

More Than “Just” Drones: Opportunities for Innovation and Businesses



Drones are becoming a mainstay in our society. We see them in tech and toy stores, catalogs of cool things, and have even noticed them in more print media, movies and commercials. Why the big deal about drones? What are they anyway?

First, the word “drone” is a common moniker that has gained widespread acceptance. In reality, the term “Unmanned Aircraft System,” or simply “UAS” is more precise. A UAS is more than the aircraft or rotary wing platform. It includes all the components that make the device work: the airframe, its mechanical components, the controller used by the pilot, the communication system that allows the airframe to be controlled by the pilot and so on. Every piece that makes the device “work” is part of the unmanned system. And it’s in all those “pieces” that companies can innovate and compete in this growing market.

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As evidenced in how often we’re seeing or hearing about them, the UAS market is exploding — and with that explosion are opportunities for innovation and new businesses. The FAA has registered more than 600,000 UAS in the past 18 months and expects 3.5 million registrations by the end of 2017. These will range

A drone operated by the Roswell Flight Test Crew carries a FLIR thermal imaging camera to assist first responders during a structural firefighting exercise, providing the incident commander with an aerial perspective on the scene.

from a simple, fist-sized rotary wing UAS, to a sophisticated commercial UAS designed with significant autonomy and capability to carry complex payloads. This opens opportunities in material technologies such as: composites for light weight and longer endurance; communication links capable of working in dense urban environments or at long ranges; sensors to perform data collection; green, reliable propulsion systems; engineering breakthroughs to fly safer and faster without colliding with fixed and movable objects; and software to manage flight profiles that ultimately become reliable enough for “Uber-like” air taxi passenger service. The dynamic evolution of these technologies will help fuel a broad spectrum of UAS missions ranging from cinematography and real estate imaging to precision agriculture, emergency response, food and medicine deliveries, resource management, industrial and infrastructure inspections, and much more.

The economics for UAS are compelling. In addition to cost savings over manned aircraft and risk avoidance for dangerous or difficult missions, the commercialization of UAS mandates training, education and service industries like insurers, law firms and data analytics companies to complement the system and component providers. Statistics reflect the UAS commercialization momentum. Venture capitalists invested nearly \$750M in the industry last year and that amount is accelerating. Just since August of 2016 when FAA rules were finally issued for UAS weighing less than 55 pounds at takeoff, over 45,000 UAS pilot (Remote Control Operator) Certificates for commercial operators have been issued. Market analysis indicates 90,000 UAS pilots will be required by 2020 to meet mission demands. Locally, the Association for Unmanned Vehicle Systems International (AUVSI) estimates that with the continued integration of UAS into the national airspace system, Washington has the potential to generate 10,000 jobs and over \$10B in revenue in the next decade, part of a predicted \$100B to \$125B global market.

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The AgBOT drone, developed by Aerial Technology International of Clackamas, OR, checks the health of a northwest vineyard using a multi-spectral sensor to perform a Normalized Difference Vegetative Index (NDVI) analysis.

An aerial photograph of a quadcopter drone flying over a vineyard. The drone is black with red and green accents and is positioned in the lower-left quadrant of the frame. The vineyard rows are visible as green lines against the brown soil, extending towards the top right. The text is overlaid on the right side of the image.

“The seeds of innovation are right here in Washington”

\$6 billion. As Hyperloop routes are constructed globally, over the next 20 years, a conservative estimate of \$180 billion will be spent on Hyperloop PODs.

Janicki Industries recognizes this unique generational opportunity and is partnering with Hyperloop One and Pacific Hyperloop to advance the PNW region competitively as the first region to connect via Hyperloop.

Closing the case for the economic gain, job creation and community benefits requires collaboration with all innovators in the aerospace sector. Pacific Hyperloop is engaged with interested parties to form a joint venture in accelerating regional Hyperloop implementation. The PNW region must secure the first-mover advantage to continue the global leadership as the net exporter of transportation technology. ▲

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Manufacturing Innovations

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It is an exciting time in the industry but also disruptive to skilled labor, supply chains, design and engineering groups, and procurement. Our educational institutions need to be at the forefront of producing the technical talent for the new manufacturing environment, leading the research projects that will produce the knowledge base for future manufacturing innovation and certification, and retraining those individuals who will be displaced. ▲

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Why Washington? Sure, there is plenty of competition from outside the US, especially from Chinese companies, one of whom, DJI, has a 70 percent market share in the “prosumer” UAS market space where commercial operators use a consumer UAS in their business. Additionally, “custom drone” designs or major parts thereof, can be rapidly produced with 3D printers and piece parts are readily available from global and US sources, often leading companies to assemble or manufacture UAS components in house.

However, the sheer growth of this market merits the attention of Washington companies manufacturing everything from connectors to composites, contracting imaging services, autonomous software, sensors, avionics, payloads, launch and recovery hardware and that meet the all-important data analysis and management needs the industry generates.

To no one’s surprise, Boeing subsidiary, Insitu, is focusing more on commercial UAS market opportunities. Amazon’s well known UAS delivery efforts and Microsoft’s own work and investments in airspace software activities reflect great interest in the UAS realm as well. And there are a whole host of smaller, innovative companies that conceive, develop, test, manufacture or otherwise provide products and services for the UAS market today. Concurrently, our major universities, community colleges and even K-12 schools are engaged in UAS or robotics education efforts, including those for the ground and maritime environments.

As Russell Wilson of the Seattle Seahawks would say, “Why not us?” The seeds of innovation are right here in Washington, in our companies, clusters, trade associations and our educational institutions. Now is the time to take advantage of those seeds to help the state become a preeminent leader in the UAS segment of the aerospace industry. ▲