Drone Advisory Committee
May 3, 2017 Meeting Minutes

Drone Advisory Committee Meeting Minutes:

May 3, 2017- Herndon, VA

List of Attachments

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Summary

The third meeting of the Drone Advisory Committee (DAC) convened on May 3, 2017, and was led by Brian Krzanich, DAC Chairman and CEO of Intel Corporation (Chairman Krzanich), and Designated Federal Officer (DFO) and Acting FAA Deputy Administrator, Victoria Wassmer (DFO Wassmer). The DAC received status reports from the three task groups (TGs). TG2, *Access to Airspace*, highlighted their progress on narrowing the scope of the large task of finding methods to allow operations/missions beyond those currently permitted for drones and defining procedures for industry to gain access to the airspace. Following TG2 was a report from TG1, *Roles and Responsibilities*, on the relative roles and responsibilities of the Federal, state, and local governments for regulating certain Unmanned Aircraft Systems (UAS) operations in low-altitude airspace as compared to the Federal government's exclusive role and responsibility for regulating all aspects of manned aircraft operations. Lastly, TG3, *UAS Funding*, reported on the status of their work evaluating potential mechanisms for funding the activities and services required both by government and industry to integrate UAS safely into the National Airspace System (NAS).

Host Welcome

The meeting was hosted by the Air Line Pilots Association (ALPA) at their Herndon, Virginia Headquarters. Captain Tim Canoll, President of ALPA, began the day by welcoming everyone to the facility and providing background information about ALPA.

DFO Statement

The DFO statement was read by DFO Wassmer at 9:04 AM.

Chairman's Welcome

Chairman Krzanich welcomed everyone to the meeting and reviewed the agenda noting that there was much work to be done during the day.

Approval of Minutes from Previous Meeting

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

Chairman's Report

Chairman Krzanich offered remarks to begin the day's sessions. He offered thanks to FAA Administrator Huerta and DFO Wassmer for their leadership and to the FAA for forming and supporting the DAC. He further thanked the FAA staff and management of the David J. Hurley Air Traffic Control System Command Center in Vint Hill, VA for a tour of their facility and the National Air Traffic Controllers Association staff for hosting the previous evening's dinner. He thanked Captain Canoll of ALPA for hosting the meeting at their Herndon headquarters. He lauded ALPA's history of safety and recommended the DAC learn from and emulate that record. The Chairman then welcomed three new DAC members: George Kirov of Harris Corporation, Michael Chasen of PrecisionHawk, and Rich Hanson of the Academy of Model Aeronautics.

The chairman then drew the committee's attention to the progress the TGs were making. He reminded the committee of the three TGs and their taskings. He thanked the TG leaders and members as well as the membership of the entire DAC Subcommittee (DACSC).

The chairman encouraged everyone on the committee to participate and engage in the discussion and make sure their sentiments are heard and understood.

The chairman mentioned that he heard some member constituencies feel their voice is not being heard. He encouraged anyone who feels that way to let the DAC leadership know so that it can be addressed.

FAA Update
Victoria Wassmer, FAA Acting Deputy Administrator, Chief NextGen Officer, and DAC DFO

DFO Wassmer welcomed everyone and thanked them for attending. She described the second annual FAA UAS Symposium held in Reston the previous month. She thanked the industry partners who assisted in the planning and execution of that symposium. She described the numbers of attendees, panels, and panelists. She described the FAA's first ever "Twitter chat" as a great success. She

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mentioned the need for the FAA to engage with a variety of stakeholders and the need for the FAA to continue its work in education and outreach efforts.

DFO Wassmer then provided an overview of the January 2017 DAC meeting and the important safety issues that must be addressed as they expand the use of drones in the airspace. An example is what happens to people on the ground if a drone flies overhead and fails? She discussed that the FAA's Center of Excellence (COE) completed the first in a series of a research projects on this topic and released the results the previous Friday. She also mentioned that there are also security concerns and the need for drones to avoid secure facilities and sensitive sites. She referenced overseas use of drones for ill-intent in combat theaters and stressed the need to ensure that does not happen here. She stated that the FAA requires assistance in answering these questions.

She mentioned two recently announced initiatives that enable the FAA to work with industry, law enforcement and national security counterparts to address these security concerns. The FAA is in the process forming a new aviation rulemaking committee (ARC) for remotely identifying and tracking UAS. The desire is that the recommendations from this ARC will pave the way for UAS identification and tracking rulemaking which will then promote future rulemaking for beyond visual line-of-sight (BVLOS) and flight over people operations. The FAA will be hosting an unmanned aircraft security roundtable to be held with transportation and national security leaders and the drone industry. This will allow a mutual understanding of security concerns and allow the best ideas to come forth. Just like the DAC, it is important that everyone with "skin in the game" have a seat at the table.

DFO Wassmer presented two slides that show the progress made by the FAA and the DAC. The first slide, entitled "History of the Drone Advisory Committee" illustrated the flow and dates of when the FAA has issued the terms of reference for the DAC, DACSC, and TGs as well as the dates of the meetings. The second slide depicted the flow of how the work that is done by the TGs gets vetted, through the consensus process, through the DACSC and the DAC, before any final recommendations are sent to the FAA. Victoria emphasized that RTCA is an advisory committee that provides advice and recommendations to the FAA. She emphasized the importance of the work being done and reiterated her thanks to the DACSC and the TGs. She encouraged the DACSC to stay focused on the tasks at hand, and to speak up and speak often, especially if there is disagreement, because as the slides show, consensus at each level should be obtained before materials are put forward to the next level. She referenced the slide shown on the screen which depicted how the tasking statements from the FAA should guide the work of the DAC, DACSC, and TGs. While the process may seem cumbersome, the dialogue is important. The policy issues being considered and society's acceptance of the technology are very important. She reminded participants that everyone has a voice and a responsibility to speak up for their constituents, and there should be no silent minority – please. To get this right, the FAA

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needs each and every one of the committee members. She closed by saying she looks forward to a productive meeting.

Earl Lawrence, Executive Director, UAS Integration Office

Mr. Lawrence provided an update on FAA activity since the January 2017 DAC meeting. Over 800,000 people have registered and more than 43,000 applicants have obtained their Remote Pilot Certificate. The Remote Pilot Knowledge exam pass rate has increased from 89% to 92%. Assisting pilots to fly safely under part 107 rules remains a focus area for the FAA. The FAA is continuing work on an automated authorization and waiver process to be deployed in the near future. Finally, the FAA is working hard to meet the demands for airspace access. The number of airspace waivers and authorizations has increased from 1,500 in January to 3,900 and more than 650 non-airspace waivers have been issued (up from 300 in January). At the last DAC, concerns that Pathfinder partners were receiving preferential treatment for BVLOS waivers were discussed. At the May 3rd meeting Mr. Lawrence assured the DAC that is not the case. The most recent waiver was for BVLOS and flight over people and was issued to FLIR Systems, Inc. The UAS is small and FLIR has implemented the appropriate safety mitigations. Diana Cooper of PrecisionHawk helped educate BVLOS applicants at the FAA UAS Symposium. Updates to the waiver portal expected after the Office and Management and Budget review this spring. Updates will assist operators in obtaining waivers.

Other notable accomplishments cited by Mr. Lawrence included: 1) attendance at the 2017 UAS Symposium, where over 600 stakeholders convened and over 250 attendees made use of the FAA's resource center; 2) FAA support for external conferences by airport associations, agricultural community, remote pilots, and local law enforcement; 3) addressing Congress twice (Senate Committee on Commerce, Science, and Transportation and House Subcommittee on Aviation); 4) Briefing the DACSC, TG3 specifically, on how the FAA is funded and operates, and the offer to present additional webinars and presentations if they will be valuable to the DAC/DACSC; 5) Facilitated the announcement of new ground collision severity research findings conducted by the Alliance for System Safety of UAS through Research Excellence (ASSURE) program. The research results may be found on the FAA UAS Integration website and the ASSURE website; 6) Continued partnerships with other government agencies, such as the Departments of Energy (DOE), Justice (DOJ), Defense (DoD), Homeland Security (DHS), Interior (DOI) and the Secret Service; and 7) the formation of the remote identification aviation rulemaking committee to look into available and emerging technology to aid in identifying UAS. Mr. Lawrence closed by sharing thoughts on what the FAA is looking for in DAC recommendations: they should be policy-focused, performance-based, achievable and realistic, specifies an action or approach, and addresses the appropriate entity (FAA or larger US Government) as well as prioritized.

Lynn Ray, Vice President, Mission Support Services, Air Traffic Organization

Ms. Ray briefed on the work the Air Traffic Organization (ATO) is conducting to support UAS integration. ATO is using section 99.7 temporary flight restrictions (special security instructions) to address national security concerns at select sensitive locations across the NAS, starting with 133 sites identified by the DoD that are now displayed on an Esri website. The ATO is continuing to work with other Federal partners (DOI, DHS, and DOE) to identify about 10-20 additional sites, and the United States Air Force is looking at 700 additional sites. This is a short-term solution; the long-term solution, as required by section 2209 of the FAA Extension, Safety, and Security Act of 2016, will likely be some form of rule-making action.

Another capability found on the Esri website is interactive maps to allow applicants for part 107 authorization to find out altitude and proximity guidance in respect to airports. The capability does not provide an authorization to fly; it merely streamlines the part 107 process.

Ms. Ray then discussed a new prototype capability coming online called Low Altitude Authorization and Notification Capability (LAANC). FAA does not intend to own this system in the long run. This is a way to exchange information with operators in the near term. LAANC automates the authorization for operations and can also be used by hobbyists.

The last thing Ms. Ray discussed is an upcoming UAS in Controlled Airspace ARC. This ARC builds on the original Small UAS ARC that dealt with more high-altitude airspace. This ARC will work over a 12-15 month period to produce recommended scenarios encompassing most desired operations, identifying gaps in research and development to inform integration, recommend prioritized changes/additions to policies and capabilities to achieve integration.

Marke "Hoot" Gibson, Senior Advisor on UAS Integration

Mr. Gibson provided updates in the Federal and security realm. He discussed (as Mr. Lawrence noted) that he testified before the House Subcommittee on Aviation with another FAA employee located at the William J. Hughes Technical Center. They provided data on FAA status, what Congress can do to build a 21st century aviation infrastructure that can support and enable innovation, and provided an update on work at the William J. Hughes Technical Center, COE. He fielded questions from the committee on how the FAA was working across lines of business and on the operations concept for hazardous airspace mitigation around airports. He provided an update on the UAS ExCom (DoD, DHS, National Aeronautics and Space Administration, Department of Commerce, DOJ, Office of Science Technology and Policy, and the National Security Council), which is a committee of Federal Government agencies designed to increase UAS security coordination.

Mr. Gibson stated the ExCom is finalizing its draft counter UAS operations concept to determine roles and responsibilities for operators operating near airports and other critical infrastructure. The draft report is scheduled to be presented on June 9, 2017 at the next ExCom meeting. The ExCom continues to be greatly concerned about operations near airports. Work began 16 months ago, driven by language in the FAA reauthorization. Mr. Gibson reported on his work with airports such as Atlantic City, John F. Kennedy, Eglin Air Force Base, Denver, and his trip to Helsinki (and federal prison tour). The FAA concluded testing in Dallas/Fort Worth Airport in the last two weeks. The FAA is not the only agency working on UAS detection around airports. DHS partnered with US Army and FAA observed a test in New Orleans. Most of the Army system encountered problems including line-of-sight radio detection system problems, high density radio-frequency environment interference, zero Doppler radar for slow moving UAS, and masking when in and around other vessels.

Comment: A DAC member was approached by the Tappan Zee Bridge Project and advised that they could not conduct drone operations. The issue is that local law enforcement cannot tell when a drone is authorized and when it is not. A "No Drone Zone" will not work for this reason.

RTCA Update
Margaret Jenny, President

RTCA walked the committee through the process of the Federal Advisory Committee Act (FACA) that drives the work of Federal Advisory Committees (FAC) and provided additional material to supplement DFO Wassmer's presentation.

Ms. Jenny discussed the roles and responsibilities of the FAA, RTCA, and the FACs. She showed a slide that graphically depicted the organizational process flow among the principle roles (FAA, RTCA, and committee) in the development of recommendations.

She further led a discussion on what consensus means. She emphasized that consensus is not voting, but rather a means to ensure that all voices are heard and all offer constructive inputs. With consensus, not everyone gets everything of what s/he wants. Everyone contributes to the outcome and comments include constructive alternatives. To be specific, consensus means that everyone can live with and support the results. If there are dissenters, the non-concurs are documented and transmitted along with the committee rational for disagreement with non-concur.

Comment: There has been some discussion that there are gaps in representation and it is important for the DAC to understand who is not represented and to fill those gaps.

Question: Is there any learning from the DAC domain survey?

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Answer: We are still receiving responses and when it is completed and compiled we will identify gaps and begin to work to fill them.

Question: A DAC member representing an association alerted the FAA that a member of his association served on an ARC and has been subpoenaed and wanted to know the policy covering that.

Answer: The FAA is working this issue will follow up with the member.

DAC Subcommittee Co-Chair Report
Bryan Quigley, Managing Director and System Chief Pilot, United Airlines and Nancy Egan, Advisor, 3D Robotics

Captain Quigley began the co-chair report by thanking ALPA and Mr. Lawrence. He recognized the efforts of the RTCA program director. He then reviewed his background and the background of his co-chair, Nancy Egan. He thanked DFO Wassmer, Mr. Lawrence, Ms. Ray, and Mr. Gibson for providing guidance and giving him the chance to serve. He also thanked Chairman Krzanich and the TGs for their hard work. He indicated he is looking forward to giving actionable advice to the FAA. He then reviewed the TG roles and indicated that the pace of DACSC meetings may seem slow and methodical. Despite that, he wanted the DAC to know that they are moving quickly, which occasionally results in some not being able to participate. He briefly reviewed the roles of various members (members, subject matter experts, observers) and the role of FAA briefers in the education of the DACSC. He closed with an observance that what is needed is active participation on the TGs. He stated that members must be actively involved – this is not a spectator sport.

Ms. Egan expressed similar views on what she wishes the DACSC to achieve. She addressed the issue of state and local folks feeling they have not been heard. She stated she has begun an outreach program. She said likes to encourage "aha" moments and had one of her own. Originally, the discussion was unmanned versus manned; those groups are coming together over the past 2 years; now they need to bring in a third voice as state and local folks approach things differently. We are all learning – we need to remain flexible and ensure that everyone participates.

Captain Quigley then recognized the DACSC by asking them to identify themselves. He stressed that the perspectives of the member shapes the engagement on the TGs and the resulting recommendations.

TG 2 – Access to Airspace Report Out
Rob Hughes, Senior Policy Advisor, Northrup Grumman Corporation and Sean Cassidy, Director, Safety and Regulatory Affairs, Amazon Prime Air

Mr. Hughes began the report with thanks to ALPA, RTCA, and the DAC members as well as FAA colleagues. He reviewed the make-up of the TGs. He observed that much has been done in 2 months and asked the committee to provide comments on whether the TG is headed in the right direction and what should be the next steps. He indicated that the TG is focused on building consensus and as co-leaders, he and Mr. Cassidy have a desire to engage responsibly. The task statement is the touchstone for the group and they have developed assumptions and guiding principles to help steer the work being done.

Mr. Cassidy reviewed the TG2 methodology and approach, which was to collaborate and educate, build and leverage consensus, and make rapid progress. To that end, they have developed five issue papers and draft recommendations.

He stated the recommendations should not reflect a single view and should be a multi-party effort. The TG organically developed into five focus subgroups:
1. Low altitude operations within the Mode C Veil
2. Equipage requirements
3. Leveraging existing cellular networks for command and control (C2)
4. Operational and airworthiness certification requirements for commercial UAS BVLOS operations
5. Future needs for airspace access beyond the 24-month timeframe.

With the assistance of MITRE, the TG looked at use cases to narrow the focus of the problem space. The current draft recommendation groups from TG2 include:
- Prioritize sUAS BVLOS operations within the Mode C Veil below 400 ft
- Develop technology-neutral navigation performance requirements
- Evaluate the existing cellular networks to meet low-altitude UAS C2 requirements
- Establish a CFR 14 Part 135 regulatory pathfinder program for commercial UAS low-altitude BVLOS operations
- Beyond 24 month timeframe recommendations.

Question: Public acceptability – is the TG thinking about how to roll this out and gain public trust first?

Answer: The TG also began to develop guiding principles and tenets – the core message that safety is of upmost importance is primary. Ushering in changes to accommodate UAS with safety as a paramount metric, (risk controlled mechanisms) allows for a slow, steady increase in complexity and diversity of

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operations. The evolution begins with defining the process path and articulating the minimum required safety for each operation.

Question: In looking at full integration, do you envision any issue with scalability?

Answer: That drove several recommendations of the TG. Namely, recommendation 4 (part 135) led to recommendation number 5. The use of land-mobile networks takes 7 different standards groups and aligns them – resulting in a scaled capability.

Question: Assuming unmanned aircraft will eventually go above 400 feet – did you examine the carrying of passengers? There are UAS vehicles that are now full production (optionally piloted) aircraft. Did the recommendations take that into account?

Answer: In response to the production aircraft question, you need an airworthiness certification for commercial on-demand operations (e.g., firefighting). The FAA must identify the minimum design and performance standards (through a risk-based lens) for type certification requirements. Using a risk-based approach, the safety case will determine the certification requirements. Operational supply chain, and recurring training and auditing functions for continuing operations all need to be considered.

Question: Will UAS integrate into the existing airspace as another aircraft type? Will manned aircraft not be denied access to airspace?

Airspace: That is a logical conclusion for an end-state – there may be intermediate stages that lead to that. That may be better answered by the FAA.

Question: Are you discounting visual Line-of-Sight (VLOS) by focusing on BVLOS?

Answer: No - there are rules in place for VLOS.

Comment: As you look at the 24-month horizon, the ADS-B mandate should help around the airports for BVLOS.

Question: Did you consider what it will take for FAA to scale up the waiver request? Part 135 is held to higher standard over part 91 - any potential victim was a by-stander. Why should commercial operations be held to a higher standard than private operations?

Answer: FAA is not saying they should be held to a higher standard; rather minimum standards to perform and operation will be less. LAANC automates the manual process. The automated process is

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derivative and expeditious of the waiver process. A similar part 135 process should be developed eventually.

Question: For the third recommendation (developing the cellular network), did you consider the impact on 911 and emergency network?

Answer: There is an evaluation ongoing and the 911 system is included in that evaluation.

Question: Recommendation 3 seems very detailed in the technology - shouldn't we be looking at a more generic technology?
Answer: Agree it is a concern. The team didn't declare this single technology would be used but is representative of the technology to be used. This study explored how the C2 requirement could be used, but doesn't mean they will be the only answer. The recommendation is to evaluate the spectrum for aviation application. RTCA SC-228, Minimum Operational Performance Standards for UAS, is looking at other technologies: 3G, 4G and 5G are also being looked at.

Comment: SC-228 is being neutral in developing a Minimum Operational Performance Standards (MOPS). Suggest changing the language to say an assessment is being done and don't list the specific technology.

Comment: The section of navigation was generic and specified integrity; communication should be equally vague and only specify availability/reliability.

Comment: Looking across the FAA's broader vision of what NextGen will need, it's important that we think about the period of time and synchronize it with what NextGen is thinking about (along with the NextGen Advisory Committee).

Comment: NextGen is important – airports' current efficiency and safety/capacity must not be compromised and systems of today and the future for airports should continue to be a focus.

Summary: The chairman summarized the discussion to say recommendation 3 should be adjusted to be more of a performance-standards based approach and less about technology. The section should address technologically-neutral components. RTCA will summarize the comments received for each task group and submit for their review and consideration.

TG1 – Roles and Responsibilities Report Out
Brendan Schulman, Vice President of Policy and Legal Affairs, DJI Technology and Dr. John Eagerton, Chief, Aeronautics Bureau, Alabama Department of Transportation/National Association of State Aviation Officials (NASAO)

Dr. Eagerton, representing NASAO, thanked ALPA for hosting the meeting and observed they are a gold-standard aviation group that to which all others admire. He noted that TG1 is looking at not only how to integrate drones into the airspace, but also integrate into society. All levels of government are involved will be touched as this industry expands. He further complimented TG2 on the great work they've completed so far.

Mr. Schulman echoed those comments. He noted that TG1 has worked very hard and a lot of work is still ongoing. Not all their work will be seen today. TG1 is addressing an important and challenging set of issues and there is significant and appropriate interest in the roles and responsibilities question. He believes we should think creatively, not about pre-emption and zoning, but rather look at what's required to meet the needs of local government and FAA. How can we conceptualize the airspace differently and the relative roles and responsibilities of FAA and local government? Drones are more personal than airplanes and will be managed differently with respect to enforcement, education, and technological tools and solutions. He then reviewed the TG1 work to date.

Dr. Eagerton then explained the methodology used to set priorities. The DAC wanted the TG to move forward and address the priorities and add method and structure to the tasking. The TG decided to use a method called Analytic Hierarchy Process (AHP). The benefits of this method are multi-stakeholders help prioritize issues. He then described how AHP works and the criteria used to determine priorities. He further explained how they were applied to the issue areas:
- Importance of issue area
- Relevance of the UAS problem
- Foundational nature of the issue
- Timely consideration on recommendations.

Mr. Schulman noted that in the desire to identify the highest priority issue, the results indicated the foundational nature of the issue was most important and there was less desire to rush to recommendations and conclusions. He then outlined the ordered priorities as:
- Enforcement
- Relative roles and responsibilities
- Enforcement of federal safety and airspace rules and regulations

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- state and local interest in and response to UAS
- Education
- Defining low-altitude UAS navigable airspace susceptible to state and local government interests
- Tech tools and solutions.

The group has undergone an extensive education campaign, bringing in many subject matter experts to brief them. Additional time is necessary to come to a consensus-based solution. The next steps are to obtain the DAC's thoughts on what has been done and should be done in the future, continue to receive feedback from stakeholders and subject matter experts, address stakeholder interests in the work, (all voices are welcome) and welcome state and local input and will report more details at the July DAC.

Question: Helicopter Association International understands and respects zoning control by cities. There are hundreds of laws being written. We are now wondering at what altitude a local government can regulate aircraft. Drones are considered by FAA to be aircraft. It appears state and municipal authorities are breaching the pre-emption rules with their laws. Will helicopter pilots need to know the patchwork of laws? State and local governments should coordinate with FAA just like they do with manned aircraft. The ability of every city/state to manage drones will lead to bigger aircraft. This is a major question that must be resolved. What are the FAA thoughts on what their action will be and why they aren't exerting control of their role?

Comment: It used to be that I assigned aviation issues to the airport director. Entire cities are transformed by drones to be airports in and of themselves. There is much interest by mayors across the country concerning altitudes, zoning, enforcement, information control. Mayor Lee embraces the desire to get city and county thoughts as there will be resistance to drones. The mayor requests that cities be engaged in the conversation. Mayors are dealing with many issues (e.g., homelessness, housing, crime, jobs). Ask mayors across the country and invite more intense dialogue in this area. Mayors are becoming airport directors because of this technology.

Comment: I congratulate the TG for taking on this huge task. Prioritization exercise discussion - enforcement QueryQueryand relative roles are tied together. FAA currently knows and understands how to handle the existing system, but lacks the clarity of understanding on what state and local governments want to regulate. This is not a black-and-white issue - this tasking should help define how those co-exist. Cities decide where the airport is located, then, the FAA defines how it is to operate. Co-existence is what we're after in this space. Cities can't be considered airports; FAA inspectors can't adjudicate homeowner's complaints for use of their property. We need a uniform system over all. Need to create space on this TG to bring definition on where there might be consensus.

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Discussion continued on the role of cities in regulating UAS and if that will eventually be applied low-altitude manned aircraft.   The resultant responses indicated that more work needs to be done to answer this question and the city/state governments need to be in the discussion. Engagement of cities/states could be through a poll (discussed previously, but time constraints prevented one from being developed). Use cases to help define the scope of the problem space, and gap analysis. To help narrow the conversation, Marily Mora and Robert Boyd suggested that the DAC help facilitate relevant organizations getting invited to attend the US Conference of Mayors convention in June and the National Association of Counties convention in July and both educate and solicit more feedback from the participants there.

The topic of how UAS increase employment was introduced. It was observed that drone operations could have a negative effect on employment, while the industry believes it will be positive. Some commented that the jobs created will require different skills than the jobs lost due to drone.

The chairman summarized the discussion and added that technology does not always decrease employment rather new skills are required. Mayors are responsible for navigating cities through the introduction of drones. The TG may be focusing on enforcement before the DAC knows what the state and local interest is. So, TG1 should re-look at priority 4 (State and Local Interest in and Response to UAS) with more attention. The DAC can help educate legislators at the upcoming local conferences.

How can the DAC help at the two conventions discussed? RTCA is to help identify DAC members who wish to assist in addressing the county and city conventions and to assist in defining what output they can produce that will benefit the two conventions and also to work with member Mayor Lee's office and Robert Boyd to get on the agendas of (or include focus group sessions) at both conventions.

TG3 – UAS Funding Report Out
Mark Aitken, Director of Government Relations, AUVSI, and Howard Kass, Vice President of Regulatory Affairs, American Airlines

It was observed that TG3 started later than the others and the co-chairs thanked everyone for their patience. TG leaders observed that future success of the drone industry depends on government and private sector funding to support and facilitate the integration and operations of drones in the NAS. Current FAA funding levels and mechanisms will not support timely integration. The UAS Implementation Plan lays out the myriad UAS activities over the next few years.

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The co-chairs then reviewed the tasking statement and determined 3 possible mechanisms for funding: government, industry, or a hybrid partnership approach. The assumptions and guiding principles and timeframes of the TG were reviewed and set the tone for the discussion of how the group will approach its work. The July meeting is for short-term recommendations with longer-term recommendations coming in November.

The mechanism for decision making was reviewed by the co-chairs (Decision Lens' AHP) that led to a ranking of the activities to be reviewed. A lot of help from the FAA was received in identifying these activities. There appears to be a natural synergy with TG2 (Access to Airspace) as they identify technology required and when, and TG3 as they identify how to fund that technology in the same timeframe.

The next steps for the TG are to:
- Collect and consider DAC feedback
- Engage subject matter experts and the FAA
- Analyze the data reduction and trade study results
- Assign focus groups with writing assignments
- Present the work and short term funding options at July 21, 2017 DAC virtual meeting.

The group currently believes that the FAA has to find new funding resources.

Question: With regards to FAA transformation - are you considering a transformative, risk-based approach from heavy certification to risk-based?

Answer from FAA: Yes - there are several efforts that include privatization. Aircraft certification is being reorganized with the part 23 rewrite. Performance based standards and requirements are desired by the FAA and there is more organizational delegation. It is not believed these efforts will affect the work of TG3.

Question: Are there resources that communities can bring on to support the activities. Where will the funding come from?

Answer from the FAA: TG3 brought up law enforcement needs and the FAA does not want to create unfunded mandates – it is critical that this be addressed.

Question: The National Academy of Sciences held a symposium on public-private partnerships (PPP) with NASA and government - how can these methods help fund these activities?

Question: Whether it will be a Cooperative Research and Development Agreement or PPP won't be part of what can be done to define the funding stream. There must be viable methods to do it, however.

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Answer: An informal survey was initially done to capture the group's thoughts for where each activity fell in funding mechanism spectrum. That may need to be revisited.

Question: How do you ensure, with an in-place architecture that is great but aging, the economic funding makes the right assumptions for technology of the future based on today? Assuming technology is improving, how can it be leveraged today rather than developing new technology (make the current system more scalable)?

Answer: The TG is looking at next 2 years. Technology won't advance enough to help in that timeframe. Some of what is done to help UAS will eventually help manned aviation; where that convergence is, no one knows but we believe it is many years away. The group does not want to do anything to degrade the current safety level of the system.

Comment: Manned aviation can benefit from unmanned aviation.

Comment: NextGen air traffic control was introduced as transformational technology more than a decade ago, yet it has not been effectively deployed because of a year-to-year budget cycle. When we think about what we'll do, we should think differently (e.g., lobbying for appropriations, adding fees on users of drones).

Comment: The current strategy in NextGen is to employ a best-equipped-best-served approach. The big challenge is to make that happen. Technology comes fast but current infrastructure has benefits that won't be replaced easily.

Comment: Thinking outside the box was part of this TG's assignment.

Comment: The future involves helping the FAA rewrite the rules to help industry move at the pace they wish to move.

New Business
No new business was presented.

Dates and Agenda (if known) for Next 2 Meetings

- The next (fourth) meeting of the DAC will be a virtual meeting scheduled for July 21, 2017.
- The fifth DAC meeting is scheduled for November 8, 2017 at a TBD location.

Action Items

Action	Responsible Party	Schedule	Status
ACTIONS OPEN FROM PREVIOUS MEETING			
None			
NEW ACTIONS			
TG2 to adjust recommendation 3 to be more standards based and less about technology	TG2	July	OPEN
RTCA to summarize the comments received for each TG and submit for their review and consideration	RTCA	ASAP	OPEN
TG1 re-look at priority 4 (state and Local Interest In and Response to UAS) with more attention	TG1	July	OPEN
RTCA to help identify DAC members who wish to assist in addressing county and city conventions, and to assist in defining what output can be produced that will benefit the two conventions; and work with members Mayor Lee's office and Robert Boyd to get on the agendas or set up focus group sessions at their conventions	RTCA	July	OPEN
RTCA to coordinate a webinar for SC-228 that can be reviewed by all DAC members	RTCA & SC-228	ASAP	OPEN
FAA to determine if members of committees and ARCs are required to divulge discussion material due to being subpoenaed	FAA	ASAP	OPEN

Attachments

Drone Advisory Committee Meeting Attendance		
Company	**Name**	**Role**
Intel	**Krzanich, Brian**	**Group Chair**
Federal Aviation Administration (FAA)	**Wassmer, Victoria**	**Designated Federal Official**
CNN	Agvent, Greg	Member
RTCA, Inc.	Allison, Darren	Manager
Airspace Systems Inc.	Banga, Jaz	Member
General Atomics Aeronautical Systems, Inc.	Blue, Linden	Member
Riley County, Kansas	Boyd, Robert	Member
Google	Burgess, James	Member
Air Line Pilots Association (ALPA)	Canoll, Tim	Member
Precision Hawk USA Inc.	Chasen, Michael	Member
RTCA, Inc.	Chaudhari, Claudia	Manager
Federal Aviation Administration (FAA)	Donovan, Colleen	Observer
Federal Aviation Administration (FAA)	Eck, Jim	Observer
3D Robotics	Egan, Nancy	Member
Los Angeles World Airports	Flint, Deborah	Member
Federal Aviation Administration (FAA)	Fontaine, Paul	Observer
Federal Aviation Administration (FAA)	Gibson, Marke	Observer
National Air Traffic Controllers Associati...	Gilbert, Trish	Member
Facebook	Gomez, Martin	Member
BNSF Railway	Graetz, Todd	Member
Wisconsin Department of Transportation, Bu...	Greene, David	Member
Academy of Model Aeronautics	Hanson, Rich	Member
Federal Aviation Administration (FAA)	Harm, Chris	Observer
Insitu Inc.	Hartman, Ryan	Member
American Airlines, Inc.	Isom, Robert	Member
RTCA, Inc.	Jenny, Margaret	Manager
Amazon Prime Air	Kimchi, Gur	Member
Harris Corporation	Kirov, George	Member
Federal Aviation Administration (FAA)	Lawrence, Earl	Observer
San Francisco, California	Lee, Ed	Member
Federal Aviation Administration (FAA)	Lenfert, Winsome	Alternate - Observer
Rockwell Collins, Inc.	Mattai, Nan	Member
United Parcel Service (UPS)	Mills, Houston	Member
Reno-Tahoe Airport Authority	Mora, Marily	Member
AT&T	Penrose, Christopher	Member
Federal Aviation Administration (FAA)	Peter, Lorelei	Observer
United Airlines, Inc.	Quigley, Bryan	Member
Federal Aviation Administration (FAA)	Ray, Lynn	Alternate - Observer

Professional Helicopter Pilots Association	Rush, Steven	Member
The MITRE Corporation	Ryals, Lillian	Member
Lockheed Martin Corporation	Samanta Roy, Robie	Member
DJI Technology	Schulman, Brendan	Member
RTCA, Inc.	Secen, Al	Secretary
Federal Aviation Administration (FAA)	Shellabarger, Nan	Observer
Association for Unmanned Vehicle Systems I...	Wynne, Brian	Member
Helicopter Association International (HAI)	Zuccaro, Matthew	Member