

April 20, 2015

Mr. John Verdi
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW
Room 4725
Washington, D.C. 20230

Re: Docket No. 150224183-5183-01 // Privacy, Transparency, and Accountability
Issues Associated with Commercial and Private Use of Unmanned Aircraft
Systems

Dear Mr. Verdi:

I am an aerospace engineer with college degrees in aerospace and mechanical engineering. I have worked in the aviation and aerospace industry for the past 25 years, including several years in research, development, test and evaluation (RDT&E) involving unmanned aerial systems (UAS). I have also served as an advocate for the UAS industry in our state and region and have been fully engaged with our state and federal legislators regarding UAS issues ranging from safety to privacy.

I believe our society is poised to significantly benefit from UAS technology, and that UAS technology offers significant potential to improve human efficiency and even save lives. Small UAS technology (or SUAS) can be used to study complex weather environments and improve our understanding and ability to predict and forecast severe storms. SUAS technology can also be used for disaster recovery and critical first responder functions thus saving lives and improving overall health and safety for citizens. SUAS technology will also become an important tool for scientists in many diverse disciplines, including those involved in biological surveys and the study of fragile ecosystems. We have not yet enumerated the vast number of positive applications and benefits to science and society that can be accomplished by SUAS technology.

SUAS technology will also benefit our economy and provide a much-needed economic boost and opportunity for technology innovation. Manned aviation transformed our world a century ago starting with applications such as Airmail, and SUAS technology is positioned to directly benefit industries ranging from agriculture to energy.

As an aerospace engineer and aviation professional, the safety of the national airspace system (NAS) is critically important to me, and safety is one of the most important factors in all of the work that I do. Much of the early focus on SUAS technology has focused on safety and integration into the NAS. Although the regulatory process with the Federal Aviation Administration (FAA) to facilitate NAS integration started slowly, recent activity and progress is encouraging and this reflects the progress that has been made in SUAS RDT&E in our nation. I sincerely believe that regulations based on UAS and SUAS safety, both for systems in the air and

for people and property on the ground, will eliminate many concerns about privacy since many of the current imagined privacy scenarios will already be illegal and prohibited. We have a very well-established legal and regulatory framework in the United States to address aviation safety and management of the NAS, and I am confident that an approach that focuses on safety first will eliminate many concerns about risks to personal privacy.

Unfortunately as our nation and the UAS industry await final clarification and rulemaking for SUAS, many state and local governments have enacted a patchwork of laws and ordinances directed at SUAS operation that are aimed at protecting personal privacy. Regardless of the intent behind these laws, the uncertainty due to inconsistencies between the laws and ordinances in various states and regions will most definitely have a negative impact on UAS/SUAS operations, and may place certain regions of the nation at an economic disadvantage during an early stage of a nascent industry that could be significant in size and economic potential.

The nature of some of the current concerns about UAS and SUAS is not unique in the history of our nation. There were concerns in the late 19th century when the Eastman Kodak Company developed low-cost camera technology and introduced photography to the masses during the Victorian age.¹ Amidst sensational claims regarding the imagined harms that might be perpetrated by “Kodakers”, the beneficial applications and uses of photography far outweighed the potential for misuse, and ultimately photography transformed our society. One can only imagine how the free press and journalism would have been impacted without the ability to adopt and utilize photography in the exercise of First Amendment freedoms. Photography also became an important tool for the arts, sciences, and even hobbyists. More than a century after the privacy debate that arise due to the emergence of “Kodakers”, groups such as the American Civil Liberties Union (ACLU) actively work to protect the rights of photographers and state that: “Taking photographs of things that are plainly visible from public spaces is a constitutional right”.² Groups such as the ACLU argue that photography can be an important tool in maintaining accountability of public officials and governments. In recent decades aerial photography has become important to applications such as news helicopters and television reporting. Recently the ACLU noted the importance of aerial photography to the free press and journalists by stating that: “Aerial newsgathering provides a unique and important perspective on breaking news, allowing for coverage that would otherwise be impossible to obtain on the ground.”³

However, the many positive applications and benefits of photography would have been restricted and possibly derailed if lawmakers and society had overreacted to late 19th century imaginations and fears. Our nation has experienced similar reactions to other technologies. For example, some feared that strangers would open and read their personal mail during the early

¹ Mensel, R. (n.d.). "Kodakers Lying in Wait": Amateur Photography and the Right of Privacy in New York, 1885-1915. *American Quarterly*, 24-24.

² <https://www.aclu.org/know-your-rights/photographers?redirect=kyr-photo>

³ https://www.aclu.org/files/assets/aclu_letter_to_faa_11.4.14.pdf

days of the Postal Service. Early automobile technology disrupted the flow and culture of city streets that had been primarily used by pedestrians and horses up until that point in time.⁴ There were also general fears and concerns about aviation immediately after World War I since most of the world's population associated aircraft with warfare and many found it difficult to disassociate the technology from the application, since aircraft had not yet been used for any purpose other than warfare up until that point. However by the 1930's celebrity aviators were capturing the imaginations and admiration of the public and aviation became very popular and ultimately transformed our society and nation in positive ways.

It is important to remember that UAS technology has not been developed in a legal or regulatory vacuum within the United States. First, Congress has defined all UAS as "aircraft", and thus UAS are subject to the vast body of FAA regulations and rules.⁵ Additionally, existing laws of general applicability already protect society against many types of harm and provide legal remedies for those harms. The common law and criminal codes that have developed over generations already address the harms to privacy, property, and safety that might arise from *any* new technology. In addition, the courts have ably shaped interpretations of the First and Fourth Amendments as new technology has developed. Our Constitution provides us with a strong foundation of legal rights, and an ability to reconcile and adapt as society evolves and changes.

It is also important to remember that technology is developed in response to problems and challenges. Engineers continually apply science to solve problems and to develop new technology to address societal challenges. The explosive growth of the internet and our information society leaves us awash in data, and our notions of personal privacy have been impacted. Yet it is important to realize that we are still in the relatively early stages of our information and data-driven society. I believe that ultimately technology has the potential to safeguard and protect our personal privacy in ways that have never before been possible. For example, in contrast to surveillance by manned aircraft, for example, data gathered with UAS can be filtered, obfuscated, redacted, and encrypted without ever being viewed by human eyes. Techniques such as "geo-fencing" can restrict data collection based on privacy or other concerns. "No-fly" or "no-go" zones can be programmed into autopilots and systems can automatically avoid those areas. In short, technology may in fact solve and address privacy concerns and enable a society where personal privacy is potentially even more protected than in the past. However, if society and lawmakers overreact by enacting unnecessary or unreasonable laws and regulations that are *reactionary* in nature, then this can stifle the types of technology innovations that are most beneficial to society.

Civil and commercial use of UAS technology has the potential to solve problems and address challenges that are otherwise difficult and dangerous (or even impossible) using manned aircraft. UAS and SUAS technology will save lives and become important tools for first responders. This technology will also provide significant economic opportunities for the United States. In an environment of global economic competition, it is critical that the United States

⁴ Norton, Peter D. *Fighting Traffic the Dawn of the Motor Age in the American City*. Cambridge, Mass.: MIT, 2008. Print.

⁵ https://www.faa.gov/about/plans_reports/modernization/

remain competitive and that we continue to foster technology innovation. Regulatory uncertainty regarding UAS and SUAS operations in the U.S. is already adversely impacting our ability to compete with other nations such as China in this nascent technology industry.

For these and other reasons, I and others have worked to urge the expeditious fulfillment by the Federal Aviation Administration ("FAA") of its Congressional mandate, established in the FAA Modernization and Reform Act of 2012, to develop a plan to safely integrate UAS into the National Airspace System ("NAS"). I – along with my colleagues in the industry - look forward to commenting separately on the FAA’s recent publication of its Notice of Proposed Rulemaking ("NPRM") that would allow SUAS to operate in the NAS.

Any technology can be misused, and UAS/SUAS technology is no different. However, the large body of safety laws and regulatory oversight of all types of aviation (including UAS) provides a level of oversight that other technologies do not necessarily possess, especially during the early nascent stages of the technology emergence and growth. I applaud the White House for directing in its recent Presidential Memorandum that NTIA establish a multi-stakeholder engagement process to develop and communicate best practices for privacy, accountability, and transparency issues regarding commercial and private UAS use in the NAS. This multi-stakeholder process will be an important opportunity to foster public trust associated with the use of UAS, and it is critical to the success of the UAS industry.

I thank you for the opportunity to provide these comments. In particular, I have thoughts on the proper scope for the NTIA best practices, the structure of the working groups, and privacy, transparency, and accountability issues.

SCOPE OF NTIA BEST PRACTICES

The FAA’s long-standing distinction between “public aircraft operations”⁶ (i.e. – government operated) versus “civil aircraft operations” (e.g. – commercially or privately operated) provides a starting point in developing a structure when establishing working groups and developing best practices. For example, some public universities already function as “public aircraft” operators when performing basic science research using UAS. As a result, universities already have strong policies and processes in place to provide responsible oversight for tasks such as data collection to protect privacy. Similarly, commercial entities (“civil aircraft” operators) are subject to requirements imposed by insurance underwriters as well as a general aversion to the risk of legal action due to privacy and other torts. There are unique distinctions between the groups that the FAA has already identified (“public” vs. “civil”). I recommend that the NTIA use this existing distinction to structure working groups and ultimately to define best practices.

I urge the NTIA to include recognized legal scholars with areas of expertise in both First

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https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/1023366

and Fourth Amendment law as part of any stakeholder group. The concept of personal privacy is intertwined with the First Amendment (and Fourth Amendment) in complex ways, and any rules or policies must withstand ultimate scrutiny by the courts to avoid encroachment on First Amendment constitutional rights.

STRUCTURE OF WORKING GROUPS

I believe that the NTIA Working Groups should include all relevant stakeholders, including academic researchers (including legal scholars), commercial developers of UAS technology, insurance companies and underwriters, and in particular aviation professionals and experts. The Working Groups should include subject matter experts on the First Amendment, privacy and aviation—all of whom have knowledge and experience that could substantially bolster the NTIA multi-stakeholder process. The Working Groups should also include industry groups and trade associations such as the Association for Unmanned Vehicle Systems International (AUVSI).

While any Working Group structure should reflect the complexity of the dialogue and debate about privacy and acceptable UAS use, I also believe the Working Groups should be structured to operate efficiently so that the process can move along expeditiously, in a way that keeps up with technological advances. Regulatory delays and uncertainty can have an adverse economic impact on any technology industry, especially those in the nascent stages.

PRIVACY

I believe that the NTIA multi-stakeholder process should continue to be mindful of the fact that UAS (and SUAS) are just a platform for a camera, or other sensor technology. Although a few of the privacy concerns they present are unique to UAS, most others are not. Often, broadly applicable laws or rules already cover the perceived harm in question. I strongly believe it is important to focus the policymaking process on privacy harms the multi-stakeholder participants determine are realistically unique to UAS technology, and avoid focusing on imaginary harms that have no rational basis in reality, or that are already addressed by existing laws or policies.

As policymakers consider best practices for UAS, it is worth noting that micro, small and large UAS platforms offer different capabilities, and consequently, the multi-stakeholder process should discuss whether they should be treated differently. Larger UAS can obviously carry larger payloads that are often more sophisticated, with higher resolutions. Smaller UAS are more likely to be broadly available, since they are more affordable, yet they cannot carry large payloads. In distinguishing between various sizes of UAS platforms, policymakers should strive to develop precise definitions of different UAS in order to avoid ambiguity. Whenever possible, policymakers should work within existing definitions that are applicable to aircraft (FAA and other) and avoid creating new definitions or categories that have the potential to create confusion or ambiguity.

TRANSPARENCY

Transparency is essential to educating the public and building trust associated with UAS. Many entities, such as academic and public institutions, are already subject to existing laws and rules regarding transparency. However, it is important to remember the important balance that must be achieved with commercial and private operations. Any requirements for transparency imposed on commercial operators should be tempered with the reality of the need to protect commercially competitive and proprietary information, data and processes. Existing aviation safety regulations may provide a model for achieving the proper balance of transparency versus protection of proprietary or commercially-sensitive information. Any proposed rules or processes should also carefully consider the impact on the First Amendment rights of private operators and others (such as journalists).

ACCOUNTABILITY

I agree with the NTIA that accountability is important to prevent abuse and encourage responsible use of UAS. Many entities (such as academic institutions) have extensive accountability protocols already in place, including rules of conduct, training, audits and assessments. Perhaps these accountability protocols could provide a model for best practices in the context of UAS/SUAS operations. Commercial operators will continue to seek to mitigate risks associated with legal liability and also public perception and acceptance. These are powerful motivations for commercial entities. The insurance industry will likely play an important role for the commercial UAS and SUAS industries and product liability will be an important factor that will impact and potentially drive the development of industry best practices. It is important to remain mindful of the strict regulatory oversight that is in place to protect the safety of the NAS, and the long-standing professional culture built on safety oversight may prove beneficial when developing best practices that lead to accountability.

CONCLUSION

I commend the Federal Government and the NTIA for pursuing a multi-stakeholder process to establish privacy, transparency, and accountability best practices for the commercial use of UAS. There are significant economic benefits associated with the commercial and private use of UAS, but I fully appreciate the need to address privacy concerns and to assure the public that the potential for misuse of UAS technology can be addressed and mitigated. Therefore, this multi-stakeholder process will play an important role to foster public confidence, and to establish privacy, transparency and accountability protocols for commercial users of UAS.