress will be slower.

#### **NASA Response:**

NASA concurs with the Council on the importance of Federal agency collaborations to foster research of mutual benefit. Within the space and aeronautics domains, NASA agrees that continuing to engage DOD/DARPA in areas of convergent interest can have the ability to provide more rapid infusion of dual-use technologies that serve both civil and military interests. NASA will proactively engage DOD/DARPA officials in those areas of convergence either through existing mechanisms and agreements, or through yet-to-be established means, as necessary.