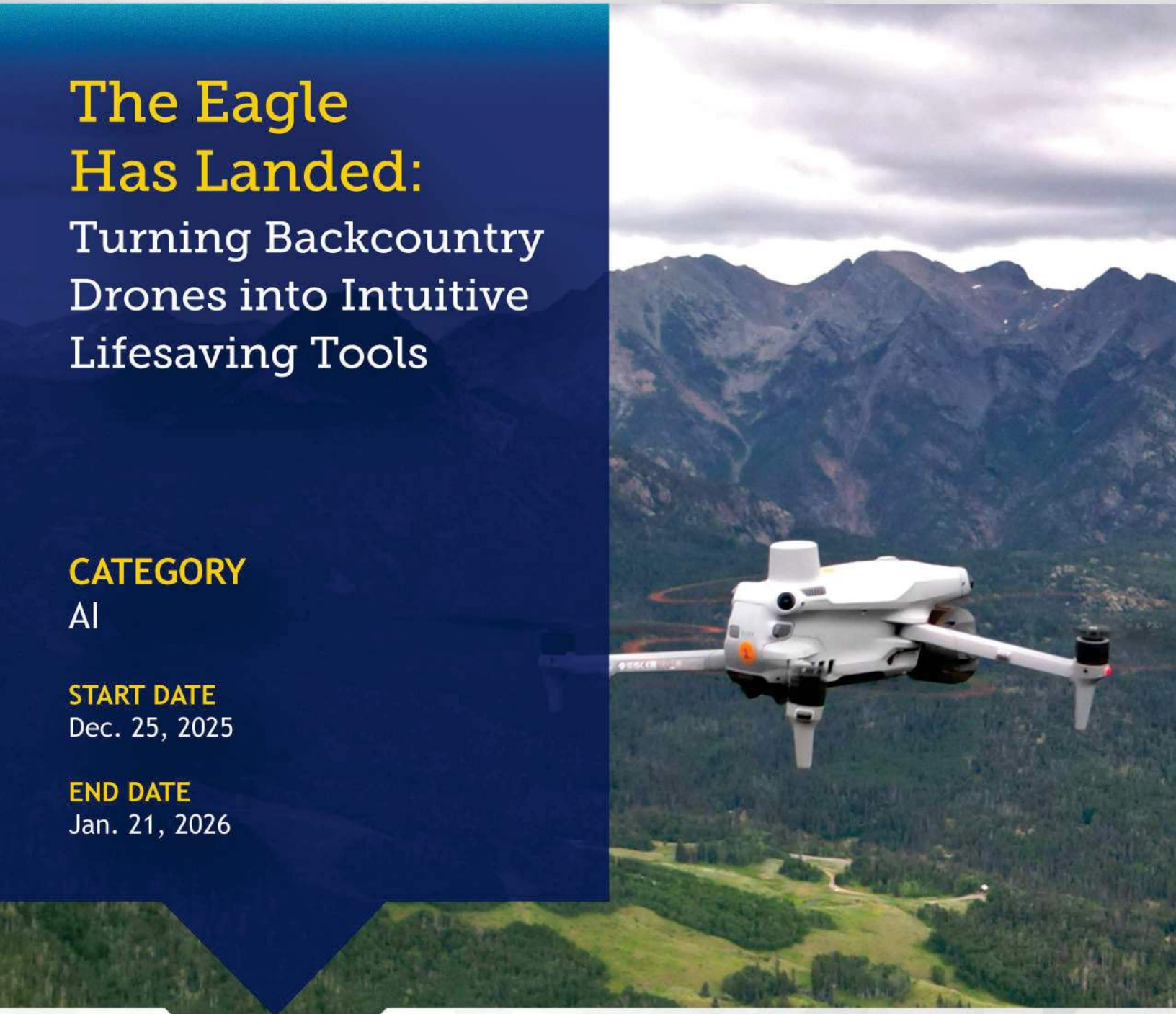
The Eagle Has Landed:

Turning Backcountry Drones into Intuitive Lifesaving Tools



CATEGORY
AI

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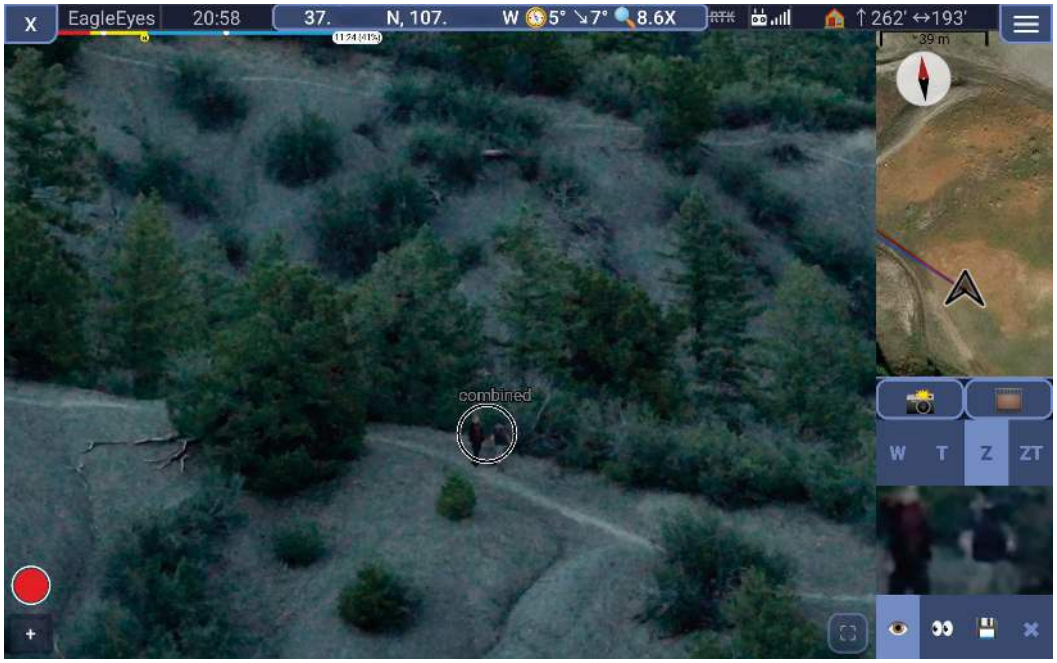
EXECUTIVE SUMMARY

In Colorado, search-and-rescue (SAR) operations are a frequent necessity due to the rugged and often volatile nature of the state's backcountry. To improve the efficiency of these critical missions and help first responders reach people more quickly, the Colorado Department of Natural Resources, through Colorado Parks and Wildlife (CPW) and the Office of Information Technology (OIT), is investing in artificial intelligence to modernize lifesaving efforts by providing teams with an advanced, expert-driven tool called the Eagle Eyes Search drone coordination platform. This specialized drone software helps teams coordinate and work better together during rescue missions.

Eagle Eyes uses artificial intelligence by applying computer vision and machine learning to autonomously detect color and motion to flag subtle clues, such as a red jacket in a shaded forest or a person waving from a distance, that can be easily missed by pilots and spotters. Put simply, Eagle Eyes acts as a smart digital co-pilot to help first responders scan vast amounts of aerial data.

The platform also connects the drone to CalTopo, the operational mapping tool used by most American SAR teams. This enables the drone pilot to coordinate more closely with the rest of the team. The search manager can assign areas directly to the pilot, and the pilot can relay clues and tracks, communicating findings and where they have searched, so that this information can be used in the next iteration of search planning.

Because the technology can run onsite, even in remote areas with no cell signal, which is vital in Colorado's vast mountains, rescue crews can quickly understand the situation and make decisions that could save lives. This project is part of Colorado's larger effort to protect its wild lands and people and a commitment to responsible, ethical use of AI. By taking this step, Colorado is helping set a new example for how technology can empower first responders and bring agencies together when it matters most.



IDEA

Each year, Colorado's parks, forests and waterways attract millions of visitors, a number that continues to climb as more people venture into the backcountry. But getting to remote locations for views and world-class game comes with risk. For even the most seasoned explorers, navigating extreme weather or wild terrain requires specialized gear, expertise and sometimes luck. For everything from an ankle sprain to an avalanche, the emergency call goes to local SAR teams. As the demand for outdoor recreation increases, so does the strain on these primarily volunteer-led services.

SAR teams in Colorado are under the authority of their county sheriffs and handle approximately 2,400 missions per year, with call volume spiking from May through October. Colorado Parks and Wildlife's (CPW) emergency management unit serves a supporting role to those teams when requested. While many states are integrating small, portable drones into their SAR arsenal, the CPW's emergency management unit is embedding AI into its aerial capabilities. Suggested by Douglas County Search and Rescue, the Eagle Eyes Search platform was implemented by CPW in January 2026 due to its low cost and potential lifesaving capabilities. Adopting AI allowed teams to solve three challenges:

- Needle in a haystack crisis: In high-stakes situations, human eyesight can't always spot a lost hiker or injured hunter in a scree field. Eagle Eyes computer vision assistance acts as a "digital force multiplier," quickly detecting movement or anomalies (such as a bright orange hunter vest in the woods) in near-real time. This gives rescuers a fighting chance when going against the clock to save a life.
- Force multiplier: This technology enhances a SAR unmanned aircraft system (UAS) pilot's ability to cover more terrain with greater confidence that a missing person is or is not present. This allows sometimes very scarce SAR resources to be used more efficiently.
- Multi-mission use: The same computer vision platform that can find a person in the snow can now be applied to wildlife population surveys (herd counting) by detecting the animals' movement. This can facilitate more accurate biological monitoring while significantly reducing the cost and safety risks associated with manned flights.

When teams are deployed to find people facing life-threatening situations, time is the only commodity that cannot be recovered. Using Eagle Eyes equips SAR with:

- Operational efficiency: Systematic search coordination reduces coverage gaps and helps operators notice details that can be missed on small drone controller screens. Training exercises demonstrate that operators using Eagle Eyes find search objects more effectively than by eye alone. In actual deployments, the system has surfaced subjects in minutes, even after manual review of the same footage failed.
- Safety: Reducing the "time to find" keeps volunteer rescue teams out of hazardous terrain for shorter durations. These portable drones act as "scouts," entering high-risk areas—like active avalanche paths or unstable scree—where sending a human searcher would be too dangerous.
- Strategy: The SAR UAS pilot uses AI to help teams cover more ground without losing effectiveness. Eagle Eyes also provides systematic coverage documentation, giving teams confidence that areas have been thoroughly searched before redeploying resources to new locations.

This solution addresses a problem universal to every state with vast public lands. Integrating AI-supported drones into public safety is a repeatable model for wildfire detection, stranded motorist recovery and large-scale disaster response.

IMPLEMENTATION

Eagle Eyes is designed for field operations. Instead of relying on a cloud connection like most systems, the platform processes HD video locally at the mission site. This is critical in Colorado’s remote areas where there is no internet access.

The system replaces and augments the drone’s native controller software interface and is intuitive and simple to use. A pilot already qualified to operate a UAS will find the interface immediately familiar and will be able to use it on a mission with about ten minutes of training. Even if that pilot has little to no SAR experience, Eagle Eyes can help them contribute to mission goals. By using AI as a filter rather than a decision-maker, users maintain a human-in-the-loop architecture that respects seasoned rescuers' judgment while giving strong digital support.

Who was involved?

- **CPW Emergency Management Unit:** Brent Lounsbury, CPW's statewide emergency management coordinator, serves as a liaison between CPW's state resources and local needs and is CPW's agency representative to the State Emergency Operations Center. He is an FAA Part 107-certified small UAS pilot and works to better support SAR teams as part of his duties.
- **Colorado Governor's Office of Information Technology:** Provided the solution engineering and an AI risk assessment process to ensure compliance with the Statewide Responsible GenAI Policy and managed the CJIS-compliant security environment.

IMPACT

AI-assisted search has an impact that goes well beyond local trails. This technology helps locate people or important items during major disasters declared by the governor. While most missions happen in Colorado, CPW can send resources anywhere in the country through the Emergency Management Assistance Compact (EMAC).

EMAC allows states to share resources during disasters declared by a state's governor, such as hurricanes, floods, tornadoes and earthquakes. Thanks to this agreement, CPW can use Eagle Eyes anywhere in the United States to help communities when they need it most.

In the end, technology is only as useful as the people who use it. AI-assisted drones offer a new perspective from above, but the person on the trail remains the most important part of the mission. This approach helps Colorado lead in both conservation and community strength. Even as technology improves, the best search-and-rescue tool will always be a person on the ground, not just a drone in the sky.