I want to make a GPS mesh network that uses an individual transmitter, a drone that acts as a connection point and a ground station. The idea would be to have an emergency GPS transmitter that can be dropped off out where S&R think someone will find it and be able to send their location.

If the location for the transmitter is too far away or has too much interference with trees, boulder, etc., there will be a drone that is modified to be a connection point between where the command center is and the GPS transmitter.

The modified drone will have solar panels on it to help extend flight time. (The hope is to get sufficient solar power on the drone so that during daylight hours, there will be no battery usage, the battery will be charged, and will have sufficient power at sunset/night to be able to return safely back to base). The point of this is to ensure that the drone can fly around a designated point to ensure that both the transmitter and control station will be able to communicate.

3 separate devices:

Ground Station (hooked up to computer)

Drone mesh

GPS transmitter

BASE COMPONENTS

[Particle Argon](https://docs.particle.io/datasheets/wi-fi/argon-datasheet/) – base station and dashboard.

[Teensy 3.1](https://www.pjrc.com/teensy/teensy31.html) – Possibly needed for Drone and transmitting device.

[Xbee 900hp](https://www.mouser.com/datasheet/2/111/ds-xbee-900hp-digimesh-kit-1374862.pdf) – digiMesh. Should have sufficient range to transmit (need to look into getting better antenna mounts/antenna to extend range).

[Adafruit GPS](https://www.mouser.com/datasheet/2/737/adafruit_ultimate_gps-779243.pdf) – Needed for transmitting device.

[ZOHD Talon GT Rebel](https://www.zohd.net/zohd-talon-gt-rebel) – best I can do without waiting a year or paying double for a used flying wing. Would prefer something with more wing surface area. Also have to worry a bit about fuselage dimensions with prebuilt.

[Pixhawk The Orange Cube](https://ardupilot.org/copter/docs/common-thecubeorange-overview.html) – allows for planning missions, live time setting loiter mode position, real time telemetry updates.

Stage 1: Verify I can talk to all 3 xbee components, get them to connect to each other

Stage 2: Verify I can transmit anything amongst them, see if I can force a jump from device 1 to device to and have device 2 forward to device 3.

Stage 3: Add GPS data.

Stage 4: Test range.

Stage 5: Build case for transmitter, ground station, figure out drone wiring.

Stage 6: Get drone working.

Stage 7: Field test.

Stage 8: Forget to record videos for all stages, panic, make videos, make a video for capstone.

<https://github.com/BKLEIN6/Capstone.git>