Idaho Unmanned Aircraft Systems (UAS) Situational Awareness Symposium Summary Report

Wednesday, June 5, 2019 | 9:00am-5:00pm
Boise, ID

Overview

Over 100 public and private stakeholders from across Idaho gathered for the first statewide workshop focused on utilizing unmanned aircraft systems for situational awareness. This effort brought together many sectors including law enforcement, emergency management, transportation, communications, emergency services, fire, search and rescue, and higher education research as well as private sector agriculture and infrastructure such as rail, communications, power and utilities. The workshop was funded by a grant from the Department of Homeland Security's National Infrastructure Protection Plan Challenge Grant program.

Key Takeaways and Recommendations:

- **Create an Idaho UAS users group that includes both public and private sector experts.**
- **Have a more robust online repository of information. Make sure information can be found online so that people can access the most updated resources. More resources are needed to aid in sharing information.**
- **Research UAS best practices from other states and countries.**
- **Create a UAS taskforce for Idaho with strategic planning for future policies, interagency MOUs, collaborative trainings, resource and risk sharing, etc.**
- **Engage elected officials and educate them on current rules and regulations to ensure that they make informed state policy related to UAS.**
- **Increase outreach and communications from FAA and ITD Aviation Services to educate current and potential UAS users.**
- **Workshop was beneficial for networking and information sharing.**
- **Workshop was very valuable for establishing a baseline of where UAS programs are in Idaho. A higher awareness of where the gaps exist and where progress needs to be focused is necessary.**
- **Hold an annual event to allow for regulation updates, additional information sharing, networking, and education.**

- **Have breakout sessions to cover specific topics in depth for participants at different stages of UAS knowledge and experience**
- **Regular updates are needed on rules and regulations on the federal, state, and local levels.**
- **Private sector has many resources and has more established UAS programs in many cases. Would like to hear more about how the public and private sector could be integrated. More outreach needs to be done.**

Welcome, Administrative Announcements, and Introductions

Brandon Hardenbrook, Chief Operating Officer for the Pacific NorthWest Economic Region, opened the workshop by greeting attendees and facilitating introductions of all participants who were present. Hardenbrook presented attendees with a background on the Pacific NorthWest Economic Region's Center for Disaster Resilience and the grant that it received from the DHS National Infrastructure Protection Plan Challenge Grant program. This grant provided the funding to hold the day's workshop in Boise, Idaho. Hardenbrook walked attendees through the workshop's agenda and the overall objectives of the UAS initiative before inviting representatives from the workshop's partners, the Idaho Office of Emergency Management and the Idaho Transportation Department, to the stage.

The Objectives and Goals of the Workshop

Scott Stokes, Chief Deputy Director of the Idaho Transportation Department, welcomed attendees to the workshop and gave a brief address. Stokes emphasized the value of building relationships with other attendees at the conference. He said, "There's so much we have in common, including needs that we have in common

that what we might realize together. I believe that having us all here together is going to get us a lot closer to knowing what those specifics are." Stokes then showed the attendees a short video with UAS footage taken for the Idaho Transportation Department of a recent avalanche in Idaho. He praised the use of UAS for being instrumental in determining the size and scope of the emergency and identifying people who were trapped in homes and businesses. Stokes ended by briefly highlighting several additional examples of UAS being used effectively in Idaho emergencies before introducing Brad Richy to the stage.

Brad Richy, Director of the Idaho Office of Emergency Management, also extended a welcome to attendees before offering an illustration of the value of using UAS in emergency situations. Richy acknowledged that the state of Idaho faces many challenges. The top three threats that he identified were wildfires, earthquakes, and flooding. These threats all present risks to emergency personnel who need access to the scene. Richy said that one of the first questions that emergency managers ask is in regards to what resources are available. UAS, he said, is an especially valuable resource to have in these emergency situations. He recognized that the day's workshop offered an excellent opportunity to network and discuss the expansion of the capabilities of UAS in Idaho and to begin to build connections with others who are interested in or are already using UAS.

Public Sector UAS Operational Concepts and Uses

Next on the agenda, Ross Engle, Flight Operations Director for the Idaho Transportation Department's Aeronautics Division, moderated a panel on public sector UAS operational concepts and uses consisting of David Barker, Logistics Officer and UAS Team Lead for the Idaho Falls Police Department as well as lead for the Idaho Public Safety UAS Council; and Ed Gygli, Manager of the UAS Program for the Idaho State Police.

Engle began by asking the panelists how an organization- public or private- can gain access to airspace above their facilities that may be closed due to temporary restrictions.

Gygli responded first by stressing the importance of advanced coordination and information-sharing. He said these are critical components to ensuring that clearance is granted to the right people and that the proper channels are being used to allow everyone to stay in contact.

Barker answered that much of his and his team's time are spent educating agencies about the rules, regulations, training, and procedures that are necessary to know prior to operating a UAS program in Idaho. He said that agencies are often not aware of rules prior to purchasing UAS and trying to establish a program. Barker also agreed with Gygli that it is essential to establish relationships with other agencies so that they are aware of how UAS can be utilized in the case of an emergency.

Engle agreed that networking is critical and then asked the panelists whether it would be appropriate for facility infrastructure owners to send a UAS crew during an incident to gain situational awareness.

Gygli replied that the Idaho State Police currently have 14 UAS pilots distributed throughout the state with 2 pilots assigned to each district and 4 pilots located at headquarters. Most of Idaho's troopers, Gygli said, are aware of how to be a visual observer even if they are not certified UAS pilots. He continued that participants in the Idaho State Police's UAS program know how to respond when incidents arise. They are spread throughout the state so that they are able to get to the scene and gain permission to survey quickly. However, Idaho is a large state, and there are factors that affect UAS flight such as weather or tree canopies. Unfortunately, this means that there are times that UAS cannot fly. Gygli believes that it is important to educate agencies' staffs about the capabilities and limitations of each type of UAS application in order to reduce unrealistic requests.

He went on to describe the circumstances surrounding the development of the Idaho State Police's UAS program and emphasized that the program was designed, ultimately, to keep people out of harm's way. They want to be efficient and gather evidence, but they also want to keep people safe. UAS is beneficial because it can enter into unknown situations rather than endangering a human.

Barker followed Gygli by saying that every agency that has a UAS program should also have someone who is staying apprised of all new regulations, rules, and changes and doing research prior to an emergency so that the answer is known to questions such as who to contact about flight permissions.

Barker underscored that developing a UAS program takes time. Finding time for employees to undergo training and certification can be a struggle. In order to be properly prepared to respond in the case of an emergency, however, does require that time and resources be allocated.

Engle then asked the panel what their most common uses of UAS were in the past year. The Idaho State Police have used UAS primarily for crime scene investigations, crash investigations,

and hazmat while the Idaho Falls Police have used UAS mostly for search and recovery missions.

Engle then asked what resources can be used in exchanging and sharing of data. To which Barker replied that the Idaho Falls Police have struggled with this due to a lack of a universal standard across agencies both at the state and federal level. He reiterated the importance of putting in the time and resources to staying up-to-date with the standards across the agencies.

Engle then opened up the floor for participants to ask the panel questions. A participant asked, "On the mapping for law enforcement, are you using a third party software, and with mapping, what is the error rate? How intricate and detailed are your SOPs?" Gygli answered that, as far as detail goes, Pix4D is sufficient for the state police's needs. Another program Idaho State Police is using is Context Capture which is accurate enough for public safety, reconstruction, and crime scene purposes but probably not accurate enough for engineering or precision purposes.

Douglas Spotted Eagle from Sundance Media Group, a workshop vendor and presenter, stood up from the audience to add to the participant's question about accuracy. He responded that there is concern about error with all tools. The errors do not come from the software that is used but are instead a result of the aircraft or methodology for the way the craft is being flown and how the data is being captured. He underscored that having an understanding of the how the equipment and software are corresponding is more important than having expensive equipment or mapping programs.

Another participant brought up the issue of cybersecurity and how to prevent data from flight missions from being hacked or stolen. The participant specifically used the example of Idaho National Laboratory as a potential victim. A representative of the Idaho National Laboratory was present in the audience and addressed the participant's concern. To try to prevent data from being compromised, Idaho National Laboratory's flight tablets are not connected to the internet. After a flight, they download the imagery to micro SD cards and then to a machine that is not connected to the internet before deleting the data from any other source. They also coordinate with different entities to ensure that no third parties are conducting any testing nearby that may be sensitive or classified. The Idaho National Laboratory representative said that it comes down to risk management.

Private Sector UAS Operational Concepts and Uses

Douglas Spotted Eagle, Founder and Director of Educational Programming for Sundance Media Group, moderated the next panel on private sector UAS operational concepts and uses consisting of Dan Milovanovic, Senior Special Agent-Hazmat for the Portland Division of the Union Pacific Railroad's Police Department; and Matthew Harris, IT Business System Development Leader for Idaho Power. Spotted Eagle began by giving participants his background and the background of Sundance Media Group. Sundance Media Group started 25 years ago as an audio, video, and software applications training company before breaking into the aviation realm. Spotted Eagle attended flight school and became a skydiver, which lead him and Sundance Media Group to combine aviation with their photography and video experience into their current venture into the commercial UAS industry.

Dan Milovanovic addressed the Union Pacific Railroad's Police Department use of UAS. Milovanovic brought UAS footage from the Union Pacific Railroad to illustrate situations where UAS was instrumental for checking trains and railroad land for burglary and trespassing, derailments and accidents, facility audits, hazmat, and other uses. He emphasized the value of UAS in these situations that could be potentially dangerous or difficult without the use of UAS. Milovanovic highlighted an incident where UAS was used to monitor an ongoing protest situation in Portland, Oregon, that blocked Union Pacific rails and land. He finished by showing footage of several other security examples of the Union Pacific Railroad Police Department's use of UAS.

Spotted Eagle then asked Matthew Harris if Idaho Power is predominantly looking for videos or photos or actionable data. Harris responded that currently they are using videos and photos that are being manually assessed. From an information technology perspective, one of the significant challenges for the future is the tremendous amount of data that is being produced that, in turn, needs to be assessed. Idaho Power is looking to AI and machine learning to help sift through video and detect anomalies. They are looking toward the future and thinking about how to build out the infrastructure to house, maintain, and more efficiently analyze that data.

Right now, Idaho Power is using UAS primarily for transmission inspections to help make operations safer for linemen. Using UAS also increases efficiency by reducing the amount of time linemen spend physically inspecting lines.

Spotted Eagle then turned to the audience for questions. A participant asked if any of the panelists had lost any of their UAS to weather or bird attacks. Harris reported that, while birds are certainly interested in the UAS, Idaho Power has not lost any equipment to birds yet. They have also flown in mostly clear weather so they have not lost equipment to weather yet, but they are researching the best platforms for more inclement weather, specifically winter storms. Spotted Eagle added that, if an agency or company is losing equipment due to weather, then that entity needs to re-examine their operational risk management. The entity should have good operational risk mitigation procedures in place to prevent loss of equipment to avoidable situations. Milovanovic interjected that Union Pacific Railroad has not lost equipment from

weather. Their challenges are mainly interference from railroad telemetry, compasses, and the large quantities of metal. Spotted Eagle used this opportunity to point out that issues such as birds, weather systems, wind, temperature, concrete, steel, telemetry and others should be taken into account when setting up policies and procedures operations for a UAS program because often these interferences are considered after the fact.

Lastly, a participant asked the panelists whether they are looking into utilizing AI or machine learning to assist with identifying problem anomalies in their data. Harris replied that Idaho Power would definitely like to explore using more AI or machine learning. Currently, using humans to evaluate the data is doable, but that will cease to be the case when there is an increase in the amount of data being captured. Spotted Eagle added that Sky-Futures, an end-to-end drone-based industrial inspection service, has AI already built in that can make current assessments, predictive assessments, and predictive notifications if a routine inspection is being made. Pix4D is also utilizing AI tools in some instances. Milovanovic inserted that he is also hoping to look into integrating AI or machine learning into his program.

Break and Networking

Everyone was then dismissed for a short recess to network and discuss with fellow participants. Participants were also able to visit booths to hear from vendors about their UAS programs and equipment.

Panel: Current Federal Regulatory Overview and Updates on Future Possibilities of UAS Policy; Idaho-specific Regulations: Idaho Code 21-213 and Needs for Improvements; UAS on a County and Local Level: UAS Public Safety Guidelines in Disaster Areas

After the networking break, Ross Engle returned to the stage with Neal Murphy of Idaho Transportation Department to moderate a panel consisting of Ken Kelley, Airworthiness FPM/POC and UAS Educational Outreach for the Federal Aviation Administration (FAA); Bryan Norton, an attorney for the City of Boise; and Chris Corwin, the Blaine County Disaster Services Coordinator.

Ken Kelley educated participants on new regulations and changes being put into place by the FAA regarding UAS use. The first change that Kelley mentioned addressed registration on UAS. Prior to Part 48, registration markings could be placed inside the battery compartment. That is no longer allowed to prevent law enforcement entities from having to handle potentially dangerous devices in order to see the registration markings. Registration markings must now be on the outside of the device. The second change is the shift in language from the use of "hobbyist" to "recreational user." Kelley then showed participants an image of the FAA Airspace card which gives users a quick reference guide to class restrictions and contact information for relevant regional authorities. He pointed out some changes to the card and noted that there has been confusion surrounding law enforcement's responsibility regarding UAS interdiction.

Kelley then clarified a point of confusion for many regarding Part 107 currency requirements. Participants need to renew their currency at knowledge testing centers. The online course is a study guide and not an actual test for re-currency. However, Part 61 holders receive credit for their knowledge from the online course which allows them to take a shorter online test for currency.

A participant asked if an online database exists to view whether someone's certificate is current or not. Kelley answered that no database exists because Part 107 and Part 61 certificates do not expire. A Part 61 certificate holder must do a 24-month flight review, and a Part 107 certificate holder must take a 24-month currency or knowledge test.

Kelley continued by explaining new rules about flying operations above people. Operations above people is going to be included in Part 107 as a waivable regulation; however, it cannot be implemented until they have remote ID. The FAA is currently reviewing and finalizing the remote ID regulations. The remote ID regulations and operations over people regulations will be released concurrently.

Next, Kelley displayed the FAA's UAS webpage on the screen with the comment that, "This website is your friend." He highlighted the various sections of the website that apply to different users and pointed out where to locate relevant information regarding changes to rules and

regulations for each type of UAS user. Kelley specifically directed law enforcement to a portion of the website that showed the FAA contacts for federal, state, local, tribal, territorial, and international law enforcement agencies who are able to provide information on UAS enforcement and registration issues.

Kelley moved on to talk about issues surrounding Low Altitude Authorization and Notification Capabilities (LAANC). There has been a lot of confusion specifically about the Class E extension on the airspace. Authorization is not necessary to operate in Class E extension airspace unless the airport that it is attached to is a Class E airport. Kelley showed maps on the screen to illustrate Class E extension and other situations when operators would need Air Traffic Control (ATC) authorization to fly.

LAANC has replaced direct contact with ATC. Authorization must be obtained through LAANC. Ross Engle then asked Kelley if Part 107 holders could fly in Class E extensions without having to obtain a waiver. It was Kelley's understanding that this is true, but he would need to verify.
A participant asked Kelley how the proper authorities know that LAANC has granted someone permission to fly in the airspace. In answer to this query, Kelley gave a brief explanation to participants about how LAANC operates. At the local controlling facility, the tower manager has a notification that will appear on their screen requesting approval for authorization. That local control manager will determine if the request requires additional information and, if there are no temporary restrictions on the airspace, will simply click "Approve" on the authorization request. The authorization will then stay in the local database. LAANC authorization can be revoked in certain cases such as the airspace being required for emergency responders. If LAANC authorization has been revoked for any reason, the pilot will receive a text message, an email, and a notification from the LAANC app.

Next to speak was Bryan Norton, a City of Boise attorney, who informed participants about Idaho-specific regulations regarding UAS use. Currently in Idaho law, two sections apply to UAS. The first of these sections is Idaho Code Section 36-1101 which basically states that UAS cannot be used to hunt wildlife. Some flexibility exists in this code. For instance, a disabled person may be able to obtain a waiver to hunt with UAS.

Most of Idaho's restrictions on UAS, however, come from Idaho Code 21-213. Norton focused on a few items from this section. Firstly, the code defines UAS as any aircraft that flies and does not carry a human, which he admitted is a very broad description. Model airplanes and rockets are expressly excluded from this distinction. The code then addresses restrictions on UAS. It starts by limiting the operation of UAS for any person, entity, or state agency without a warrant and prohibits intentionally conducting surveillance, gathering information, or recording any specific person or location without consent. The exceptions to this restriction include emergency response for safety, search and rescue, and controlled substance investigations. However, Norton stated that the use of UAS for controlled substance investigations is unconstitutional despite what the code says. In fact, much of Idaho Code 21-213 is unconstitutional, according to Norton.

Norton highlighted two final points from the code. The code provides a legal clause that allows someone to sue if the information taken with UAS is published. Lastly, it permits someone to

"aerially inspect their 'facilities' if they have a valid easement, permit, license, or other right of occupancy."

According to Norton, most of the UAS issues result from people calling the police about recreational users flying over their property. To the surprise of many, this is not illegal as long as the pilot is adhering to the regulations governing that flight.

A participant asked if there is a law against shooting down a UAS. Norton and Kelley both quickly responded that there is a law against shooting down UAS, and it is a federal offense. A UAS is an aircraft which means that a person shooting down a UAS can be charged under the same U.S. code as a terrorist downing an airliner. There are also state codes that persons could be charged under that relate to vandalism or destruction of property.

Norton is often asked by police officers about what is and is not legal flight. Norton's response was that it depends on how the UAS is being used. If it is being used as a tool to commit a crime, then that is an illegal use and can be prosecuted.

Another participant asked whether any trespassing statutes exist that specify height requirements above private property or other restrictions. Norton's replied that the FAA through Congress controls the national airspace and determines safe flight. The only instances where a trespassing case can be made would be in the case of video voyeurism or something similar.

In conclusion, Norton encouraged participants to reach out to their legislators about fixing the issues with Idaho Code 21-213. He acknowledged that it is a broken code that needs to be fixed not only because of the law enforcement problems but because of the serious unconstitutionality of the code.

Ross Engle then asked Chris Corwin to share his experiences with UAS on the local level. Corwin spoke to participants from the perspective of a county emergency manager. He mentioned that wildfires are probably one of the important issues that he deals with. When there is a wildfire, the airspace will be restricted to allow air support to come in, but sometimes entities such as power companies want access to their damaged critical infrastructure. The question that Corwin wanted to answer was how to access airspace that is restricted. Corwin went on to explain the Incident Command Structure (ICS) and how it is set up. Corwin suggested that one of the first things to do is to find the liaison officer whose job it is to help coordinate with the incident commander when and how to grant access to the restricted airspace.

Engle asked Corwin if he could suggest any online resources to participants about where to find a point of contact to arrange for a temporary flight in the case of a wildfire or other disaster. Corwin suggested that the easiest thing to do is to know who the local emergency manager is because that person will be coordinating resources in the event of a disaster, and the incident commander will approach the emergency manager if UAS is needed.

That concluded the panel, and participants were dismissed for lunch.

Keynote Speaker: Robert Blair, Three Canyon Consulting

While participants enjoyed lunch, the keynote speaker, Robert Blair, a lifelong farmer and UAS expert, approached the stage dressed in overalls and carrying a pitchfork. Blair has been on the leading edge of precision agriculture utilization and is recognized as a domestic and global leader in this field. The focus of Blair's was how technology and UAS in particular has changed the way that he farms and approaches his business strategy. Blair stated, "As a farmer, I've been relying more on technology and doing fewer things on my own."

Blair began by sharing his experiences of how his progression into precision agriculture and his use of UAS led him to testifying in front of Congress, speaking in front of agribusiness leaders from across the globe, and even appearing on radio shows in Australia. Blair acknowledged the perception of farmers and even Idahoans as simple or backward or, as he put it, "rednecks." He stated that this perception is difficult to overcome, but farmers and Idahoans need to change this image. Idaho is a state involved in a vast array of highly advanced technologies like Idaho National Laboratory, Micron, and others.
Blair posits that a negative perception of UAS persists as well which he believes also needs to change.

Blair then described his first foray into UAS. In 2006, Blair saw an ad in a farm magazine for UAS and decided to purchase one. While Blair's first UAS was fairly primitive, it sparked a vision for Blair, and he began to modify his UAS to capture better imagery.

Blair saw the potential for UAS use and decided to use UAS for field scouting on his farm. Instead of being able to view only a portion of a field at time, Blair could survey an entire field using UAS and use that data to aid in nutrient and input management, to find anomalies in fields, and to determine his monitoring decisions. He also explored beyond remote sensing utilization for UAS and built a seeder that could be attached to a UAS and used for replanting grass after wildfires or floods. Blair also described some of the early challenges and failures that he encountered while modifying and experimenting with UAS.

In 2008, Blair became more involved in other aspects of UAS including trying to have a representative from the agriculture sector placed on the initial Aviation Rulemaking Committee. Blair lamented that, to this day, there is no representation from the agriculture sector on that committee despite being touted as one of the industries that could most benefit from UAS. In that same year, Blair also filed the first petition for commercial UAS use to the FAA. It took until 2016 for Part 107 to be enacted which allowed for commercial flight without an exemption.

In 2014, the FAA clarified loopholes in UAS regulations that ultimately made it more difficult for universities and the private sector to work together as well as clarifying commercial use of UAS versus hobby use. Both of these clarifications were negative in Blair's estimation.

Blair then reiterated a statement that Douglas Spotted Eagle had made previously in the day about the value of data obtained from UAS flights. Blair restated that the value of UAS is not in the equipment or the software being used but is instead about the data. The more data that can be collected and analyzed the better and more efficient a person or organization can be.

Next, Blair turned to the progress that other countries are making in UAS. He stressed that the United States is following behind other countries in UAS development, especially China, which he believes should not be the case. The United States cannot afford to ignore the necessity of remaining relevant and progressive when it comes to UAS applications. Blair believes that UAS users need to take advantage of the government's favorable outlook toward the business climate so that the United States can match and go beyond China's capabilities. He also warned that Idaho as a state is falling behind in UAS progress. According to Blair, Idaho has a vast array of valuable resources and institutes of higher learning that are not being fully utilized for UAS.

Blair did recognize some challenges to progress, however. "Technology needs to work 100% of the time." Blair mentioned the lack of proper operator training, sensor software limitations, short battery life, the complexity of spectral signal analysis, the cost effectiveness of utilizing drones for large tracts of land, the size and amount of data, and the constraints of cloud computing in rural settings as a few examples of challenges facing UAS, especially in the agriculture sector. Blair acknowledged though that these challenges are also opportunities for the state of Idaho to change the public perception of Idaho by providing better training and by building better sensor software and batteries, for example. Blair insisted that Idahoans have to take the initiative. He told participants, "Each and every one of you is an expert in your field. We need you at the table. We need your voice." Having participants from across all different sectors gathered for the workshop was a great first step toward bringing Idaho's resources together.

Blair finished by encouraging participants to work together with the government and with the FAA and others on regulations and capabilities for UAS. "Our government can help us, but we have to create that environment. We have to shout with one voice."

At the end of Blair's presentation, a participant asked Blair if there is a country that serves as a model of success besides China. Blair responded that Australia is an example of a country whose government understands the importance of UAS and is actively working with different sectors to create successful UAS programs. He believes that Australia is leading in first world countries in UAS.

Concept of Operations (CONOPS) and Common Operating Procedures: Discussion on Current Process to Access Damage Using UAS and Identifying Gaps and Challenges

After a brief break, Brad Richy addressed participants about how UAS has changed emergency management. He used the example of the Teton Dam failure in Idaho in the 1970s as an example of how technology has changed the way emergency management is conducted. Instead of using

an incredible amount of manpower and time like in the Teton Dam disaster, UAS could be used now to map the situation in an hour flight.

Richy reiterated Chris Corwin's suggestion that people be aware of who their local emergency manager is and how to contact them. He stressed that knowing how to contact that person is going to be immensely useful in the case of an emergency for everyone involved. Richy continued by emphasizing the need to have an emergency plan in place and to anticipate an emergency by asking questions about preparation and how one might respond.

Discussion on Systems for Facilitating Information Recording, Storage, and Sharing of Damage Inspection Information

Brad Richy asked that participants discuss the UAS Adoption and Data Sharing Questions [See Appendix A below] that were presented on the screens amd at their respective tables. Twenty minutes of tabletop discussion ensued followed by a debrief by the larger group.

The first discussion question focused on how an organization might start a UAS program and what resources might be available to these organizations. Brandon Hardenbrook asked if participants were aware of any useful data-sharing programs. Richy mentioned WebEOC, which is only available at this time to the public sector as well as Survey 123 as two resources that can be utilized to share information in emergencies. Another participant explained the LIDAR Consortium which is a tool that is being used by GIS to collect data and then share that data across agencies.

Hardenbrook then asked if any participants had a good model or mutual aid agreement for sharing equipment across organizations in Idaho A participant answered that, as of now, no mutual aid agreements exist concerning UAS. His agency is planning on reaching out to the other Idaho state agencies first, before attempting to establish mutual aid agreements with cities, counties, or businesses. His agency already has a working relationship with many of the other state agencies; however, they would have to set up a different agreement for UAS. A member of the Boise Fire Department also answered this question. According to him, the Boise Fire Department has a contractual agreement with the Idaho Department of Lands already which means that any resources that either organization owns can be used by the other organization at a contractual rate. This includes UAS. Richy added that Idaho Office of Emergency Management has sixteen special hazmat teams that can be called to respond to communities in emergencies. Under a grant, Idaho Office of Emergency Management trains and equips the teams and can assist when other agencies respond. Their hazmat teams are a model, best practice for the nation. Richy thinks that this can be used as a model for UAS assistance across the state as well.

As a follow up, Robert Blair asked Richy what made Idaho's hazmat response plan one of the best in the nation. Richy responded that it came down to coordination between the teams, communities, and the agencies.

Next Steps and Timeline

With that, Brandon Hardenbrook asked participants to share key takeaways and recommendations from the workshop and for future events.

- Create an Idaho users group that includes both public and private sector experts.
- In the next event it would be beneficial to have breakout sessions to cover specific topics in depth as various participants are just beginning and others are more advanced information and discussions.
- Robert Blair mentioned Australia has what he considers to be the best overall UAS policy and strategic planning. Let's learn what they are doing and see what we can apply in Idaho. Who could do this?
- Helpful to have a more robust online repository of information. Make sure information can be found online so that people can access the most updated resources. Will it be on ITD website?
- Create a UAS taskforce of sorts for Idaho with strategic planning for future policies, interagency MOUs, collaborative trainings, resource and risk sharing, etc. Engaging elected officials slowly and carefully. There is a knowledge gap with our elected officials on current rules and regulations, we need to educate them before they begin to make state policy related to UAS.
- Workshop was very valuable for establishing a baseline of where UAS programs are in Idaho. We need higher awareness of where the gaps exist and where progress needs to be focused. More resources are needed to aid in sharing information.
- Maybe a two-day event next time with specialty panels in different sessions?
- Increase outreach and communications from FAA and ITD Aviation Services to educate us.
- It seems there is very little coordination between federal and states and much misunderstanding by users about what is required. We need regular updates.
- Private sector has many resources and has more established UAS programs in many cases. Would like to hear more about how the public and private sector could be integrated. Brad Richy interjected here to mention that Idaho Office of Emergency Management has a private sector coordinator who can be contacted about public-private sector partnerships. They need to do more outreach.
- The workshop was extremely beneficial in networking and information sharing, an annual event would be extremely helpful. What kind of follow-up will participants receive? Who/what agency will continue with this great first step?

Brad Richy thanked everyone for attending and voicing their opinions and recommendations. He noted that search and rescue operations are greatly enhanced with UAS. The day's workshop helped give everyone a better understanding of the capabilities of UAS and what resources are available in Idaho. "Technology is an incredible opportunity for us to absorb, understand, and try to make good decisions on how we can best get the resources out to handle any kind of event across the state."

Brad Richy then asked that each table group offer one suggestion of what the next Idaho UAS workshop should include. Below is a list of these suggestions:

- Integration and partnerships between the public and private sector- which ones exist, how to start a new one, templates to not have to recreate the wheel.
- Have breakout sessions where the different categories in the new users group can get together by content specialty.
- A resource consortium or central repository to find experts, resources, and information on how to start a UAS program and other related topics, rules and regulations. Is there a regional source for the northwest?
- A joint effort with private and public sector to address the Idaho Legislature regarding changes to the code for both the public and private sector. Who will initiate this?
- More time for FAA and legal updates. Many are not aware of the rules and regulations surrounding UAS use. We could have an entire separate session just on the FAA.
- How to standardize UAS operations between different Idaho departments and jurisdictions
- More time given to public safety regarding UAS and how airspace priority works.
- Vendor demonstrations and exhibits are excellent. Maybe add a second day.
- Community outreach and education on the rules and regulations surrounding UAS on the state, county, and local levels for recreationalists and beginners. The public has little idea of what any of the laws are. Who is in charge of outreach for Idaho?
- The state should develop mutual aid MOUs for the sharing of UAVs, equipment and related resources (certified pilots, cameras, sensors, etc).
- Monthly newsletter, short bullet points or links to updates, resources, applications, other websites.
- Panels for private sector on how to find the local emergency planner and learn about incident command for disaster resilience and working together with public safety.
- Presentation from ITD that explains how they determine what transport will be closed, what areas are closed and how to communicate with ITD regularly about aviation and UAS issues. Whose scope of work is this?

UAS Demonstrations

Gloria Totoricagüena explained the logistics of the remainder of the workshop and introduced the workshop vendors. The vendors then described their companies and what participants would experience during their demonstrations.

Rapid Expeditionary Concepts: Brody Escalera, CEO of Rapid Expeditionary Concepts, and his team displayed their Ground Control Station which brings together the manned/unmanned team application for the special operations part of the Department of Defense. They are also moving into law enforcement and search and rescue as well. His company takes hardware and integrates it into manned and unmanned aircraft. They also partner with other companies to better integrate hardware and software for manned and unmanned aircraft.

Rapid Aerial/Empire Unmanned: Matt Broderick conducted a mock search and rescue operation for participants to observe. He encouraged the public sector to reach out to the private sector and to companies like Empire Unmanned because they have been flying UAS for quite some time and have the resources to assist in the case of search and rescue, if needed.

Sundance Media Group: Attendees were invited to view demonstrations and to fly the drones themselves. Sundance Media Group brought their Aerial Vehicle Operations Center (A.V.O.C.) with them from Las Vegas. They also led demonstrations of their drones.

Appendix A

Tabletop Group Discussion Questions: Idaho Critical Infrastructure Access and Situational Awareness CONOPS and Information Sharing

- Have you started a UAS plan/program in your organization? What are the obstacles thus far? What resources are useful to beginners?
- Barriers to UAS adoption: Privacy issues? Resource sharing? Joint training? Setting protocols? Funding? Public negative perception?
- Current local access protocols: Waivers from FAA? Is prioritized critical infrastructure already identified?
- Methods of obtaining situational awareness of infrastructure
- Data Format and Transmission Issues to Consider
- What applications would be valuable to your organization?
- Technical knowledge
- Regulatory uncertainty