

# Electric towers inspection

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# Infrastructures Inspection with drones

## Today:

- Multirotor UAVs
- Equipped with a **GPS** for stabilization and navigation
- Payload for data acquisition:
  - Cameras (visible, infrared)
  - Lidars
  - ...



# Infrastructures inspection today

- Pros and cons of GPS:
  - + Signal easy to process
  - + Adapted to navigation (waypoint missions)
  - Loss of signal
  - Variable accuracy
  - Blind sensor: no perception of obstacles
- Inspection need: « Sense and Avoid »:
- State of the art on the topic:
  - Active research domain in Academia
  - And by some drones companies...
  - Strong research effort on Vision sensors. Exemple: EUROC (European Robotics Challenge)
  - Another (complementary) sensing modality : Laser sensors

# Inspection with lasers

- Pros of laser sensors:
  - Metric information (easy to process)
  - Accuracy
  - High frequency acquisition
  - Rapidly growing commercial offer



Laser altimeter  
(Lightware optoelectronics)



Planar scanner  
(Hokuyo)



3D Lidar  
(Velodyne)

# Inspection with lasers

- Application exemple: towers inspection
- Potential:
  - Accurate estimation of the drone's position w.r.t. tower
  - Allow for a preliminary 3D reconstruction of the tower
  - All computations can be processed on-board in real time

