I-95 Corridor Coalition: UAS Webinar - A Webinar on the Why and How of Setting up a State Unmanned Aircraft System (UAS) Program: Experiences from DE and MA

March 21, 2019

Question and Answer Summary

NOTE: Results from the Polling Questions asked during the webinar are provided at the end of this document.

General Questions:

Q: Koree Dusenbury (NJDOT): Where can I find that program [Drone Logbook]?

A: Dwayne Day (DelDOT): You can do a google search and find Drone Logbook

A: Justin Ferri (KMJ Consulting): https://www.dronelogbook.com/hp/1/index.html

Q: Anthony McCloskey (PennDOT): What is the typical size of the pictures?

A: Dwayne Day (DelDOT): Typically, around 6.7MB

Q: J Walter (PennDOT): What technology do you use to live feed video to the TMC?

A: Dwayne Day (DelDOT): We have a Verizon SIM card in our iPads that provide a private link to Verizon towers

Q: Eric Tallarita (Connecticut DOT): Do you allow flight over live traffic?

A: Dwayne Day (DelDOT): No flying over live traffic by FAA regulation.

Q: Paul Krisavage (ConnDOT/IBI): What issues did DE have with software regarding foreign country development issues?

A: Dwayne Day (DelDOT): We haven't had a big issue with DJI and so far have no fear that they might be accessing our data.

Q: Paul Krisavage (ConnDOT/IBI): How do you get around homeland security issues as you send data over the air so-to-speak? In our planning stages in CT we are restricting data storage to onboard-only for post-processing later.

A: Dwayne Day (DelDOT): The video from the drones is sent on a private network, no different than sending a live image from a fixed or portable camera on the road.

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Q: **John Melville (PennDOT): How much does Drone Logbook cost?**

A: Dwayne Day (DelDOT): Enterprise license is $20/month, all my pilots have individual accounts and they are linked to a DelDOT account (each of which have no cost).

Q: **John Melville (PennDOT): Did DelDOT use UAS to respond to the chemical gas leak at the Delaware Memorial Bridge on Thanksgiving weekend? Just curious – I remember being stuck in the traffic jam.**

A: Dwayne Day (DelDOT): We were not called to support that incident.

Q: **John Dwyer (PA Turnpike): Dwayne, great presentation. What is the primary difference between Part 107 and the public COA for a state agency? Thanks!**

A: Dwayne Day (DelDOT): COA can be more restrictive. You have to contact the FAA 72 hours prior and log your flights with them at the end of the month, but the COA can allow you to fly in areas that the 107 will not.

Q: **James Li (MWCOG): MassDOT, was private network or cellular network used to stream data from your drones?**

A: Jeff DeCarlo (MassDOT): We use private band/SIM cards on cellular networks. Like Dwayne and DelDOT, it's identical to existing wireless cameras in the Commonwealth.

Q: **Ginna Reeder (I-95 CC): Can you talk about how you built your technical resources among your staff? You need pilots, data analysis, and other skills - did MassDOT recruit or is this just staff learning new skills?**

A: Jeff DeCarlo (MassDOT): We've put out some advertisements, but we have recruited exclusively through personal relationships from members of our team. It's difficult to find the right folks to match our necessary skillset, internal culture, etc.

A: Scott Uebelhart (MassDOT): We pull from two pools of people. The first has real manned aircraft experience. They are useful because they already understand key concepts like what airspace is, how to operate in airspace, preflight planning, and operational and emergency experience. The second group typically comes from firefighters, EMTs and other first responders, who bring UAS experience and have been trained in emergency and stressful operational experience. We only have 6 pilots at the moment but are going to continue to expand.

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Q: **Kamal Suliman (VDOT): Can you give an example of an incident management mission? What are the triggers for flying an IM mission?**

A: Jeff DeCarlo (MassDOT): We developed a call-out mechanism to our highway ops center. We've developed a complex wire diagram that answers the question when does a situation arise to the level of needing a drone? About 50% of the time we call our lead investigator, who is also our chief pilot. We call him and rally the troops.

A: Scott Uebelhart (MassDOT): On a practical level – you need to be able to fly in the weather! We're expanding all-weather operations but also need FAA clearance as well. There was an incident last march in a nor'easter when a bus was stuck in rising floodwaters. Our investigator had to call FAA to get authorization to fly within the Logan airspace (which was approved within minutes).

A: Dwayne Day (DelDOT): If someone calls the Fireboard for drone support, we've set up call-out procedures to get in contact with the appropriate people. Often times, law enforcement calls us directly and asks us to be on standby.

Q: **Dennis Caltagirone (NJDOT): Has either state run into issues flying over and streaming from fatality-involved incidents?**

A: Jeff DeCarlo (MassDOT): We're very sensitive toward accidents involving fatalities. During the pipeline fires there were two fatalities and within an hour our team and NTSB deployed there. When we arrive on scene, we get a sense of the accident site and determine whether it is appropriate to stream or not. Unfortunately, this year there were a few situations where that might have been a problem.

A: Dwayne Day (DelDOT): We do not stream fatalities, though we've gone to a couple and photographed evidence for crash recovery. Keep in mind that doing so may bring you a court subpoena. I've been subpoenaed once and another employee has been subpoenaed as well. We'll take those pictures, put them on a thumb drive, and hand carry them to a medical examiner or head investigator.

Q: **Ginna Reeder (I-95 CC): We know that data storage and the large files produced by UAS operations are an especially important issue for some agencies. What other advice do you have for the group?**

A: Dwayne Day (DelDOT): It's certainly a lot of data. The drones we use produce beautiful videos but take an excessive amount of digital space. We're using traditional local digital storage methods and also cloud providers like dropbox to provide them with the videos.

A: Scott Uebelhart (MassDOT): Our GIS expert gave us the phrase "if you can't find it, you don't have it." We take great care to make sure we can access our data and

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make it indexable. It's easy to put images in file folders but this is not a reasonable solution to long-term use and the scaling nature of the operation. We're moving toward the model of data as the core product. In practical terms, we've been using Google Drive in our initial steps as a baseline repository, but with sensitive material we've been saving things to a thumb drive and hand carrying them. A large data node is the next step in expansion toward infrastructure and future steps. If you're just starting out, appreciate that flying aircraft is just a small part of the entire operation and that a UAS program is really a data program. We can use commercially available tools that can turn UAS data into data that can be integrated into GIS, CAD, and build a complete image of say something like a construction site. You can take linear measurements, aerial measurements, you can even use raw images to make 3D point-clouds and make volumetric measurements. In Worchester there was a large rock ledge being blasted for a construction project, and we determined a larger area than originally planned needed to be blasted out, which changed estimates by several hundred thousand dollars. We're putting together cost/benefit analysis to show higher-ups that a UAS program can be turned into time and financial savings as well as increased safety.

A: Jeff DeCarlo (MassDOT): For incident response there is a smaller data commitment than on the maintenance side. For maintenance, we aim to look at deltas over time in data and ultimately, we want to be able to detect changes using artificial intelligence (AI) to facilitate predictive maintenance. We expect that might give us additional savings, though there is a lot of innovation required leading up to that kind of technology.

Q: **Ginna Reeder (I-95 CC): Have you made the case for cost savings for your agency? What advice can you give about presenting data like that to key decisionmakers?**

A: Jeff DeCarlo (MassDOT): At MassDOT, our day one task was to analyze the business case. As part of the business case, we were looking at quantitative measures like return on investment (ROI). We're tracking ROI and working hard to improve discrete numbers, but we're currently estimating in order of magnitude. Despite the lack of complete precision, it's useful when talking to directors or superiors

A: Dwayne Day (DelDOT): We're mimicking this model as well. Just as an example, during NASCAR events, we'd put an individual in a state police helicopter that was $6000 per hour, for several hours. Now we just purchase a drone for $2000 that can be used multiple times per year and you can see how that would pay for itself very quickly.
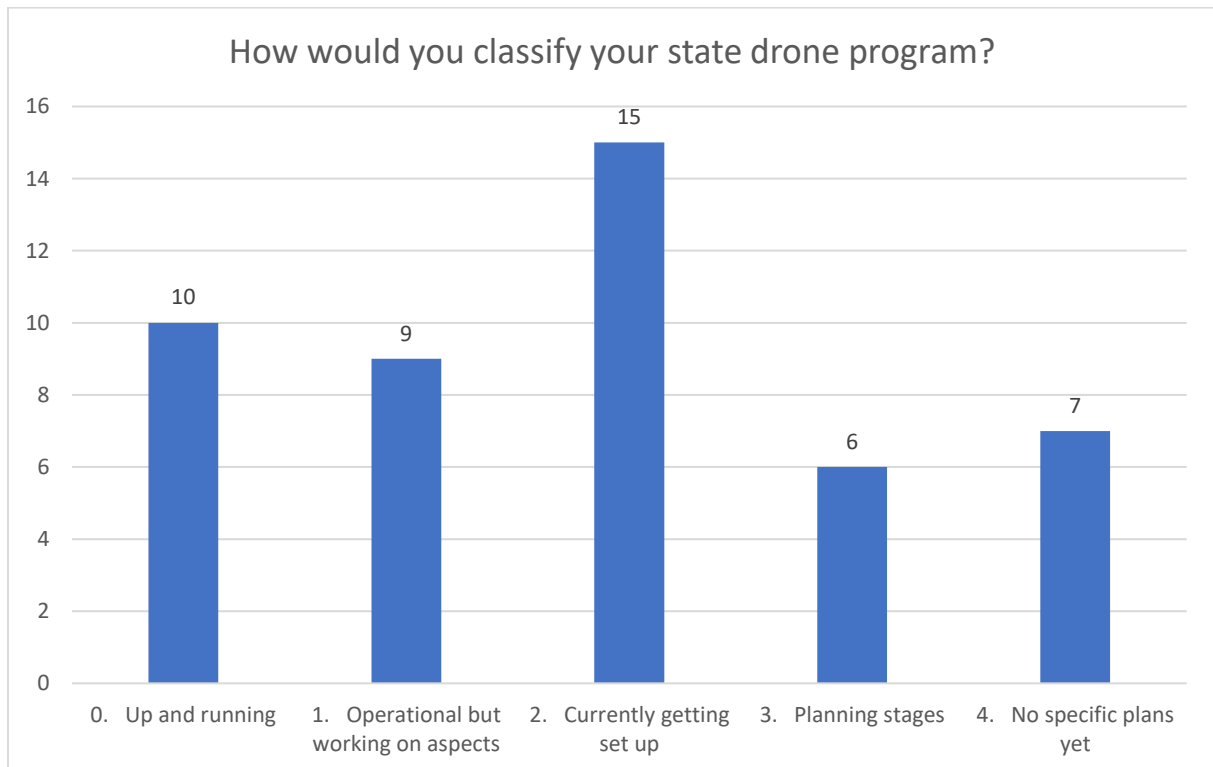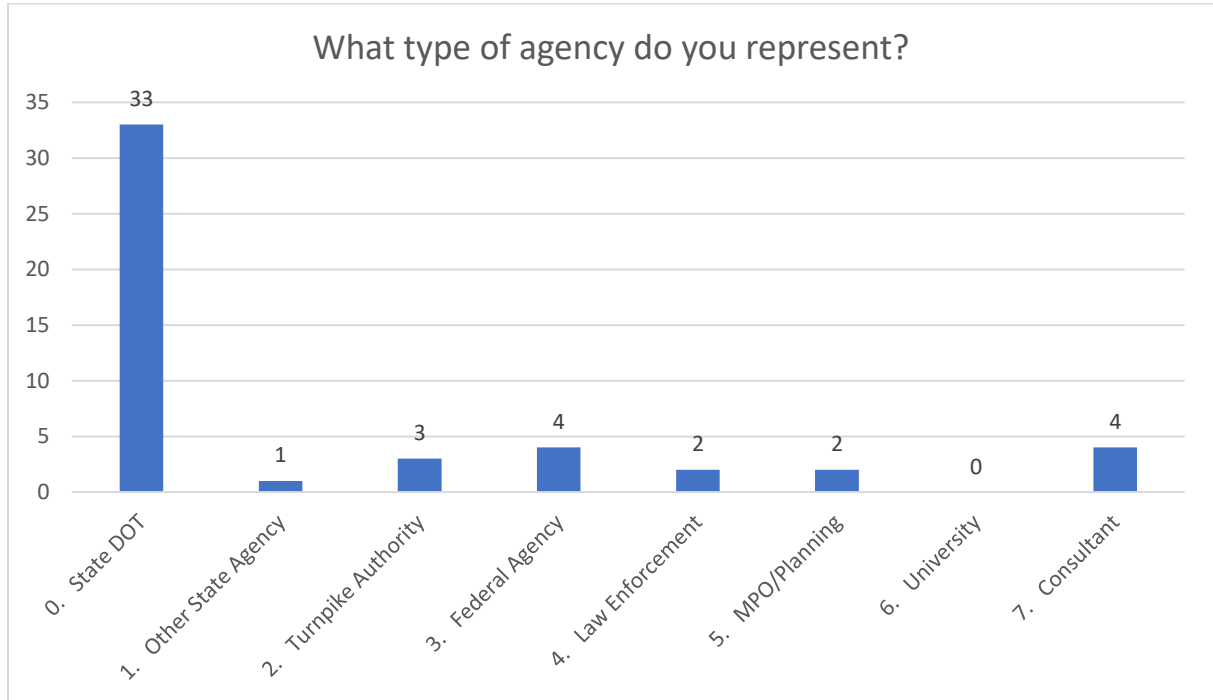
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What type of agency do you represent?

How would you classify your state drone program?

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What would help your agency take your program to the next level? (note all that apply)