

Quadcopter

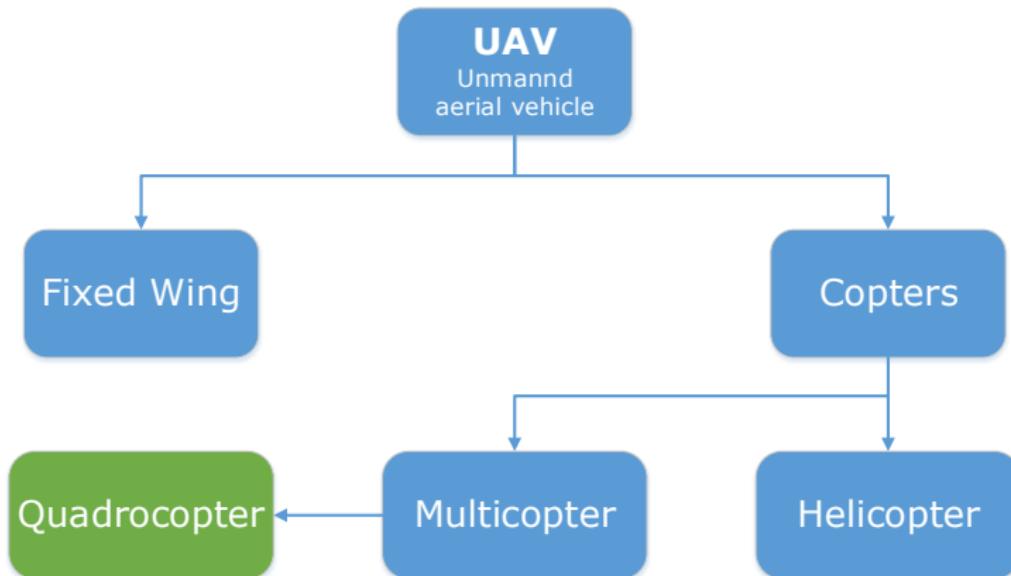
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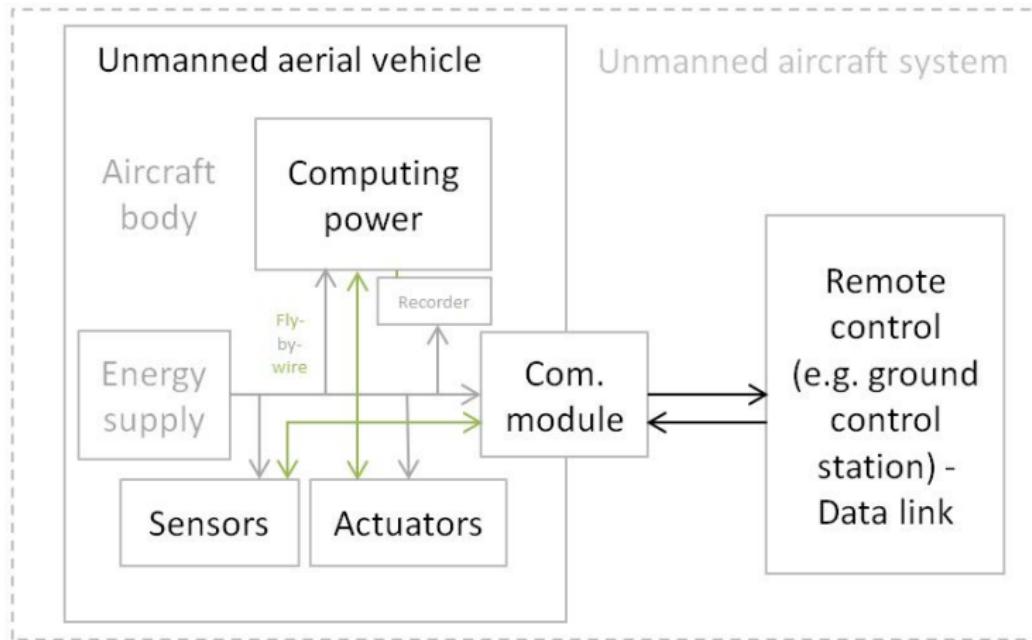
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Introduction



Physical structure



Components



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Compromise between:

- Flight time
- Agility
- Durability
- Control
- (Money)

Self build kit

- No special knowledge required
- Very sturdy
- A lot of auxiliary
- Payload
- Price-Performance ratio

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Payload

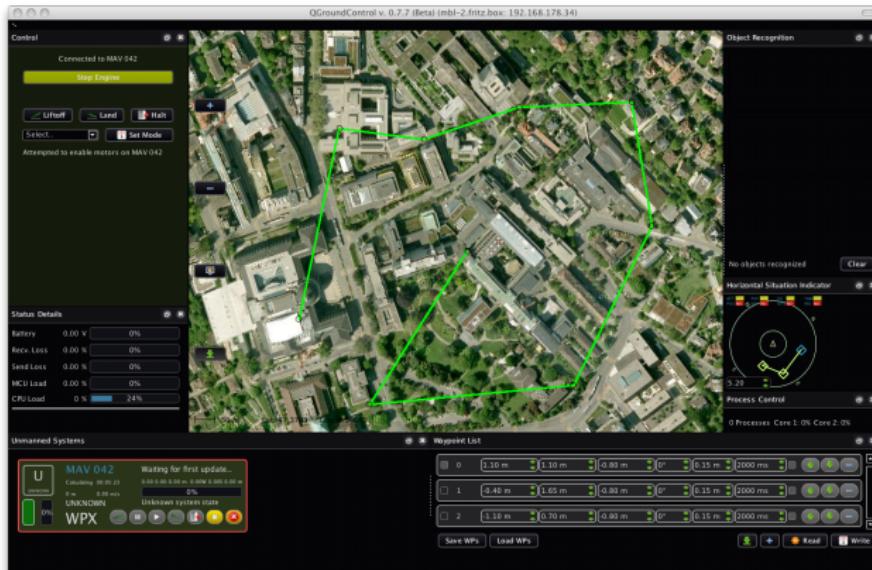


Controller, modes

- Stabilize
- Way-points
- Follow + obstacle avoidance
- Acrobat
- Manual
- 6 additional modes

Tools, way-point

Configure and calibration



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Gimbal



FPV - First Person View

- Camera attached to the drone
- Transmitter
- Receiver
- Black & white picture
- Noise

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Add picture from FPV

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Out of the box



Disturbance ,hazards

- Wind - Light weight
- Electronic Fields - 2.5 GHz band
- Water

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Disturbance



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Disturbance



Power supply

- Li-Po Battery: 14V, 5Ah → 0.055 kWh
- Flight time: 5min - 20min
- Charge time: about 2 hours
- Gasoline

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Power supply



Distance

- 1.2 miles normal
- 6.2 miles Yagi antenna

Law, Risk towards others

- Register devices
- Fish drones from sky

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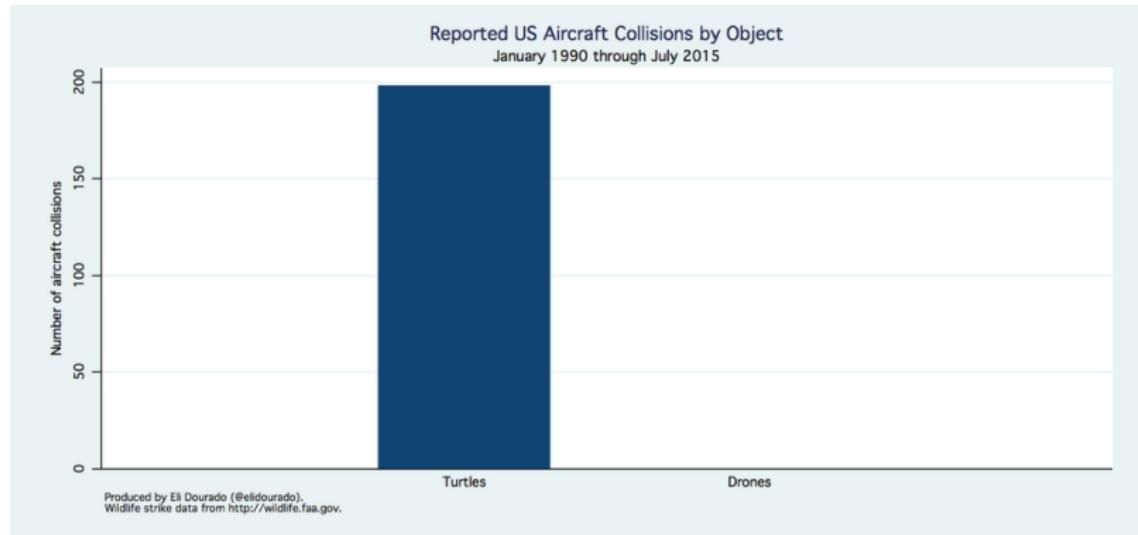
Law, Risk towards others



Law, Risk towards others



Law, Risk towards others



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Learning the basics

- Software
- Hardware
- Away from Flight Simulator -> Real flight behaviour

Learning the basics

- A lot of auxiliary
- Photography

Testing

- Cheap version of a quad
- Test new control software
- Allowed to crash

Education

- Software and Hardware is changeable, expandable
- A good mix of everything
- Mostly indoors

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Current time

- Easy to fly
- Cheap, without camera 60 CHF; with camera 150 CHF
- Problem with privacy
- Drones near the airport

Future

- Rescue Drones
- Package delivery (Amazon)

Sources

<https://www.bazl.admin.ch/bazl/de/home/gutzuwissen/drohnen-und-flugmodelle.html>

<http://store.dji.com/product/f450-naza-m-v2-landing-gear-h3-3d>

<http://www.bbc.com/news/technology-30932395>

<http://www.popsci.com/airplanes-hit-more-turtles-than-drones>