

Drones Overview: Pros (mostly) and Cons

10 AMAZING Future Drone Uses

<https://www.youtube.com/watch?v=JXAgmtQlCGs>

Flying Cameras

- **Videography**

movies / commercials / ...

YouTube

- **Architectural**

New construction

Realtors

- **Personal**

3D Robotics Solo: <https://3dr.com/solo-drone/>

Hover Camera: <https://www.youtube.com/watch?v=aOn-BG4hopQ>

Sprite: https://www.youtube.com/watch?v=_l6CQRHIGyg

Cargo Delivery: "The Last Mile"

- Amazon / DHL / etc.

- Airbus/LocalMotors - Airbus Cargo Drone Challenge

<https://cocreate.localmotors.com/localmotors/airbus-cargo-drone-challenge/entries/>

- Urgent Medical Delivery

Light-weight urgent stuff

Hospital-to-hospital, -to-patient, -to-remote village

2kg / 10km = \$0.25

Sport Drones

- **First Person View (FPV)**

FPV examples: <https://www.youtube.com/watch?v=EiKEFQ4iWn4> (-1:35)

Sponsored drone racing comes to ESPN in the fall

World Drone Prix in Dubai netted winner \$250k

Public Safety

- **First Responders**

Drone swarm autonomously flies to scene, builds scene map prior to rescue vehicles

What's best access for emergency vehicles at a crash site?

- **Search & Rescue**

10- to 100-1 “cost” efficiency over fixed-wing/copters

Sweeping an area during a search&rescue

Drone swarm maps interior of buildings, identifies risks and survivors

- **Situational Awareness**

Drones used to track flooding in recent Texas storms

Fire assessment (think Yarnell Fire)

Humanitarian / Disaster Relief; site mapping after 2015 Nepal earthquake

Medical aid station location

- **Ambulance Drone**

AED <https://www.youtube.com/watch?v=y-rEI4bezWc> (-1:30)

Automated lifeguard drone delivers lifesaver rings to water victims

Survey Drones

- **Precision agriculture, crop analysis**

Improve crop yield, reduce cost, feed the expanding population

Managed to the specific plant, not the whole field

How many apples are growing in the orchard?

Are there distressed (under-watered, diseased) plants? Fix those plants.

Fertilizer/pesticide application down to the inch

- **Surveying / GIS / 3D mapping / spacial analysis / metrics**

Construction assessment: Is building on-schedule?

Monitoring job sites; going where humans cannot

Inspecting structures: bridges, power lines, wind turbines

Area and volumetric analysis: How many cubic meters in that mine tailings pile?

SenseFly <https://www.youtube.com/watch?v=oZ3ZSnQM7v4> (0:45 - 2:21)

SiteScan - survey-03.png

- **e.g. roof mapping**

RoofSnap - roofing company, re-roofing estimates

Solar panels: available roof area, sun orientations

Swarms

Modeling the swarming behaviors in nature

Transforming a problem through large populations

Autonomous decision-making w/o a priori plans

- **Construction**

<https://www.youtube.com/watch?list=PLovyEo1Abq2nBsh9R-RekNtao3G-ptmCH&v=CCDIuZUfETc>

- **Surveying**

swarm flies the fields every morning, produces analysis results by noon

- **Public Safety**

fire scene assessment: monitoring fire line, back blazes

train derailments; where humans can't go