Drone Advisory Committee (DAC)
March 9, 2018 Meeting Minutes

List of Attachments

- Attachment 1: Attendees
- Attachment 2: Agenda
- Attachment 3: Presentations

Summary

The March 9, 2018 DAC meeting was hosted by The MITRE Corporation in McLean, Virginia. The DAC heard from the DAC Subcommittee (DACSC) co-chairs, DACSC Task Group 3, and the FAA. The meeting started promptly at 9:00 AM with a greeting and information from The MITRE Corporation. At 9:02 AM the DFO Statement was read, followed by a roll call of the members. The unanimous approval of the minutes from Meeting 5 was recorded at 9:13 AM. The chairman's report was delivered at 9:14 AM, followed by the opening comments from the FAA.

The DACSC co-chairs, John Allen, jetBlue Airlines, and Sean Cassidy, Amazon Prime, provided opening remarks to the subcommittee work and to the Task Group (TG) 3 presentation. Task Group 3 leaders Howard Kass and Mark Aitken presented the group's final report on UAS Integration Funding, which was followed by a question-and-answer session with the committee.

The morning session concluded with a presentation from Earl Lawrence of the FAA, on the response to the DAC recommendations on Access to Airspace delivered after the November 2017 DAC meeting.

A discussion followed on the future of the DAC and how the FAA would engage with the DAC was held. It was an open discussion with no presentation slides and was led by the chairman and the Designated Federal Officer (DFO).

A brief discussion of a set of draft tenets, meant to provide guidance to the DAC as it develops future recommendations to the FAA, (as prepared by an ad hoc DAC group) was briefly discussed under New Business.

The meeting concluded with a review of the Action Items recorded and closing remarks from the chairman and the FAA. The meeting was adjourned at 3:46 PM.

Official Statement of the Designated Federal Officer
Dan Elwell, Acting Administrator, FAA

The Designated Federal Officer (DFO) statement was read by FAA Acting Administrator *Dan Elwell* at 09:02 AM.

DAC Chairman's Report
Brian Krzanich, CEO, Intel Corporation

The chairman thanked the MITRE Corporation for hosting the meeting and thanked the FAA for continuing to utilize the DAC. He asked for a moment of silence to remember DAC member Mayor Ed Lee of San Francisco who passed away in November 2017. He thanked the Task Group members for all their efforts over the past months and expressed a special thanks to Sean Cassidy of Amazon Prime for accepting the role of co-chair on the DACSC. He also thanked outgoing DACSC co-chair Nancy Egan for her leadership of the subcommittee. He noted that the final TG 3 report would be delivered during the meeting and congratulated them on the great job researching and educating themselves on the complexities of FAA funding. He pointed out that since November, the FAA has been reviewing and beginning to act on the recommendations provided by TG 2 and the committee would hear from the FAA on how they were acting on those recommendations. Lastly, he noted the committee would discuss their future role and encouraged all members to engage in the upcoming dialogue.

Approval of Minutes from Previous Meeting

The minutes of the previous meeting were unanimously approved as distributed.

FAA Remarks
Dan Elwell, Acting Administrator FAA

Mr. Dan Elwell, Acting Administrator FAA, delivered the FAA remarks. He indicated that the next 12 to 18 months will be critical to the UAS integration effort and listed several accomplishments that are aiding in that effort. He discussed the Integrated Pilot Program and the UTM Pilot Program and the impacts they will have on UAS integration. He then thanked the members of TG 1 for their efforts and specifically thanked the leadership, Brendan Schulman, DJI, and Dr. John Eagerton, National Association of State Aviation Organizations. He stated that although the TG has sunset, the issues raised by the TG will still be tackled. He then thanked the members of TG 2 and their leaders, Sean Cassidy, Amazon Prime, and Rob Hughes Northrop Grumman Corporation, and noted that the FAA will be presenting a response to their recommendations during the meeting. He thanked the members TG 3 and their leaders, Howard Kass, Clear, and Mark Aitken, Akin Gump, and stated that he was looking forward to their presentation. Lastly, he mentioned the ongoing efforts to re-charter RTCA and that the committee would be discussing the orientation of the DAC. He thanked John Allen and Sean Cassidy for their leadership on the DACSC, as well as the outgoing DACSC co-chair Nancy Egan of 3D Robotics. He thanked The MITRE Corporation for hosting the meeting and also remembered Mayor Ed Lee for his leadership on the DAC.

DACSC Lead Report Out

John Allen, jetBlue Airlines
Sean Cassidy, Amazon Prime

The DACSC co-chairs provided opening comments to the TG 3 presentation. They also delivered comments regarding the sunsetting of the Task Groups and indicated the subcommittee members are all ready for additional taskings. They requested clarity from the FAA on how the activities of the existing and planned Aviation Rule-Making Committees (ARCs), the NASA Technology Capability Level activities, the UAS IPP, the DAC, and other efforts tied together, and asked how the DACSC, which includes so many talented individuals, can make their work impactful and best serve the needs of the DAC and FAA. He vowed that their work would be responsive and transparent.

Task Group 3 Presentation

Howard Kass, Clear
Mark Aitkin, Akin Gump

The co-chairs of TG 3 began their presentation with thanks to the FAA and RTCA for assisting in the development of their report. Mr. Kass also recognized Ms. Meghan Ludtke of American Airlines, for her leadership during the development of the report.

The presentation began with discussion of commercialization of drones and how TG 3 approached the task, including the process used to develop the interim and final reports. Mr. Kass referenced an example scenario that embodies the issues regarding funding of UAS work: The Integrated Pilot Program proposals are being evaluated by the FAA group economic analysis group using resources benefitting unmanned aviation but paid for from manned aviation budget.

The TG 3 report recommends the FAA focus on community outreach and training as well as communication efforts between the manned and unmanned industries. The balance of the consensus points to which the group agreed were:

- Additional funding is necessary to integrate drones safely into the NAS.
- Funding for integration efforts will be shared across government and industry.
- Options for funding should not be constrained by the current traditional aviation funding structure and any recommended funding structure should not alter the current structure of funding for traditional, manned aviation.
- The regulations, policies, and standards necessary in the next five years should be developed primarily by the FAA (in the case of standards, by industry via tasking from the FAA), with significant industry input.
- The research and development (R&D) and system development necessary in the next five years, should be a collaborative effort between government and industry, with the industry shouldering most of the basic R&D.
- The communication, outreach, and training necessary in the next five years should be shared between government and industry, depending on the activity.

- No later than 2020, FAA should implement transparent cost accounting measures to track separately the resources being used for manned and unmanned aviation activities.
- The UAS industry could be expected to pay for the operation and maintenance of an automated Unmanned Traffic Management (UTM) system through a yet-to-be-created user fee funding model.

After the presentation concluded, the Chairman opened the floor for discussion. Several topics were discussed including explaining the rationale for recommending the sustainable cost accounting system. This was included in the report to allow a trail back to the funding origination and to inform conversations between congress and FAA with data on how budget was allocated across accounts. The cost accounting should be the principle that UAS integration efforts should not affect manned aviation.

The committee also discussed funding mechanisms, as well mechanisms for the industry to receive credit for investments, and the allocation of research and development money. It should be recognized that manned aviation industry is entering unmanned aviation through investment (like in UTM) and research and development (R&D).

Universities are also investing heavily into R&D and can assist in funding with industry partners. Industry should look to academia for ideas and funding.

The consensus points outlined by the report were not prioritized, as the Task Group was unsure what the industry would look like in the future. The report was designed to be strategic in nature, offering a menu of options to assist policy makers and budget makers understand how the budgeting process could change to help industry (e.g., moving from an annual budget cycle versus to a multi-year budget cycle).

One member asked what steps could be taken to motivate investors in the UAS industry, as many are hesitant at this point. The co-chairs indicated that the group felt a fee-for-service approach would be appropriate and different from manned aviation. The service providers might not be government entities, but not enough is known to define the mechanism that would be far in the future.

Another member suggested that leasing airspace (slide 17) is contrary to the UTM concept and he could not support that. The co-chairs agreed that the airspace should be an open resource.

The co-chairs noted that the TG started their consensus process with an "us" vs "them" stance, but over the course of their deliberations came to understands one another's perspectives and gained mutual understanding and respect with goal of finding common ground.

One member noted that long-term funding stability is key to successful integration of UAS into the NAS.

The DFO asked the committee to consider a world where the ATC reform bill had passed, and the FAA was governed by a board. He asked the committee to consider how a board would set priorities for funding and what mechanism and revenue model they would propose. Some suggested a UAS trust fund. The group agreed this would be a good follow-on tasking for the DAC.

The group discussed how to encourage industry funding, stating that when the mission is clear, it is easier for industry to agree to funding mechanisms. There might be a role for state and local entities and taxes. The FAA indicated that the intent of the UAS IPP is to work out some of these issues.

When asked whether the group had looked at what other countries are doing, the answer was "no."

The chairman summarized the presentation and discussion. The current system constraints are stifling revenue operations. There are opportunities where industry would be willing to lead with funding. Who runs a system like UTM, in the end, is independent of but is linked to how UAS integration is funded. There is a role here for how to cement an industry-FAA partnership. The Task Group demonstrated that the "us vs. them" mentality of unmanned and manned aviation can be overcome.

The chairman called for a motion to accept the final report and provide it to the FAA. The motion was made, seconded, and carried with no opposition.

FAA Response to DAC Recommendations from TG2

The FAA provided a briefing on the response to the recommendations made on Access to Airspace at the November 2017 DAC. There were five recommendations made and the FAA addressed all five. The response from the FAA was created looking at all the recommendations together and will look to use regulations and waivers to define implementation steps.

This list summarizes the five recommendations and the FAA response to each:

1. Prioritize sUAS Beyond Visual Line of Sight (BVLOS) operations within the Mode C Veil below 400 feet above ground level. The FAA concurs with this recommendation and is supporting the outcome through BVLOS WG, FAA Focus Area Pathfinder 3, UAS Traffic Management Pilot Program, Integration Pilot Program, and Low Altitude Authorization and Notification Capability.
2. Develop technology neutral navigation performance requirements. The FAA concurs with this recommendation and has two efforts to determine appropriate requirements: Joint UTM Research Transition Team (RTT) with NASA – Overall navigation objective to explore operator solutions to ensure that a UAS will remain within a defined area (around a planned trajectory or defined area); and FAA effort to define any air navigation service provider requirements for low altitude UAS BVLOS operations in the Mode C Veil.
3. Evaluate the minimum requirements needed to meet low altitude UAS command and control (C2) operations. The FAA concurs with this recommendation and supports C2 standards development through both American Society for Testing and Materials (ASTM) and RTCA Special Committee-228; Joint FAA/NASA UTM RTT – Communication and navigation working group to ensure UAS are under the remote pilot's operational control; Partnership for Safety Plans (PSPs) and type design projects provide additional, excellent opportunities to test C2 options
4. Establish a FAR part 135 regulatory "pathfinder" program (and draw upon findings from other pathfinder programs) for commercial UAS low-altitude (<400') BVLOS operations. The FAA

concurs with this recommendation and finds a) many existing regulations were largely written without consideration for new entrants, such as UAS; b) while the standards in part 135 are often obscured by prescriptive language that did not anticipate UAS, the rule is comprehensive and the standards are still applicable; c) Significant challenges to certification remain; and d) FAA is currently working with part 135 UAS-specific certification projects with operators of both small and large UAS.

5. <u>Beyond 24-Month Timeframe Recommendations</u> The FAA concurs with this recommendation and understands that the current regulatory framework can be challenging for UAS operators and are actively working on additional UAS-specific regulations. In the interim, the FAA, through the use waivers and exemptions to existing rules, is finding where legacy regulations create undue burdens on the UAS stakeholder community and lessons-learned from the waiver and exemption processes will be used to inform future rulemaking activity.

Future Engagement; Potential Future Taskings

An additional topic of discussion was introduced by the DFO. He called for the discussion to be open to all members. The DAC does not do oversight, decision-making, or control. The DAC is an advisory group to give input to the FAA on given topics. As the Task groups close, what is next for the DAC? The FAA would like a group that can hear FAA ideas and determine impacts and what might not have been considered when forming the ideas.

Members introduced several ideas for future taskings that involved data collection and dissemination as well as software validation and verification for UAS using both traditional and autonomous software. The Department of Defense stated an interested in non-deterministic software testing for autonomous UAS. Many members of the DAC indicated they were interested in working with the FAA on data definition and helping to define institutional mechanisms for managing the data.

The committee also discussed how to assist the FAA with topical and timely advice on near-term issues and concerns. The UAS industry is fast moving, and waiting for answers from the DAC can take too long. A new method of engaging with the DAC is being considered that would include three options:

1. Fast-response off-cycle (not necessarily coinciding with a DAC meeting) and not seeking consensus
2. Discussion during the DAC meeting of advance material supplied by the FAA prior to the meeting, with the aim of reaching consensus during the meeting
3. Traditional Tasking Statements that would be staffed by the DACSC with recommendations coming back at a subsequent DAC meeting

A suggestion was made to use time during the DAC meeting to inform members of activities in which other members may be engaged. Presentations, educational and informative in nature, could be a standing topic on the agenda. A suggestion to cross-inform with the NextGen Advisory Committee was also introduced.

A request was made to include non-cooperative drones as a focus item of the DAC, as well as involving Department of Homeland Security and Department of Defense personnel in DAC meetings.

In an environment with many activities (ARCs, UAS IPP, NASA TCL, meetings, etc.) that involve many of the same people and organizations, a suggestion was made that the DAC could be used to help set priorities amongst the activities. At a minimum, members felt their ability to provide actionable advice to the FAA is hindered by their lack of knowledge of all the disparate activities. Assisting in developing a long-term vision based on the joint perspective of the members could be undertaken.

A member introduced the topic of where a drone is permitted to take off and land as something the DAC could explore. The DAC could assist in developing guidelines but would require the engagement of local governments. It was observed that TG 1 discussed this topic and found that it was not too controversial.

The topic of enforcement and education was raised with an emphasis on how to assist in educating the public. It was suggested that industry is an ideal candidate for conducting education initiatives. It was observed that the American Modeling Association is spearheading a campaign to educate uninformed UAS users that there are rules to follow and pointing them to those rules. It was stated that the DAC is better venue than an ARC for discussing items like this because it does not require a Notice of Proposed Rulemaking (NPRM).

New Business

Tenets

A call for new business was made and the discussion of Draft DAC Tenets created by a small ad hoc committee made up of DAC members was introduced. Gur Kimchi reminded the DAC members that the tenets are designed to work as a cohesive, integrated whole and that taken separately they could create a healthy tension that will drive discussion and force us to recognize and address key issue facing our industry. After a brief discussion regarding the tenets and the desire to review them all together, it was decided to distribute them and allow the membership to review them before the next meeting using Workspace, to be set up by RTCA. Members were encouraged to submit their comments in a timely manner.

Action Items Review

ACTION	OWNER	DUE	STATUS
PREVIOUS ACTION ITEMS			
Strike "which includes Class B airspace" from TG2's recommendation 1 for clarity before forwarding final report to the FAA. Modify the Mode C Veil language.	RTCA/TG2	Nov 2017	CLOSED

DAC to establish a TG2 Tiger Team of SME's to define what is applicable to UAS in the existing rules.	DAC/DACSC	OBE	CLOSED
Re-task and reconstitute TG1.	FAA/RTCA	OBE	CLOSED
Future DAC Agenda item for DAC procedures and meeting tenets.	DAC/RTCA	Spring 2018	CLOSED
Coordinate DAC 2018 Meeting Schedule.	RTCA	Dec 2017	CLOSED
NEW ACTION ITEMS			
Work with members to develop presentations for the DAC to educate members on what individual member organizations are doing in the UAS arena	RTCA	On-going	OPEN
Develop a suggested agenda for two meetings out	RTCA/FAA	On-going	OPEN
October 2018 meeting needs to be carefully planned to avoid conflicts (date and location)	RTCA	July 2018	OPEN
RTCA to set up a discussion area on Workspace to allow an exchange of thoughts on the tenets	RTCA	July 2018	CLOSED
DAC members to provide comments on Tenets by June 26, 2018. RTCA to compile for July meeting discussion	RTCA	June 2018	OPEN
FAA to come back to RTCA on future taskings	FAA	April 2018	OPEN

Closing Remarks

The chairman and DFO both thanked the members for their time and again thanked MITRE for hosting the meeting.

Meeting Calendar

Next meetings:
- July 17, 2018 – Location TBD
- October 17, 2018 – Location TBD

Adjournment

The meeting was adjourned at 3:46 PM.

Attachments

Last Name	First Name	Organization
Agvent	Greg	CNN
Alonso	Juan	Stanford University
Baker	Mark	Aircraft Owners and Pilots Association
Banga	Jaz	Airspace Systems Inc.
Boyd	Robert	Riley County, Kansas
Burgess	James	Google (x)
Canoll	Tim	Air Line Pilots Association
Chasen	Michael	Precision Hawk USA Inc.
Cleveland	Peter	Intel
Elwell	Dan	Federal Aviation Administration
Flint	Deborah	Los Angeles World Airports
Gilbert	Trish	National Air Traffic Controllers Association (NATCA)
Gomez	Martin	Facebook
Graetz	Todd	BNSF Railway
Hanson	Rich	Academy of Model Aeronautics
Jenny	Margaret	RTCA, Inc.
Kimchi	Gur	Amazon Prime Air
Kirov	George	Harris Corporation
Krzanich	Brian	Intel
Mattai	Nan	Rockwell Collins, Inc.
Mills	Houston	United Parcel Service (UPS)
Mora	Marily	Reno-Tahoe Airport Authority
Rush	Steven	Professional Helicopter Pilots Association
Samanta Roy	Robie	Lockheed Martin Corporation
Schulman	Brendan	DJI Technology
Secen	Al	RTCA, Inc.
Wynne	Brian	Association for Unmanned Vehicle Systems International (AUVSI)
Zuccaro	Matthew	Helicopter Association International (HAI)

	Last Name	First Name	ORGANIZATION
1	Aitken	Mark	Akin Gump Straus Hauer & Feld LLP
2	Ali	Bahrami	Federal Aviaiton Administration
3	Allen	John	Jetblue
4	Allen	Jack	JMA Solutions
5	Arel	Tim	Federal Aviaiton Administration
6	Barkowski	Justin	Aircraft Owners & Pilots Association
7	Baxenberg	Sara	Wiley Rein LLP
8	Bechdolt	Anne	FedEx Express
9	Beebe	Onja	NATCA
10	Bill	Davis	Federal Aviaiton Administration
11	Blanks	Mark	Institute for Critical Technology and Applied Science
12	Brown	Lee	Landrum & Brown
13	Bullard	Shawn	Duetto Group
14	Burleson	Carl	Federal Aviaiton Administration
15	Casey	Richard	Professional Aviation Safety Specialists
16	Cass	Lorne	American Airlines
17	Cassidy	Sean	Amazon Prime Air
18	Chris	Brown	Federal Aviaiton Administration
19	Cirillo	Michael	Airlines for America
20	Cochran	Walt	Leidos
21	Cooper	Diana	PrecisionHawk
22	Dalton	Dan	Airspace System, Inc
23	Damush	Jon	Insitu
24	Dan	Williams	Federal Aviaiton Administration
25	Davis	Melvin	Cavan Solutions
26	Devine	Thomas	Airports Council International
27	Donovan	Colleen	Federal Aviaiton Administration
28	Dygert	Jeff	AT&T
29	Edwards	Bailey	FAA
30	Ehrich	Rob	Slipstream Strategies
31	Ellman	Lisa	Commercial Drone Alliance
32	Fontaine	Paul	Federal Aviaiton Administration
33	Ford	Nancy	Security101
34	Fraser	Stephanie	Covell Solutions Inc.
35	Friedman-Berg	Ferne	Federal Aviaiton Administration
36	Galushka	Joe	Federal Aviaiton Administration
37	Gary	Norek	Federal Aviaiton Administration
38	Gielow	Ben	Amazon
39	Griffith	Dean	Jones Day
40	Harm	Chris	Federal Aviaiton Administration
41	Hayes	Alan	Volanz Aerospace Inc.
42	Hedblom	Brenden	Thales
43	Hughes	Rob	Northrop Grumman
44	Irvine	Peter	U.S. DOT
45	Jenny	Margaret	RTCA, Inc
46	Johnson	Doug	CTA

	Last Name	First Name	ORGANIZATION
47	Johnson	Bob	Johnson Consulting and Advisory, LLC
48	Kachel	Katie	Chambers, Conlon & Hartwell LLC
49	Kass	Howard	Representing AA
50	Keegan	Charles	Aviation Management Associates, Inc.
51	Kohler	Brittney	National League of Cities
52	Lawrence	Earl	Federal Aviaiton Administration
53	Leaton	Brian	Thales
54	Leone	Gregg	The MITRE Corporation
55	Logsdon	Adam	On Brand Air
56	Ludtke	Meghan	American Airlines
57	Malloy	Lisa	Intel
58	Manno	Claudio	Federal Aviaiton Administration
59	Martino	Chris	Helicopter Assoc Int'l
60	McCans	Stefanie	Department of Transportation
61	McKelligan	Mark	NATCA
62	McNair	Mike	Bell
63	McNall	Peter	General Atomics - ASI
64	Michel	Gary	DLA Piper LLP
65	Mickler	Thomas	EASA
66	Migala	Stephen	_
67	Morrison	Rebecca	RTCA, Inc
68	Murdock	Joel	FedEx Express
69	Naaden	Jennifer	Duetto Group
70	Nagle	Margaret	Google (X)
71	Niles	Frederick	MITRE Corporation
72	Osantowske	Andy	Evans Incorporated
73	Pann	Chin	Federal Aviaiton Administration
74	Pasztor	Elizabeth	The Boeing Company
75	Peter	Lorelei	Federal Aviaiton Administration
76	Ramsey	Christian	uAvionix
77	Randy	Willis	Federal Aviaiton Administration
78	Reed	Mark	ALPA
79	Remo	Laura	Department of Transportation
80	Rhodes	Dave	MCR
81	Richter	Jennifer	Akin Gump Strauss Hauer & Feld LLP
82	Rosia	Megan	Rockwell Collins
83	Runkel	Brian	Runkel Enterprises
84	Sapir	Genevieve	Department of Transportation
85	Satterley	Matthew	AirMap
86	Schill	Robert	HERE Technologies
87	Schultz	Dean	Reno-Tahoe Airport Authority
88	Shahidi	Hassan	MITRE
89	Shellabarger	Nan	FAA
90	Singh	Adi	Ford Motor Company
91	Stearn	Geoff	Ligado Networks
92	Stubblefield	Angela	Federal Aviaiton Administration

	Last Name	First Name	ORGANIZATION
93	Sugahara	Kenji	Oregon Department of Aviation
94	Swafford-Brooks	Lisa	Department of Transportation
95	Swanson	Mo	Echodyne Corp
96	Taylor	James	USA
97	Teel	Brandi	RTCA, Inc
98	Terry	Ryan	Lockheed Martin Corporation
99	Tony	Schneider	Federal Aviaiton Administration
100	Troxell	Wade	Mayor- Fort Collins, CO, National League of Cities
101	Turner	Josh	Wiley Rein LLP
102	Wain	Gabrielle	Iris Automation
103	Walker	Damon	U.S. DOT
104	Wang	Jue	USC
105	Warner	Ward	U.S. Army Aeronautical Services Agency (USAASA)
106	Weidner	Steve	NATCA
107	Weidner	Stella	Boeing
108	Wells	Jay	Air Line Pilots Association, Int'l
109	White	Greg	Apex Unmanned LLC
110	Wilkinson	Molly	American Airlines
111	Williams	Heidi	NBAA
112	Williams	Jim	JHW Unmanned Solutions
113	Williams	Bryan	Duke Energy Corporation
114	WRIGHT	STEVE	DACSC
115	Zilonis	Sarah	NATCA

Sixth Meeting of the Drone Advisory Committee (DAC)
Agenda

DATE: March 9, 2018

TIME: 9:00 AM – 3:30 PM EST

PLACE: MITRE-1 Building
7525 Colshire Drive
McLean, VA 22102-7539

Agenda

Start	Stop	Agenda Item
9:00 AM	9:01 AM	Call to Order; Official Statement of the Designated Federal Officer
9:01 AM	9:11 AM	Welcome and Introductions, Review of the Fifth DAC Meeting
9:11 AM	9:15 AM	Approval of Minutes from the Fifth DAC Meeting
9:15 AM	9:30 AM	Chairman's Report
9:30 AM	10:10 AM	FAA Update
10:10 AM	10:25 AM	Break
10:25 AM	10:35 AM	DAC Subcommittee (SC) Co-Chairs' Report
10:35 AM	11:15 AM	DACSC Task Group 3's (TG3) UAS Funding Report
11:15 AM	12:00 PM	Discussion of TG3's Report
12:00 PM	1:00 PM	Lunch
1:00 PM	1:45 PM	Discussion of FAA's Response to DAC Recommendations
1:45 PM	2:30 PM	Discussion of DAC Engagement in the Future
2:30 PM	3:15 PM	New Business/Agenda Topics
3:15 PM	3:30 PM	Closing Remarks
3:30 PM	3:30 PM	Adjourn

Welcome to the Meeting of the Drone Advisory Committee

March 9, 2018

Official Statement of the Designated Federal Officer

PUBLIC MEETING ANNOUNCEMENT
Read by: Designated Federal Officer Dan Elwell
Drone Advisory Committee
March 9, 2018

In accordance with the Federal Advisory Committee Act, this Advisory Committee meeting is OPEN TO THE PUBLIC.

Notice of the meeting was published in the Federal Register on:

February 17, 2018

Members of the public may address the committee with PRIOR APPROVAL of the Chairman. This should be arranged in advance.

Only appointed members of the Advisory Committee may vote on any matter brought to a vote by the Chairman.

The public may present written material to the Advisory Committee at any time.

DAC Agenda Topics

- Welcome and Introductions, Review of the Fifth DAC Meeting

- Approval of Minutes from the Fifth DAC Meeting

- Report from the DAC Chairman/Update from the FAA

- Report from the DAC Subcommittee (SC) Co-Chairs

- Reports from the Co-Chairs of the DACSC Task Groups (TGs)

- Discussion of Reports from the Co-Chairs of the DACSC TGs

- Discussion of FAA Response to DAC Recommendations

- Discussion of DAC Engagement in the Future

- New Assignments/Agenda Topics/Other

- Closing Remarks

- Adjourn

Welcome and Introductions
Opening Remarks

Review and Approval of:

Minutes – November 8, 2017

DAC Chairman Report

FAA Update

DAC Subcommittee Co-Chair Report

Co-Chairs:
Sean Cassidy, *Amazon Prime*
John Allen, *jetBlue Airlines*

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Final Report of DACSC TG3
(UAS Funding)

Co-Chairs:
Mark Aitken
Howard Kass

Setting the Stage for the Commercialization of Drones

- Development of the drone industry as a commercially viable industry providing returns for investors, innovation for companies and benefits for consumers is a priority of the Trump Administration

- Currently, federal agencies led by FAA are devoting increasing amounts of resources to getting drones integrated safely into the national airspace system.

  - As this requires the development of new protocols, procedures and processes, it is resource consuming for federal agencies with tight budget.

  - For the FAA, approximately 90% of the FAA budget is raised from taxes and fees paid by commercial airline passengers.

- Task Group 3 (TG3) was established to search for funding ideas so the FAA has the monetary resources to continue its vital mission in promoting the drone industry without shorting manned aviation interests that actually fund the FAA.

- TG3 short term report (July 2017) recommended increased Congressional appropriations to FAA so FAA has the resources it needs for drones and airlines

TG3 Approach

- We looked at different ways that the government pays for things:

    - Taxes
    - Fees
    - Auctions
    - PPPs

- We debated the different ideas but more importantly we grappled with a fairly unique set of facts.

    - Many in the industry are spending millions already to build UTM systems and other infrastructure necessary to support drone integration into air space, but also into the broader US economy.

    - Thus, while there is no objection that government needs more resources to maintain manned aviation and encourage drones, various entities are already "paying."

Process

- Based on the guidance received from the DAC, TG3 decided that it would be most beneficial to move forward with drafting it's long-term report from the short-term report, given it's key recommendation.

- Broke up into four subgroups to focus on the main categories of the FAA's UAS integration efforts:

    1. Policies & Procedures, Rulemaking, and Standards
    2. Outreach, Communication, and Training
    3. Research & Development and Systems
    4. Potential Funding Mechanisms

- Re-evaluated the short-term report and updated the necessary sections that to reflect the long-term activity, including the recommendations made by TG2.

- What we don't know is how much money FAA needs – we can cost out actions, but how many drones will be flying around in year 1 versus year 5?

Consent Recommendations

- Congress and the Administration need to lead and jumpstart the integration of drones into the US economy

    - DOT/FAA are doing their part – pilot programs, ARCs, Drone integration office
    - But, real limits to what the agencies can do without meaningful funding to hire, develop, regulate and introduce all of the safety-related requirements as well as the commercial "rules of the air."

- Congress must provide a multi-year funding program so FAA/DOT and other agencies can get drones in the air and the drone revolution can begin

    - Corporations and State/Local governments are doing their part with investment, land, tax credits and incentives
    - Federal agencies are working as hard as they can with serious resource constraints
        - FAA cannot continue to charge the airlines for drone projects

- FAA needs to implement a sustainable cost accounting system

What That Means…

- Additional funding is necessary to safely integrate drones into the NAS.

- There will be a combination of government, industry, and shared funding across the integration efforts.

- Options for funding should not be constrained by the current traditional aviation funding structure and any recommended funding structure should not alter the current structure of funding for traditional, manned aviation

- The regulations, policies, and standards necessary in the next five years should be developed primarily by the FAA, with significant industry input.

- The research and development (R&D), and system development necessary in the next five years, should be a collaborative effort between government and industry, with the industry shouldering most of the basic R&D.

- The communication, outreach, and training necessary in the next five years should be shared between government and industry, depending on the activity.

- FAA should implement transparent cost accounting measures in order to track the resources being used for manned and unmanned aviation activities.

- The UAS industry may be expected to pay for the operation and maintenance of an automated Unmanned Traffic Management (UTM) system through a yet-to-be-created user fee funding model.

The Future – As Drones Take Off – Funding Ideas

- The drone community recognizes that as it takes off, the federal government cannot provide a sustained level of investment, absent Congressional buy-in

  - TG3 members explored other ways the federal government could pay for drone operations over a 3-5 year time period.

- The options explored include (note: some will require legislation):

  - User Fees – lots of government experience, can be tweaked to reflect policy preferences
  - Point of Sale Tax on drone-related hardware
  - Business Use/Transaction Tax
  - Public/Private Partnerships
  - Auction/Lease of Airspace
  - Access Charges
  - Other?

What are the Work Priorities?

- There is a lot of work being done by the drone community and at all levels of government. TG3 supports this (See July 2017 report). The drone industry recognizes that over time work that is being done by government today might be better handled by industry in the future.

- While research into safety, NAS integration and the development of a low-altitude UTM work continue apace, we believe there needs to be an acceleration in the following areas:

  - The regulations, policies, and standards necessary should be developed primarily by the FAA, with significant industry input.

  - The research and development (R&D), and system development necessary should be a collaborative effort between government and industry, with the industry shouldering most of the basic R&D.

  - The communication, outreach, and training necessary should be shared between government and industry, depending on the activity.

Additional Considerations

- Congress doesn't act.

- Agencies can't sustain work-levels on "borrowed" funds/resources

- Airlines complain about the diversion of funds/resources

- Investors and innovators conclude the regulatory process is too slow and divert resources elsewhere

- Corporations determine that they cannot receive a return on investment

Discussion of TG3 Report

Discussion of FAA's Response to DAC Recommendations

FAA's Response to DAC Recommendations

(originating from TG2 - Access to Airspace)

March 9, 2018 DAC Meeting

1. Prioritize sUAS Beyond Visual Line of Sight (BVLOS) operations within the Mode C Veil below 400 feet above ground level.

- **FAA concurs**

- **Strategy, plans, and operational implementation will evolve to achieve a mutually desired outcome**

- **The FAA is supporting this outcome through:**
  1. BVLOS Operations in Controlled Airspace Working Group
  2. FAA Focus Area Pathfinder 3 – BNSF Re-charter
  3. UAS Traffic Management (UTM) Pilot Program (UPP)
  4. Integration Pilot Program (IPP)
  5. Low Altitude Authorization and Notification Capability (LAANC)

2. Develop technology neutral navigation performance requirements.

- **FAA concurs**

- **FAA has embraced performance-based navigation**

- **Two ongoing FAA efforts to determine appropriate requirements:**
  1. Joint UTM Research Transition Team (RTT) with NASA – Overall navigation objective to explore operator solutions to ensure that a UAS will remain within a defined area (around a planned trajectory or defined area)

  2. FAA effort to define any air navigation service provider requirements for low altitude UAS BVLOS operations in the Mode C Veil

3. Evaluate the minimum requirements needed to meet low altitude UAS command and control (C2) operations.

- FAA concurs

- FAA supports C2 standards development through both American Society for Testing and Materials (ASTM) and RTCA Special Committee-228

- Joint FAA/NASA UTM RTT – Communication and navigation working group to ensure UAS are under the remote pilot's operational control

- Partnership for Safety Plans (PSPs) and type design projects provide additional, excellent opportunities to test C2 options

4. Establish a FAR part 135 regulatory "pathfinder" program (and draw upon findings from other pathfinder programs) for commercial UAS low-altitude (<400') BVLOS operations.

- **FAA concurs**

- **Many existing regulations were largely written without consideration for new entrants, such as UAS**

- **While the standards in part 135 are often obscured by prescriptive language that did not anticipate UAS, the rule is comprehensive and the standards are still applicable**

- **However, significant challenges to certification remain**

- **The FAA is currently working with part 135 UAS-specific certification projects with operators of both small and large UAS**

5. Beyond 24-Month Timeframe Recommendations.

- **FAA concurs**

- **The FAA understands that the current regulatory framework can be challenging for UAS operators**

- **We are actively working on additional UAS-specific regulations**

- **In the interim, the FAA, through the use waivers and exemptions to existing rules, is finding where legacy regulations create undue burdens on the UAS stakeholder community**

- **Lessons learned from the waiver and exemption processes will be used to inform future rulemaking activity**

Questions/Comments Beyond Today's Discussion

Contact the FAA's UAS Integration Office

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and/or

Chris Harm, UAS Stakeholder and Committee Liaison
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Possible Future Taskings:

- Does the UAS Research Plan adequately capture current research needs? What are the research gaps? Are some areas over-researched? What research questions are viewed as most pressing towards informing UAS integration?

- What UAS research areas are you looking to perform in the next 3-5 years that the FAA may be able to use to advance integration? What is your vision for UAS integration in the next 3-5 years? What type of operations would you like to see happening in what environments/etc.?

- What do you see as a future need the FAA should address in the UAS Implementation Plan that it is not currently capturing? How can you contribute to the FAA's safe integration of UAS? How would we capture this contribution?

Topics for Discussion:

- What, if any, concerns would you have with the FAA going to a final rule on remote ID?

- You have seen the FAA adopt a partnership with industry to develop LAANC. Doing so enabled the FAA to much more quickly speed up the process of granting airspace authorizations than if the FAA had used more traditional methods of acquiring these services. What other areas would be most conducive to a government-industry partnership?

- How can the FAA better educate government, industry, and the public about its programs, current regulatory requirements that apply to all aircraft including UAS, and our future plans?

- How do we collectively enhance the level of safety?

- What should the FAA prioritize to enable your most important initiatives?

- Does the use of counter UAS technology in the National Airspace System raise concerns for you, and if so, and how could those concerns be addressed?

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Discussion of DAC Engagement in the Future

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DAC Potential Tasks

a. Prioritization, Master long-term vision, plan, timeline.
   i. How do all the parts fit together (ARCS, IPP, UPP, NASA TLC, etc.)
   ii. What are the gaps?
   iii. Mechanism for long-range funding
b. Comprehensive data strategy plan
c. Infrastructure, jurisdiction of landing and departure
d. Review FAA's UAS Research Plan
e. Review FAA's UAS Implementation Plan
f. Education, advocacy, enforcement
g. How to move ID rule forward
h. Areas for government/industry partnership
i. Define outputs of IPP and UPP projects, harmonize – lead to functional and performance requirements

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New Business/Agenda Topics

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Meeting Summary/Action Item Review

DAC 2018 Meeting Schedule

- July 17, 2018, Location-TBA
- October 17, 2018, Location-TBA

Closing Remarks

Adjourn