

**Testimony of Colin Guinn  
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**Before the House Committee on Science, Space, and Technology**

***“Unmanned Aircraft Systems (UAS) Research and Development”***

**January 21, 2015**

Chairman Smith, Ranking Member Johnson, and members of the Committee, thank you for inviting me to testify on UAS Research and Development. My name is Colin Guinn, and I am the Chief Revenue Officer of 3D Robotics, North America’s largest consumer drone manufacturer. We are known for pioneering advanced and easy-to-use consumer drone technology, and for the Pixhawk, the world’s most popular universal autopilot platform. We are also a founding member of the Small UAV Coalition.

Today I’d like to focus my testimony on four points: (1) UAS research and development is important not only for integration of UAVs into the NAS, but for the U.S. economy as a whole; (2) Although the test sites are helpful, they are not enough; (3) the FAA must act quickly to maintain American competitiveness; and (4) allowing very small UAVs to operate commercially now will also serve as R&D for other UAVs.

**I. Research and development for small UAVs is important not only for integration into the NAS, but for the U.S. economy as a whole.**

3DR is at the forefront of research and development for small UAVs. For example, our autopilot is unlike any other on the market, in that it collects all of the information from every flight and saves it to the cloud. This is important because it helps us improve parts of operation that we may have not otherwise tested. We’re working with NASA on the Urban SkyWays project, which will be the first end-to-end demonstration of a commercial drone network through four major cities. We’re also partnering with NASA to develop an air traffic management system for UAVs, and developing new technology to help UAVs avoid objects. Finally, we’ve partnered with Intel on an amazing project to develop microcomputers. All of these projects are critical, because as we solve these technical issues, we will be able to speed up the safe integration of small UAVs into the national airspace.

This R&D has already produced enormous benefits. When our colleagues discover new sensors for precision agriculture, American farmers are able to increase their crop yields. Improvements in UAV platforms have benefitted the oil and gas industry, which uses drones to inspect live flare stacks. At 3DR, our drones have been used to gather data for ecological research and improve accuracy of search and rescue missions. As we improve and find new uses for our drones, we’re creating efficiencies that will help us work smarter, save resources, and live sustainably.

## **II. Although the test sites are helpful, they are not enough.**

Right now, American companies are not allowed to conduct research and development for UAS outside on their own property. Congress was well-intentioned in setting up the UAS Test Sites for this purpose, and we believe that the sites could be helpful for some companies. However, they are not enough to support our nation's entire UAV industry. First, for many smaller start-ups, they are cost-prohibitive. Second, some of our colleagues are iterating new platforms every few weeks – they don't have the time to navigate the bureaucracy of the test sites. Finally, companies don't want to move their entire teams of engineers to these test sites. Just like in other industries, UAS engineers want to test in their own labs.

These significant restrictions on R&D, as I'm sure you understand, are crippling. American companies are faced with either spending the time and money to operate at the UAS Test Sites, operating in the shadows, or moving R&D overseas. It is no small wonder that the epicenters of UAV research and manufacturing are now in France and China. Today, the FAA should allow companies to conduct R&D activities outside on their own property.

## **III. The FAA must act quickly to maintain American competitiveness.**

This brings me to my third point. In order for the UAS industry to flourish, we have to have a sensible and risk-based regulatory system to support it. We hope the long-awaited sUAS rulemaking will open up R&D opportunities, but the pace of this rulemaking is just too slow to maintain American competitiveness. We believe the FAA has authority to authorize such R&D now on a broad scale, whether under section 333 (of the FAA Modernization and Reform Act of 2012) or its existing exemption authority (in section 44701(f) of the Federal Aviation Act).

## **IV. Allowing very small UAVs to operate commercially now will also serve as R&D for other UAVs.**

My fourth point is that FAA can jump-start R&D by allowing the smallest UAVs to begin operating in the national airspace. R&D should not be relegated to test sites or testing at one's own facilities. And far too much R&D up to now has concentrated on large UAVs that are intended to operate in controlled airspace. Operating very small UAVs in the open environment –for commercial purposes in addition to testing – will also provide essential data for the safe development of other small UAVs. The U.S. can follow other countries such as France and Canada and expedite integrating the smallest UAVs – under 2 kilograms (about 5 pounds) to operate in the national airspace. With their very light weight, they pose a negligible risk should there be a collision with another aircraft or a person. And there are many commercial uses for the smallest UAVs, so that experience gained from these operations – with geo-fencing, fail-safe and go home capabilities, among other safety features – will provide lots of data to inform the development of other small UAVs up to 55 pounds, as well as larger UAVs.

## **Conclusion**

Thank you again for inviting me to testify today. 3DR is proud to continue raising the bar for UAV technology and investing our energy in research and development. We need to work together in developing technology and regulations to quickly and effectively integrate sub-2 kg UAVs into the national airspace. I look forward to answering any questions.