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Updated: 9:02 p.m. Monday, Nov. 30, 2015 | Posted: 12:28 p.m. Monday, Nov. 30, 2015

## UW drone scientists say Amazon Prime Air could help them innovate

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By Alison Grande and KIRO 7 STAFF

**SEATTLE** — Amazon's Prime Air commercial revealing the company's drone design was encouraging for scientists at the University of Washington who study and create drone technology.

KIRO 7 visited the Autonomous Flight Systems Laboratory at UW, where researchers had seen Amazon's commercial.

They were interested in the design of the drone. In the commercial, the drone delivered a box of shoes.

UW Professor Emeritus Juris Vagners, of UW Aeronautics & Astronautics, said the hybrid design of the drone helps with speed. "The configuration they've come up with is really quite unique," said Vagners. To help with speed, Vagners noted the location of a prop in the back. "Their solution is to put the prop, which is in the tail configuration, to give them good forward capabilities and to get range capabilities." After lifting vertically, the drone moves forward more like a fixed-wing plane. He also said one of the biggest advances in drone technology came with the development of the lithium cellphone battery, both light and powerful.

Vagners was a part of the team that flew the first unmanned drone, The Airsonde, across the North Atlantic in 1998. The journey took 26 hours.

UW research scientist Chris Lum runs the Autonomous Flight Systems Lab at UW. "I was actually pretty impressed with what they're doing here and I'm pretty glad it is becoming more mainstream," said Lum. He thinks Amazon Prime Air would be viable now.

"Technologically I think it is feasible and could happen now," said Lum. He added that the only hurdle is the Federal Aviation Administration. The FAA is still working on the regulations. The decisions the FAA makes about the Amazon drone program could relate to what researchers are able to do at UW. Right now, students are not able to innovate and then go test their theories right away. They often have to leave the country to fly their drones. They have done a lot of work in Australia.

The FAA would not comment Monday about the Amazon Prime Air technology and where it stands in the regulation process. The FAA did make it clear the commercial was not shot in the United States. Amazon has done some research just across the Washington border in British Columbia.

UW scientists are currently working on transponders for drones. Lum thinks it is possible all drones will be required to have transponder technology.

"Where is this unmanned system in relationship to all other traffic in the area? That's a pretty critical piece of technology I think that this type of Amazon Prime system might need, so you have situational awareness of where is everyone else in my air space," he explained.

Lum said when Amazon Prime Air is available he'll pay for it, just to see it in action, landing at his home.

"If anyone else besides Amazon was doing this, I would think it was a little kooky. But if there's someone that's going to make this work, I think it is going to be a company like Amazon."

KIRO 7 News is working on commonly asked questions found on social media concerning Seattle airspace and the future of delivery nationwide.

### How will it work?

According to the website's FAQ, Amazon Prime Air is a future service that will deliver packages up to five pounds in 30 minutes or less using small drones. Flying under 400 feet and weighing less than 55 pounds, Prime Air vehicles will take advantage of sophisticated "sense and avoid" technology, as well as a high degree of automation, to safely operate beyond the line of sight to distances of 10 miles or more.

"One day, seeing Prime Air vehicles will be as normal as seeing mail trucks on the road," Amazon wrote.

#### How will Amazon ensure safety?

Amazon says it will not launch Prime Air until they are able to demonstrate safe operations.

"Safety is our top priority. Our vehicles will be built with multiple redundancies, as well as sophisticated 'sense and avoid' technology."

#### How will Amazon integrate Prime Air vehicles into the airspace?

Amazon believes the airspace is safest when small drones are separated from most manned aircraft traffic, and where airspace access is determined by capabilities.

To learn more, view Amazon's airspace proposals [here](#) and [here](#).

#### How long has Amazon been planning this?

Amazon first revealed its plans for drone delivery back in 2013.



#### What has the FAA said?

The Federal Aviation Administration currently bans commercial drone flights, except for a few dozen companies that have been granted waivers. It has granted Amazon approval to fly drones for research.

Back in March, the FAA granted approval for Amazon to research the Prime Air service.

#### Where is Amazon building and testing?

Prime Air development centers are in the United States, the United Kingdom and Israel. The company is testing the vehicles in multiple international locations.

#### What does the mean for residents near the Washington state fulfillment centers?

There are three fulfillment centers in Washington: DuPont, Sumner, and Kent. KIRO 7's Alison Grande is talking to a drone expert and the FAA.

She'll be in Kent talking to residents who could see drones overhead when Prime Air is launched.

#### When can you choose Prime Air as a delivery option?

Amazon will deploy when and where we have the regulatory support needed to safely realize our vision.

"We're excited about this technology and one day using it to deliver packages to customers around the world in 30 minutes or less," Amazon wrote.

#### What will the Prime Air delivery vehicles look like?

Amazon is testing many different vehicle designs and delivery mechanisms to discover how best to deliver packages in a variety of environments.

"We have more than a dozen prototypes that we've developed in our research and development labs. The look and characteristics of the vehicles will evolve over time," Amazon wrote.

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8 Comment(s)

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- Posted by Digger21 at 1:19 p.m. Nov. 30, 2015
- [Report Abuse](#)

Will there be a Prime Fart too?



- Posted by StainedDress at 1:42 p.m. Nov. 30, 2015
- [Report Abuse](#)

Cough Cough gag gag...One thing to note.

These stupid lazy means to dump junk from the sky are dangerous and trespass into the air space of private properties.

If they cross a home owners air space, they have every right to seize whatever assets they are carrying and to take ownership of these stupid RC planes.

Don't forget that these RC drones can damage your property, injure those on your property.  
Just wait until a child is murdered by one of these 55 lb crafts or its cargo crushes a child.

Then it won't be so.....K....E....W.....L..... anymore!



- Posted by awram at 3:01 p.m. Nov. 30, 2015
- Report Abuse

I like moving targets.



- Posted by cyberguy at 4:21 p.m. Nov. 30, 2015
- Report Abuse

Looking forward to it Amazon



- Posted by fremonster at 5:00 p.m. Nov. 30, 2015
- Report Abuse

@stainedDress did you even bother to read the article? They aren't going to use them until they are 100% certain they will be safe. Sense and avoid technology is being used quite regularly now. Honestly, I would trust the technology to not screw up more than I trust most Seattle drivers.

"Don't forget that these RC drones can damage your property, injure those on your property.

Just wait until a child is murdered by one of these 55 lb crafts or its cargo crushes a child."- It will not be carrying anything over 5 lbs, and again, sense and avoid. Pretty simple technology these days, actually.

"If they cross a home owners air space, they have every right to seize whatever assets they are carrying and to take ownership of these stupid RC planes" -Good luck catching one. Nothing but doom and gloom for you, eh?



- Posted by AnkleBiter at 5:12 p.m. Nov. 30, 2015
- Report Abuse

It'll be interesting to see if this gimmick is ever profitable.



- Posted by IRDL at 7:40 p.m. Nov. 30, 2015
- Report Abuse

So we've got one poster saying that drones can cause damage to property and may fall from the sky and crush a child and then there is another poster saying they like moving targets.

Sounds to me as though if one falls from the sky and crushes a child or damages someones property it will be because someone shot it down.



- Posted by StainedDress at 12:48 p.m. Dec. 1, 2015
- Report Abuse

Drones are falling from the sky and hurting people as just happened today.

[http://hosted.ap.org/dynamic/stories/U/US\\_ROAD\\_RACE\\_DRONE\\_CRASH?SITE=AP&SECTION=HOME&TEMPLATE=DEFAULT&CTIME=2015-12-01-12-33-49](http://hosted.ap.org/dynamic/stories/U/US_ROAD_RACE_DRONE_CRASH?SITE=AP&SECTION=HOME&TEMPLATE=DEFAULT&CTIME=2015-12-01-12-33-49)

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