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## GOAT - Good On All Terrain

Low-cost lightweight morphing exploration robot - land, sea, air

**Payload**

Electronics  
FPV Camera  
Scientific instruments  
Waterproof

**Wheels**

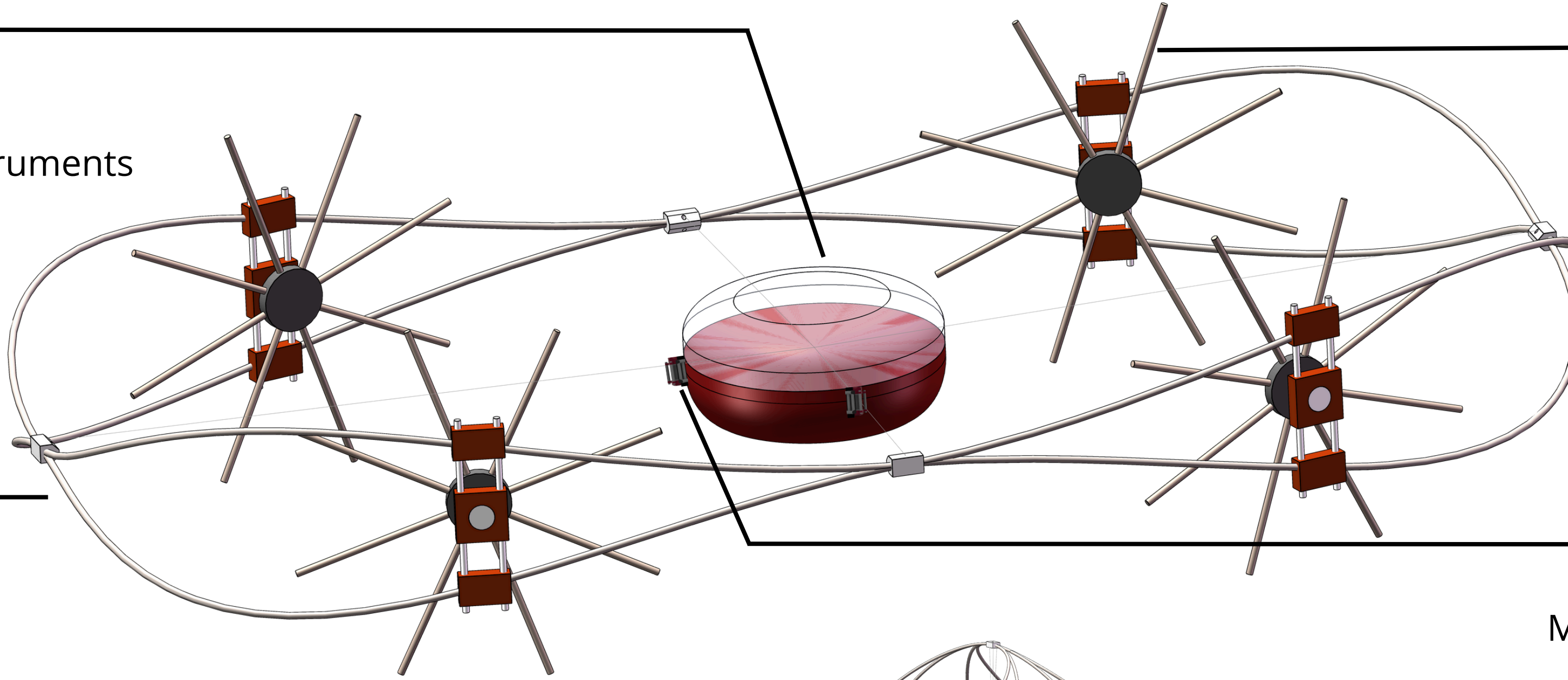
Rimless  
Fiberglass  
Independent  
Skid steer control

**Frame**

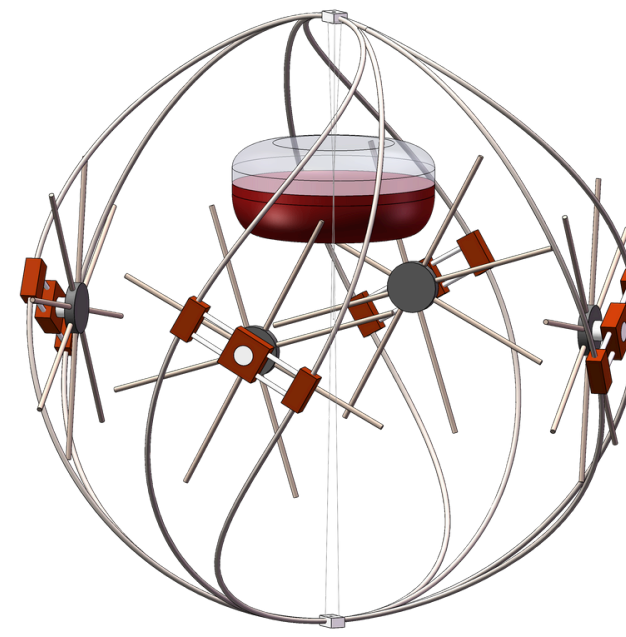
Compliant  
Fiberglass  
Lightweight  
Robust

**Winches**

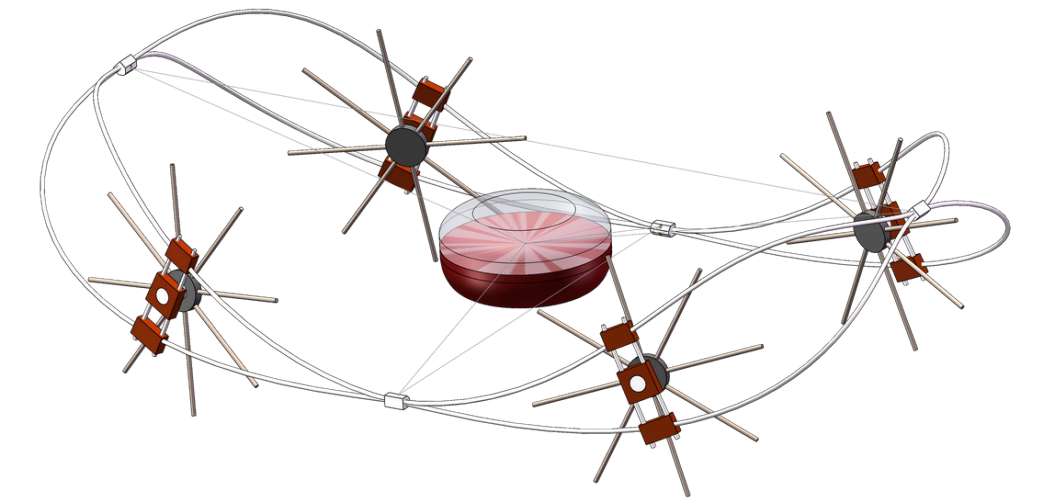
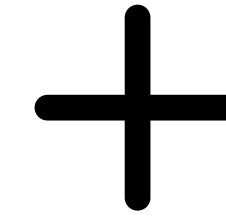
Additional DOF  
Morphing capabilities



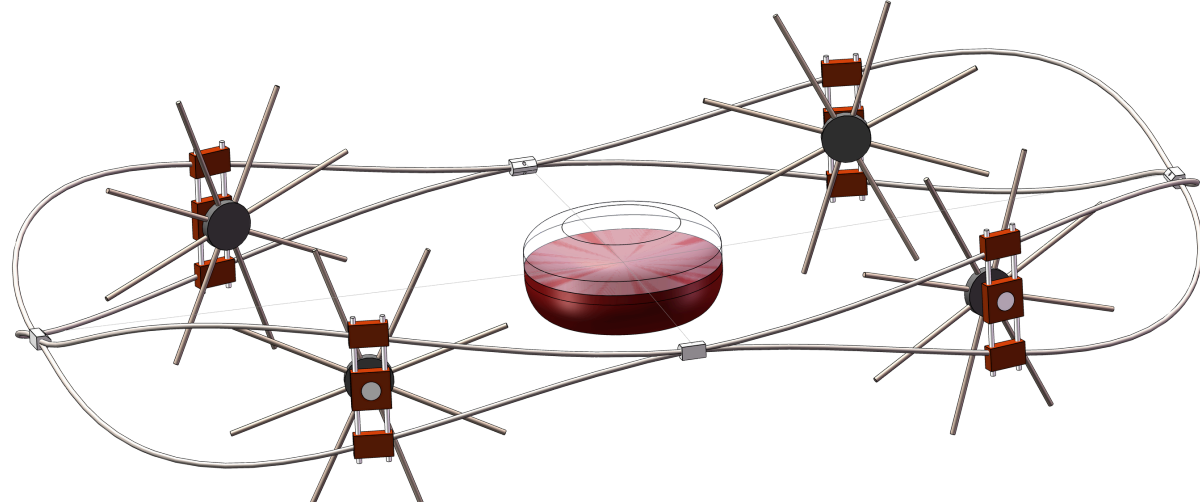
Morphing



Ball Configuration

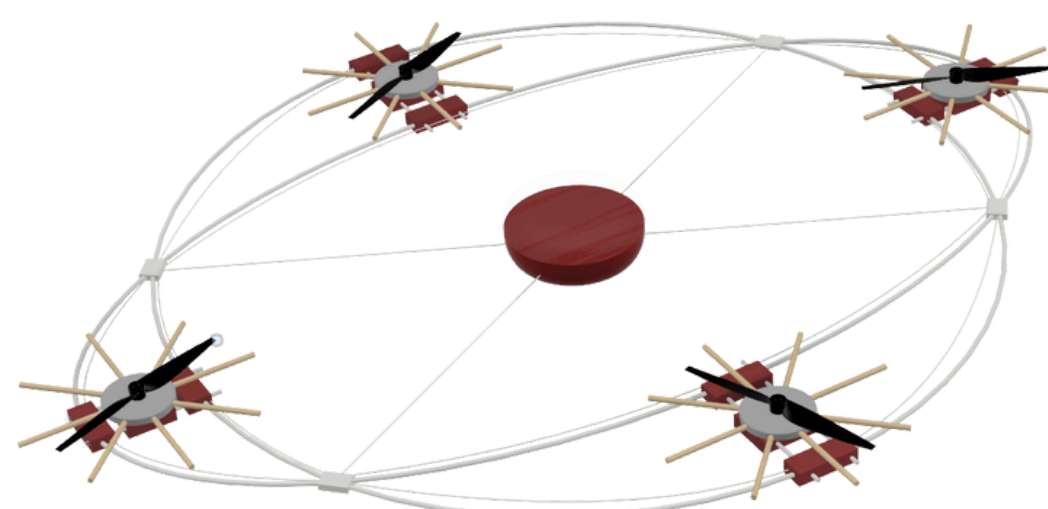


All Intermediate Configurations



Driving Configuration

Morphing



Flying Configuration

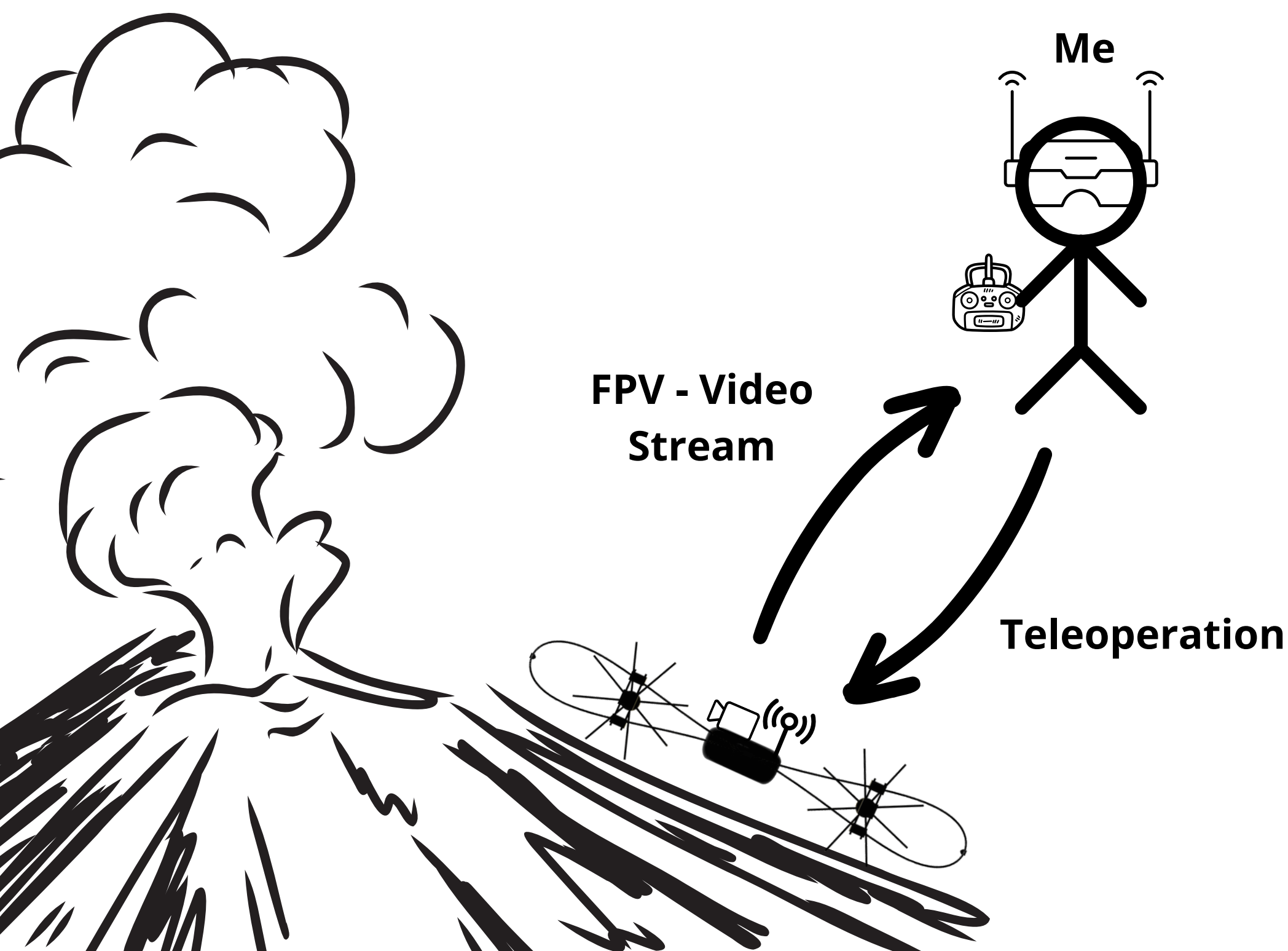
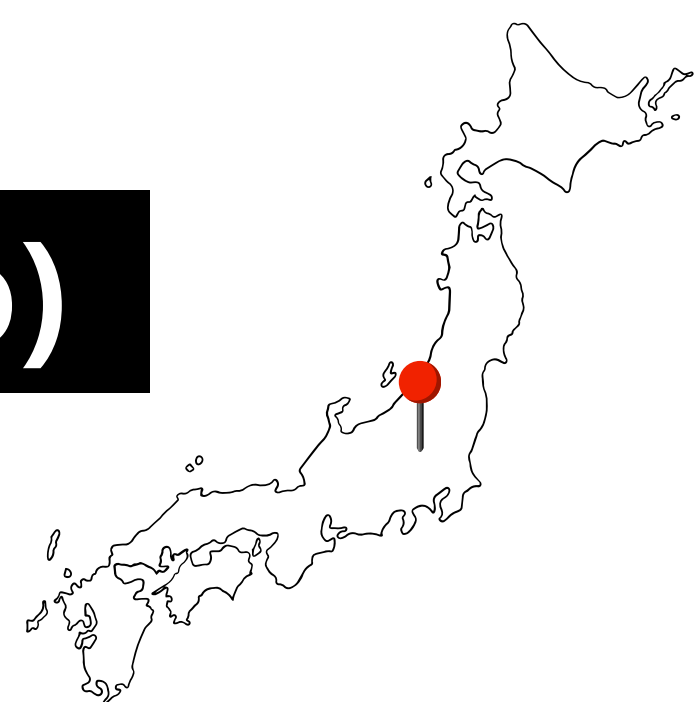
Morphing capabilities drastically increase recovery by changing the center of mass and bringing wheels back to the ground to regain traction

## Field Testing - Mt. Asama in Japan (EPFL x UTokyo)

**Situation:** Active volcano with ashes reaching Tokyo => Need for a "moving measuring station"

**Problem:** No entry zone of 4km

**Solution:** Drone deployment of GOAT and teleoperation



**Conventional robots**

Expensive, heavy, unflexible, hard to control



**Drones**

Expensive, bad autonomy, unuseful during storms, limited ground activities



**GOAT**

Low-cost, effective recovery due to morphing, high autonomy with solar panels, easy-to-use