Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Utilizing Rapidly Deployable Aerial Communications Architecture in Response to an Emergency	)	PS Docket No. 11-15;
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COMMENTS OF THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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July 25, 2012

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I. INTRODUCTION AND SUMMARY

The Telecommunications Industry Association ("TIA") hereby submits comments to the Federal Communications Commission ("Commission") in the above-captioned proceeding.[1] TIA appreciates the opportunity to discuss the use of deployable aerial communications architecture ("DACA") in facilitating emergency response situations by rapidly restoring communications in the immediate aftermath of a catastrophic event.

TIA represents the global information and communications technology ("ICT") industry through standards development, advocacy, tradeshows, business opportunities, market intelligence and world-wide environmental regulatory analysis. Its hundreds of member companies manufacture or supply the products and services used in the provision of broadband and broadband-enabled applications. Since 1924, TIA has enhanced the

[1] *Comments Sought on Utilizing Rapidly Deployable Aerial Communications Architecture in Response to an Emergency*, Public Notice, PS Docket No. 11-15, FCC 12-53 (rel. May 24, 2012) ("PN").

business environment for broadband, mobile wireless, information technology, networks, cable, satellite and unified communications.

TIA members manufacture DACA technologies while other members could be adversely affected by the potential interference caused by these technologies. TIA applauds the Commission's consideration of DACA technology in improving its public safety goals but recommends the Commission carefully consider limiting DACA's use to existing current public safety communication frequencies in order to avoid interference with commercial use and repairs. In general, control of DACA platforms should be in the hands of local agencies that are in the best position to make potentially lifesaving decisions. The decision to implement DACA platforms should remain with these agencies as they are in the best position to evaluate the potential benefits and costs of implementation. DACA is a new and developing technology and should be monitored closely.

II. THE CURRENT STATE OF DEPLOYABLE AERIAL COMMUNICATIONS ARCHITECTURE TECHNOLOGIES

Local, state, and federal agencies could provide critical communications infrastructure in emergency situations by using piloted aircraft, unmanned aerial vehicles ("UAVs"), and tethered or untethered balloons. Each DACA technology has its own unique characteristics and capabilities, but all utilize the advantages that altitude has in providing coverage. These technologies also coordinate frequency assignments to allow

multiple users on the ground to access the aerial platform and enjoy increased coverage area.

Currently, the military has deployed multiple types of DACA technologies using piloted aircraft, UAVs, and tethered or untethered balloons to provide enhanced surveillance, intelligence and communications for soldiers in remote locations.[2] For example, Lockheed Martin offers aerostat systems for military use in domestic and international markets that carry communications suites, surveillance, and other types of equipment.[3]

Although the majority of DACA technologies are currently used for military operations, there are multiple types available for use in emergency situations to help restore communications. The Commission has identified several promising types of DACA technologies for future use in restoring communications during the first 72 hours of emergency situations.[4]

a. Small Unmanned Aerial Vehicles

Small unmanned aerial vehicles (SUAV) are hand-launched, battery-powered vehicles that fly to about 500 feet above ground level (AGL).[5] SUAVs can generally support one communications service, such as a single frequency band for cellular services. This equipment can be pre-deployed, brought into a disaster area, or launched

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[2] *See* FCC DACA White Paper at 4

[3] *See* Lockheed Martin, http://www.lockheedmartin.com/us/products/lighter-than-air-vehicles.html (last visited July 24, 2012).

[4] *See* FCC DACA White Paper at 5

[5] *Id*.

from a nearby location. SUAVs can stay airborne for several hours at a time and can be used as repeaters or virtual cell towers. AeroVironment, Inc. has a family of SUAVs which could be applied in these emergency situations. They operate at an altitude from 300-500 feet and up to two hours at a time.[6]

b. Balloons

Weather balloon technologies (Balloons) are capable of carrying various electronic packages that act as repeaters.[7] These systems can bridge repeater technologies to allow use of more than one band of frequencies by the overall system. However, frequent re-launching may be required to ensure continued communications coverage because of the short time that balloons can remain aloft. Space Data Corp. has developed a system of balloon deployments capable of providing 24/7 coverage to a large footprint when operating at a high altitude.[8] This balloon technology has also been deployed by the U.S. military.[9]

Other types of balloon technologies could be tethered to the ground in a stationary manner. Carolina Unmanned Vehicles Inc. has developed DACA technology that can be tethered to the ground and provide coverage. In natural or man-made disasters the technology can act as a relay platform for emergency voice communications, as a

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6 *See* Comments of AeroVironment, Inc. at 1

7 *See* FCC DACA White Paper at 6

8 *See* Comments of Space Data at 3

9 *Id.*

network bridge for interconnecting ground computers and networks, and as relay point for dissimilar communications systems.[10]

c. High Altitude Long Distance Unmanned Vehicles

High altitude long distance unmanned vehicles (HALE) allow for deployment at potentially higher operational altitudes, for longer durations, with greater payloads.[11] Because of their height and maneuverability, HALEs may allow for geographically directed communications, which may decrease the potential for harmful interference, and may provide greater capacity than other available solutions.[12]

AeroVironment is currently testing a HALE platform, Global Observer that is capable of flights up to 7 days (continuous) at altitudes above 50,000 ft.[13] The test model currently carries an existing communications relay payload that is capable of providing the interconnectivity required by the Commission for emergency telecommunications architectures.[14] Aurora Flight Sciences Corporation has two DACA platforms, the Orion UAS and the Centaur, which could be used in emergency situations.[15] Orion's payload capacity of over 2500 lbs and open architecture allows for the integration of multiple communications packages.[16] Centaur is a highly efficient low altitude aircraft that can serve as both a manned and unmanned communications node.[17] It is capable of carrying

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10 *See* Comments of Carolina Unmanned Vehicles Inc. at 9

11 *See* FCC DACA White Paper at 6

12 *See* FCC DACA White Paper at 6-7

13 *See* Comments of AeroVironment, Inc. at 5

14 *Id*.

15 *See* Comments of Aurora Flight Sciences Corp. at 1

16 *Id*.

17 *See* Comments of Aurora Flight Sciences Corp. at 1

telecommunications equipment and its open architecture enables quick integration of new payloads.[18]

d. Deployable Suitcase Systems

Deployable suitcase systems are portable transceivers that can be placed on low flying aircraft, vehicles, or tall buildings to be used as repeaters.[19] The State of Arkansas filed comments stating its desire to make use of aerial telecommunications in the event the statewide emergency network experiences a system failure due to emergency. Its current approach is to use two deployable suitcase systems on small aircraft operated by emergency agencies.[20] These aircraft Examples of deployable suitcase repeater technology include Motorola Solutions' PDR3500[21] and Oceus Networks' Xiphos.[22]

In addition, the Commission has acknowledged other technologies, such as quick-mounted antennas, repeaters and transmitters on wheels, and satellite technologies, were also identified in the record as potential solutions for temporary communications networks during emergencies.[23]

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18 *Id*.

19 *See* Comments of AeroVironment, Inc. at 7

20 *See* Comments of State of Arkansas at 2

21 *See* Motorola Solutions http://www.motorola.com/Business/US-EN/Business+Product+and+Services/Two-Way+Radios+-+Public+Safety/Infrastructure/Base+Stations+and+Repeaters/PDR3500_US-EN (last visited July 24, 2012).

22 *See* Oceus Networks http://oceusnetworks.com/resource-center/videos/introduction-4g-lte-xiphos (last visited July 24, 2012).

23 *See* FCC DACA White Paper at 7 (*Citing* Comments of Sprint Nextel at 1-5; Comments of ComSite Hardware, Inc. at 1; Comments of ViaSat, Inc. at 1-2.)

This is by no means a comprehensive list of applicable DACA technologies as there are many manufacturers, and the industry continues to innovate and develop new technologies. Manufacturers are in the best position to determine the capabilities of each DACA technology to support commercial and public safety communication services. The operational costs of DACA technologies or other alternative platforms will vary depending on the type of technology and its capabilities.

The Commission should observe its policy of technology neutrality and allow for the entities and agencies who decide to use these technologies to determine which platform will work best for their needs. This would also foster a competitive market for these technologies and drive costs down.

III. COORDINATION AND IMPLEMENTATION

The application and implementation of a DACA platform will depend on a variety of factors: relief efforts will vary with the type of emergency; different agencies will respond differently to similar scenarios; the physical limitations caused by the geography of the affected area; and other potential variables.

TIA recommends the individual agencies use DACA only as part of their existing public safety networks. This applies at the Federal, State, and Local levels. Each agency will be in the best position to evaluate their communication needs in an emergency or disaster. In addition, the agencies could best determine the cost effectiveness of

implementing DACA technologies as part of the public safety network, keeping in mind their overall costs. Also, if DACA platforms were integrated into existing public safety networks it would not require agencies to create entirely new regulations but merely changes the technology used in their current relief operations.

Federal, state, and local agencies already coordinate with the FAA in emergency situations to limit the amount of air traffic present in a disaster area. DACA technology should be folded into the current systems being used. Current regulations with the FAA impose temporary flight restrictions in the vicinity of disaster or hazard areas.[24] In these cases the Administrator will issue a notice under which aircraft helping in hazard relief is operated "under the direction of the official in charge of on scene emergency response activities."[25] This implies a level of local control over aircraft being used in relief operations, but this interpretation should be clarified with the FAA.

Some of the carriers have questioned the efficiency of integrating DACA technology into their existing networks.[26] These companies have invested large amounts of resources in establishing and maintaining their networks. This includes alternative solutions to provide coverage in emergencies or disasters.[27] In their cost/benefit analysis, interference and application concerns have outweighed DACA's usefulness in their

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[24] 14 C.F.R. §91.137.

[25] *Id*.

[26] *See* Comments of AT&T at 3, Sprint at 3

[27] *See* Comments of AT&T at 6-8, Sprint at 2-3.

networks.[28] In these cases resources are better spent repairing the existing networks because it is more practical and faster than implementing DACA platforms.[29]

In light of these reservations, it appears that DACA technologies can be most effectively used with existing public safety network frequencies. This would help minimize the amount of interference commercial users would experience because the frequencies used would already be dedicated to public safety. The Commission should also take into consideration the possible interference that could occur from DACA technologies operating at a higher altitude than traditional base stations. Because of the added height from being airborne, it is likely the interference will be stronger because of the changing interference characteristics.[30]

With regards to interoperability, DACA platforms should be used only as a temporary measure to augment the existing public safety networks in the case of an emergency or disaster. Interoperability is currently being addressed in other Notices. DACA should not be viewed as a solution to address interoperability as its use is temporary and is not the proper vehicle to mandate interoperability.

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[28] *See* Comments of AT&T at 9, Sprint at 1.

[29] *See* Comments of AT&T at 7, Sprint at 8.

[30] *See* Comments of APCO at 1-2, CTIA at 1-2, AT&T at 2-3, Sprint at 6.

IV. CONCLUSION

For all of these above listed reasons, TIA recommends DACA use to augment existing public safety networks and is under local agency control. This would limit interference with other disaster relief operations while maximizing the effectiveness of disaster relief operations.

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