Wildfire Technology Management

How UAS are Impacting the Future of Fire Fighting

IDGA
Institute for Defense and Government Advancement

How UAS are Impacting the Future of Fire Fighting

Unprecedented surges in wildfire disasters globally have produced an exceptional emphasis on the need to effectively predict, prevent, and mitigate wildfires. One means by which wildfire prevention agencies can learn more about wildfires is through drones. By using uncrewed aerial system (UAS) wildfire agencies can research wildfires from above without risking manpower, thus protecting personnel and saving agencies money.

Ben Miller is the Director for the Colorado Center of Excellence for Advanced Aerial Firefighting and has decades of experience in public safety, with a focus on how drones and other UAS can be leveraged by safety agencies. On April 23, attendees of the Wildfire Technology Management conference in Pasadena, California will get to hear Ben explain how his home state of Colorado is leveraging technologies such as drones to enhance wildfire response and prevention across the state. Before the conference, IDGA sat down with Ben to learn more about his role in Colorado Division of Fire Prevention and Control and how the department plans to revolutionize wildfire management.

If you are interested in learning more about the Wildfire Technology Management conference, be sure to read the whole agenda. Besides thought-provoking sessions, the two-day conference will also allow attendees to collaborate on and advance solutions for the prediction, prevention, detection, suppression, and mitigation of destructive wildfires.

Can you describe the current uses of UAS and drones in wildfire management and where you see the future of these technologies headed?

The key advantage drones offer is mobility. They provide a means of aerial observation and intervention that circumvents the limitations of ground-based approaches. For instance, instead of laboriously climbing a hill to assess a wildfire, drones can swiftly provide an aerial perspective, facilitating quicker decision-making and response.

Moreover, the democratization of aviation through drones is a significant development. The reduced complexity and cost associated with drone technology compared to traditional aircraft make it accessible to a wider range of organizations, including smaller fire agencies or even volunteer groups. This accessibility transforms how we approach fire prevention and response, enabling more agile and cost-effective strategies.

Currently, the FAA's regulations, notably Part 107, govern drone operations for civil operators, ensuring safety and standardization within the industry. However, as the need for larger drones with more extensive capabilities arises, we encounter regulatory challenges. While the FAA's focus is understandably on civil operators, such as commercial drone deliveries, there's a lag in addressing the specific needs of government agencies like ours, which require larger drones for public safety missions.

To bridge this gap, we're pioneering the concept of public aircraft operations for drones. This framework allows government entities to establish their own safety protocols and operational standards, enabling us to leverage drones effectively for firefighting and other emergency response tasks. By developing comprehensive programs that ensure professionalism, safety, and efficiency, we aim to set a precedent for responsible drone use within the public sector.

Looking ahead, our vision for drones in wildfire management encompasses larger, longer-range drones capable of carrying significant payloads, such as firefighting equipment or supplies for frontline responders. Additionally, advancements in autonomy and beyond-visual-line-of-sight (BVLOS) capabilities will further enhance our ability to mitigate wildfires efficiently and safely.

Can you describe what COTAK is and provide an update on its roll out?

COTAK, or Colorado Team Awareness Kit, is a groundbreaking initiative aimed at revolutionizing real-time location services for public safety agencies across the state. At its core, COTAK is a state level version of TAK, or Team Awareness Kit, originally developed by the Department of Defense.

TAK is essentially an application that provides real-time location tracking and communication capabilities for users, initially designed for military operations. It allows individuals equipped with the app to view each other's locations on a map, facilitating coordination and collaboration in dynamic situations.

Now, COTAK takes this concept and tailors it for civilian use, particularly in the realm of public safety. It serves as the backbone infrastructure that enables agencies to deploy TAK-like capabilities within their operations. This involves authentication mechanisms, server connectivity, and the creation of channels for different user groups, such as police, fire, EMS, and more.

For instance, a police officer can activate the police channel on their device during a shift, allowing them and their colleagues to see each other's locations in real time. Similarly, in emergency situations like a traffic accident, responders from different agencies can coordinate effectively by sharing their locations through dedicated channels.

The significance of COTAK lies in its scale and ambition. It represents the first statewide effort to implement such a comprehensive real-time location service system for public safety agencies, encompassing a potential user base of around 130,000 first responders across more than 3,000 agencies in Colorado.

The rollout of COTAK has been a monumental undertaking, requiring meticulous planning and coordination to onboard users and ensure the smooth operation of the system round-the-clock. While challenges persist, we are nearing the final stages of implementation, poised to deliver a transformative tool that will enhance situational awareness and coordination among public safety professionals statewide.

Why is local engagement and partnerships instrumental in implementing fire safety measures in Colorado? How do these partnerships contribute to more effective wildfire prevention and response efforts?

Local engagement and partnerships are absolutely essential when it comes to implementing effective fire safety measures in Colorado. The nature of firefighting and wildfire management inherently demands a collaborative approach that extends beyond individual agencies or jurisdictions. By fostering partnerships at all levels, we can ensure a unified and coordinated response to wildfire incidents, maximizing our collective resources and capabilities.

One example that comes to mind is our collaboration with the U.S. Forest Service through NIFC (National Interagency Fire Center) in Boise. Through a cost-share agreement, we've been able to pool our resources and expertise to develop technologies, like COTAK, specifically tailored for wildland fire operations. This collaboration has been instrumental in enhancing situational awareness and coordination among wildland firefighters, ultimately leading to more effective wildfire prevention and response efforts.

Moreover, our partnerships extend beyond government agencies to include industry stakeholders as well. For instance, we're currently engaged in a pilot project with Lockheed Martin, exploring the potential of space-based sensing technologies for wildfire detection and monitoring. This collaboration represents a convergence of cutting-edge technology and real-world wildfire management needs, with the potential to revolutionize how we detect and respond to wildfires from space.

Additionally, initiatives like FireGuard, which bring together states and federal agencies to leverage national assets for fire management, are further examples of the power of collaboration in advancing wildfire prevention and response efforts.

What are you hoping attendees of Wildfire Technology Management walk away from your session having gained?

The main takeaway I hope attendees of my session gain is a profound understanding of the critical importance of real-time resource location in emergency response scenarios.

Real-time resource location isn't just a convenience—it's a life-saving tool. When lives are on the line and every second counts, knowing the exact whereabouts of personnel and assets can make all the difference. Whether it's locating a distressed individual in need of rescue or coordinating the deployment of firefighting resources to combat a rapidly spreading wildfire, accurate and timely location information is paramount.

Historically, traditional methods of communicating location over radio have proven inadequate, particularly in high-stress situations where clear and precise communication becomes challenging. This deficiency in location awareness has unfortunately led to tragic outcomes in the past.

That's where solutions like COTAK come in. By providing real-time visibility of resources and personnel, COTAK empowers emergency responders to make informed decisions swiftly and effectively. It eliminates ambiguity and guesswork, enabling responders to navigate complex scenarios with confidence and precision.

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APRIL 23-24, 2024
WESTIN HOTEL PASADENA,
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SHAPING THE FUTURE OF WILDFIRE PREVENTION AND SUPPRESSION

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Wildfire Policy and Technology Director
Western Fire Chiefs Association

Joe Tyler
Director,
California Department of Forestry and Fire Protection (CAL FIRE)

Angela Coleman
Associate Chief
US Forest Service

Brian Rhodes
National Director, Fire and Aviation Management
US Forest Service

Jeff Rupert
Director, Office of Wildland Fire
Department of Interior

Gordy Sachs
Director, International All Hazard
US Forest Service

Brian Marshall
Chief, Fire and Rescue
California Govenor Office of Emergency Services (CAL OES)

Daniel Berlant
State Fire Marshal
California Department of Forestry and Fire Protection (CAL FIRE)

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Director of Strategic Engagement and Partnerships
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Fire Chief
Orange County Fire Authority

Sean Triplett
Tools and Technology Branch Manager, National Interagency Fire Center (NIFC)
US Forest Service

Chris Tubbs
Fire Chief, Southern Marin Fire District
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Jeff Marsolais
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