

Oregonian Drones: A brief overview of the current state of unmanned aerial vehicles

BY STEPHEN BURTT AND RIC STEPHENS

They are in the news almost daily. Drones. Unmanned Aerial Vehicles. UAVs. The media is fascinated by the implications of flying robots for everything from delivering pizzas to spying on neighbors. If we can move past the sensationalism of this new technology, the professional applications are much more immediate and—in some cases—critical.

Urban Planning

One of the most valuable aspects of drones is the ability to see areas from unique and inaccessible perspectives. Site analysis from a low-altitude, oblique perspective can show land use relationships unavailable from the ground or satellite imagery. In addition, videography adds the elements of time and motion to depict flows and patterns not visible from static orthographic imagery. Perhaps even more importantly, UAV videography can engage the public in ways that traditional media cannot. Most recently, Aerial Technology International provided aerial photography and videography for the Willamette Falls Legacy Project. The imagery showed the relationships between the various structures and waterfalls with aerial perspectives that were more comprehensive and encompassing than possible at ground level. To see samples of these views, visit the Willamette Falls Legacy Project website at <http://www.rediscoverthefalls.com/photo-of-the-day-2/>.

Agriculture

A key feature of drones is the ability to mount a variety of sensing equipment such as infrared



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Unmanned aerial system (hexcopter) with high-resolution camera.

which shows the vitality of agriculture. “In farming, the potential uses of drones include flying over nurseries to do inventory and identifying areas of plant damage, disease or irrigation problems.” (AP, 2014) The impacts of watering, subsurface flows, pesticide coverage and many other measures can be made with drone sensing equipment. The savings and productivity for farmers will be in the thousands and tens of thousands of dollars annually. Local experts also see opportunities for inventories and other applications for vineyards. For more information on this subject, visit <http://www.foxnews.com/us/2013/11/29/drones-could-be-game-changer->

in-oregon-wine-country-official-says/ . Currently, Oregon State University is exploring the applications of drone monitoring for farmland. For more information on this program, visit <http://www.opb.org/news/article/drones-to-check-out-acres-of-potatoes/> .

Forestry

The same drone technology that monitors agricultural lands could be adopted to detect forestry stresses such as insect infestation and drought. This is especially critical as these are linked to forest fire and timber production. An advantage of drones of traditional aerial imagery, is the ability to fly within the forest or at extremely low levels to also monitor understory growth.

Emergency Services

For disaster response and assessment, drones will become invaluable in allowing first responders to evaluate disaster sites without being directly endangered. Search and rescue can be more quickly conducted even at night with infrared cameras. Delivery of critical medicines and instruments to isolated locations is also possible. Drones can assist in coordinating immediate emergency response and ongoing disaster recovery. In September, the Tualatin Valley Fire and Rescue Department training facility will be used for a large-scale disaster simulation for Community Emergency Response Teams. Drones will be included in this simulation to examine their potential. [For more information about this emergency exercise, contact the authors]

International Applications

Australia is conducting tests to deliver books via drones. The United Arab Emirates will be using

drones to conduct government business in remote areas. Peru is using them to explore archeological sites. Germany is using drones to search for deer in farmland to protect them from heavy equipment. Numerous wildlife reserves in Africa are now using drones to prevent poaching. The list of creative uses grows daily.

Where are we today?

“Drones’ commercial use is still not legal [in the U.S.], and businesses have to apply for special time-consuming, expensive and uncertain permits that have barred most drone entrepreneurs.” (AP, 2014) The Federal Aviation Administration hopes to complete updated regulations next year that will allow for commercial use. Until then, drones have a variety of restrictions regarding flight locations and permitted altitudes. Hopefully, Oregon will be positioned to benefit from these new technologies, business opportunities and applications.

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Ric Stephens is the Managing Editor for the Oregon Planners' Journal and is using drones for aerial photography and videography for planning projects in Oregon, China, and the United Arab Emirates. Ric will be teaching University of Oregon “Green Cities” students UAV piloting and videography this summer.