

UAVs and Utility Arboriculture

ISA 2015 Orlando FL, USA August 11

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FULL PRESENTATION <https://prezi.com/grbaebtutuop/uavs-and-utility-arboriculture/>

Transcript of UAVs and Utility Arboriculture

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Current and Future Uses

Business Decisions

Unmanned Aerial Vehicles

The Future is Now:

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and Utility Arboriculture

Dan Staley &

Alex Bilous

Additionally

Very rapidly developing technology

FAA very near solidifying rules of conduct

Business models evolving

Agriculture monitoring and spraying

Infrastructure inspection and monitoring

Search and rescue

Fire monitoring

Wildlife monitoring

161.8 mph

260.4 kmh

Search and Rescue, Wildfire, Wildlife

ISA Annual International Conference and Trade Show

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Harris Aerial

Fixed Wing

RV Jet

Ideal for detailed inspections and surveying

stationary objects like pipelines, wind turbines, bridges, power lines and rail tracks.

Allow for full 3-axis maneuverability:

Precise control of horizontal and vertical

Ability to hover at specified altitude with GPS-assisted flight control modes

Shorter flight times

Needs for arborists at this conf include hyperspectral imagery (for NDVI), aerial mapping and inventory, thermal imagery, utility corridor mapping and monitoring, etc.

I think what this will do is change the way tree care companies do their business - using boom sprayers on 1-5 (or more) trees on a property. Also imagery such as thermal and hyperspectral (NDVI).

So what you are selling is safety, safety, safety with the spraying, and versatility and expanding markets with imagery. Urban utility corridor inspections for short distribution line runs. Also inspection for pests, defects, structural stability (industry jargon).

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What you need to start to make a decision: Four main points

UAV Basics and Capabilities

Current and Future Uses

Business Decisions

What are the capabilities of UAVs

What are they used for now

What might happen in the future

Machines vs a service provider

Fixed wing and rotor-wing

Fixed wingspan from ~2 to 8 feet

Rotor-wing ~3-8 arms with rotors

Fixed wing for long-duration, long-distance applications
Rotor-wing for short-duration, precision applications
Commercial aircraft much more complex than hobbyist aircraft

Fixed Wing

Long distance, high altitude
Wing design allows different capabilities
Wing size may require launcher

Rotor-Wing

Short distance, low altitude
~More rotors, greater lift and control
Used by industry and hobbyists, quality
less for hobbyists

Cameras and Technology

Very rapidly developing technology
FAA very near solidifying rules of
conduct - exceptions for agriculture
Business models evolving
Agriculture monitoring and spraying
Infrastructure inspection and monitoring
Search and rescue

Fire monitoring

Wildlife monitoring

Infrastructure

~215 mph

Fixed Wing Features

Autonomous flight

Rotor-Wing Features

Autonomous or guided flight

Visual spectrum

Video

Thermal

Infrared-near infrared

Multispectral

LIDAR

In Short...

ALEX: especially interested in your thoughts and input on the section in black puzzle piece (Business decisions). These are mostly utility arborists and likely not that technically savvy, so how do they decide on what is a good investment or do they go with a service provider? And what about the other arborists in the room, and do they buy an octocopter with

sprayer, multispectral camera, thermal for fire & Search and Rescue, etc.?

The application of agriculture aircraft to utility forestry and urban forestry will be opened up by us, in August. How do we do a good job?

Agriculture

Crop health

Visual inspection (weather)

Spray applications

Infrastructure