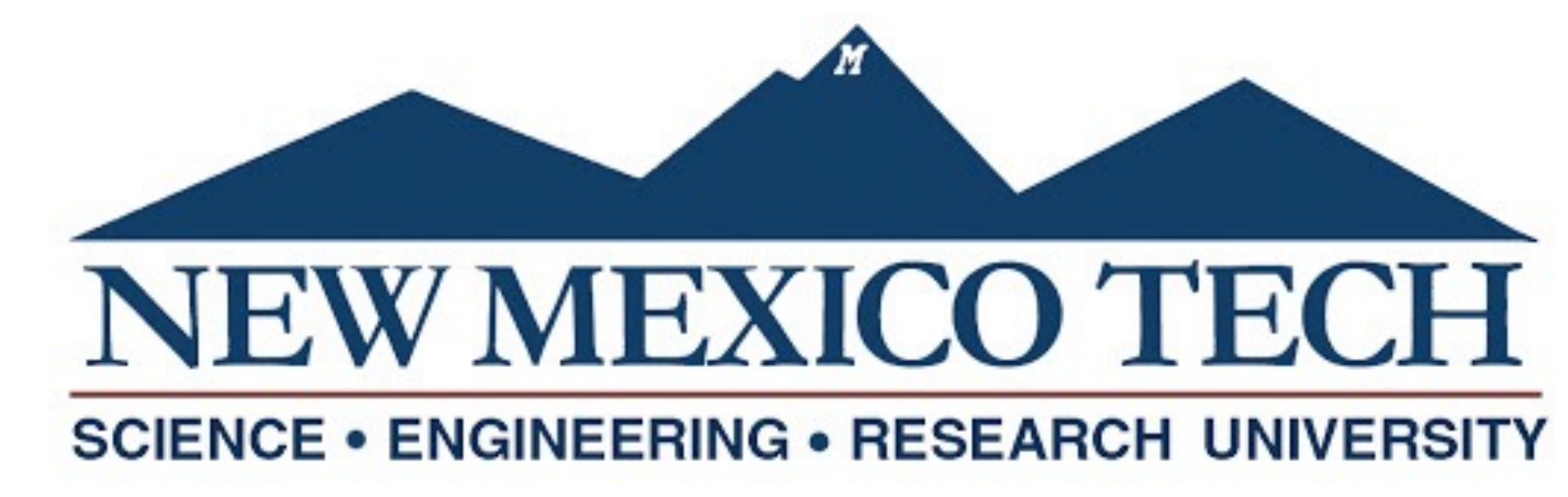


Sustainable Vertiports for Bringing Autonomous Drone Swarm Inspection to Oil and Gas Industry Community

Lead PI: Sihua Shao, Lead Institution: New Mexico Tech
Award Type: PG [2323050]



Project Challenge

Detect and quantify methane emissions from oil and gas industry

- Hard-to-reach orphaned wells
- Gas venting or flaring
- Fugitive emissions

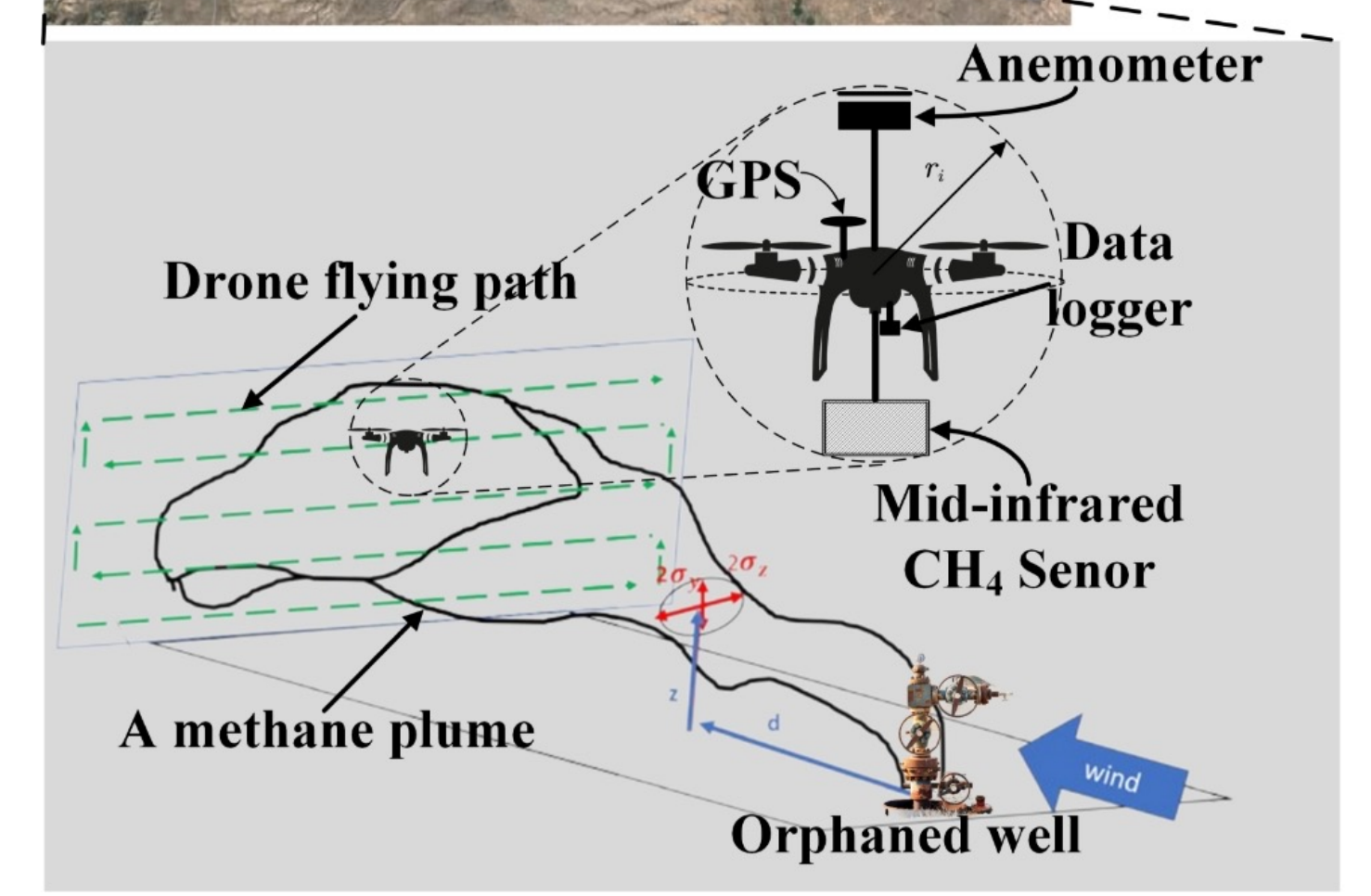
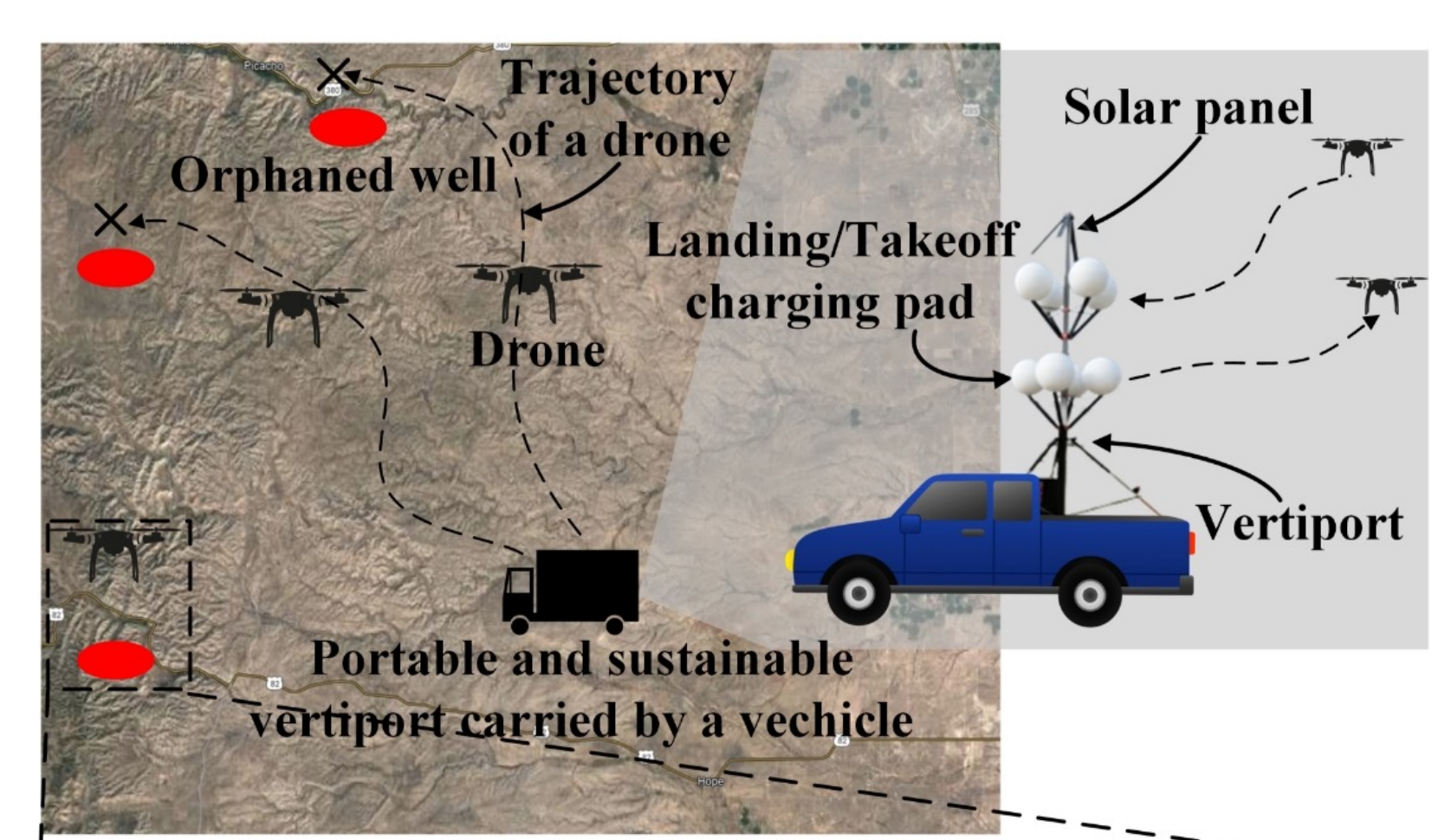


Intellectual Merit

Technical and social advancements:

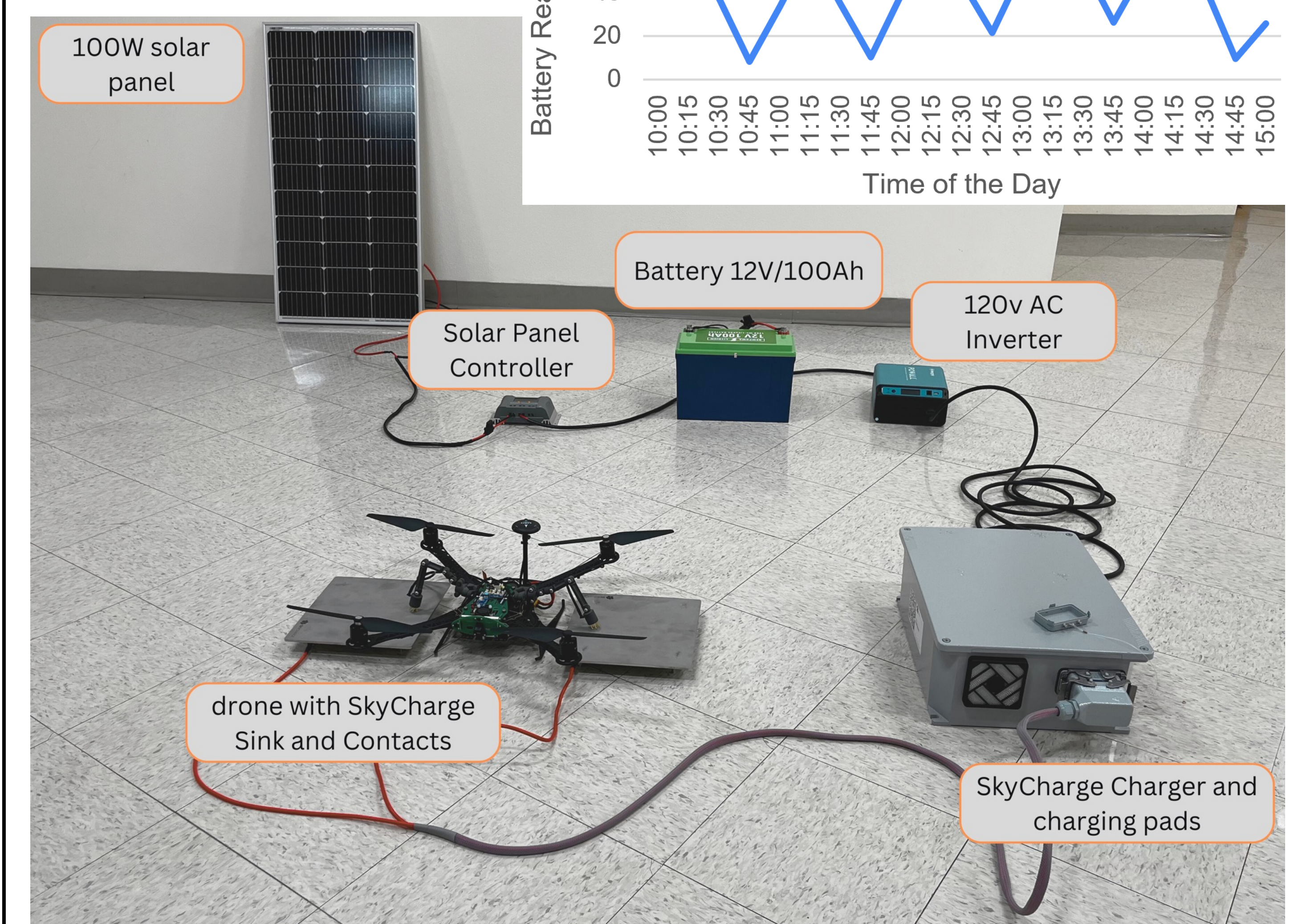
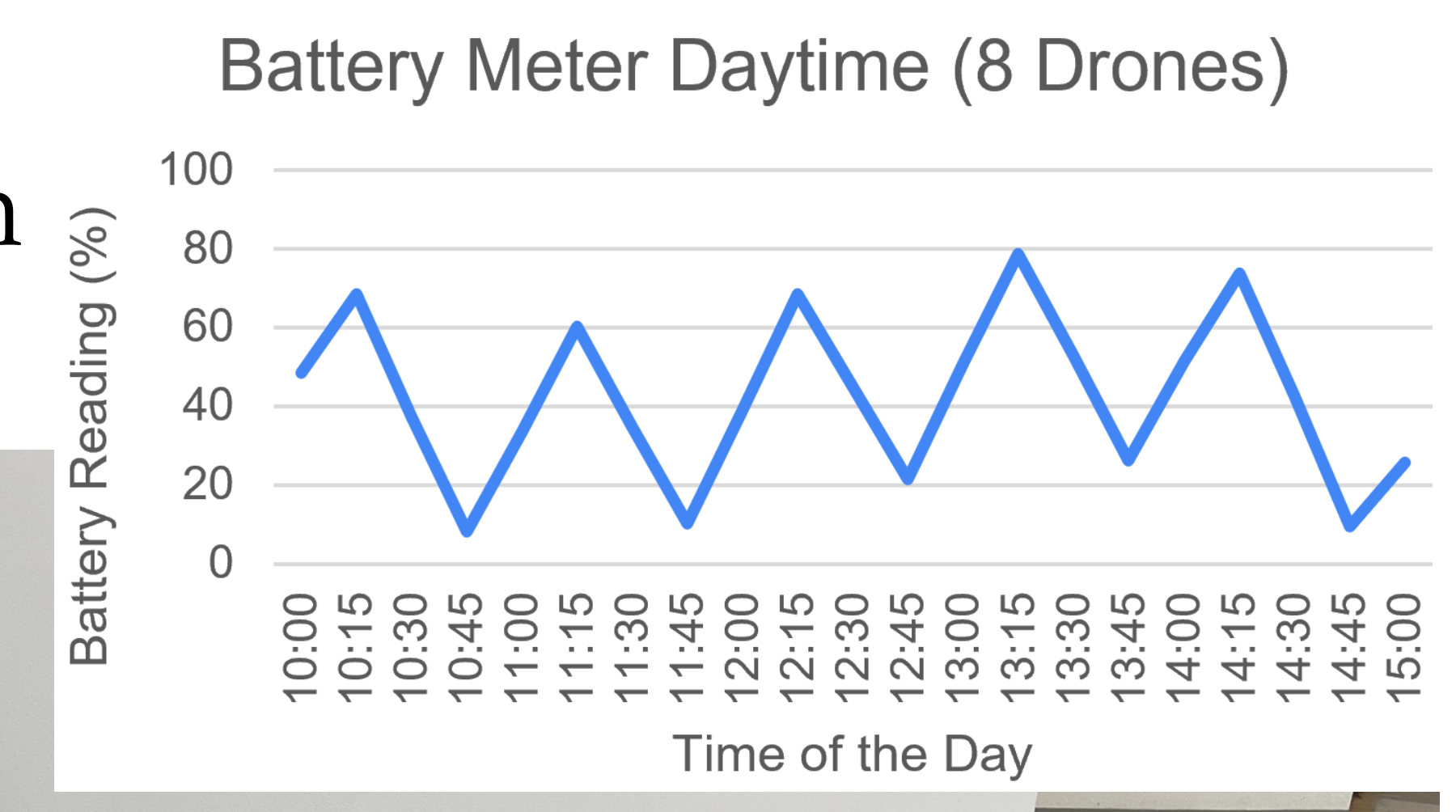
- Vertiport
- Landing
- Takeoff
- Detection
- Localization
- Quantification

- Regulator
- Operator

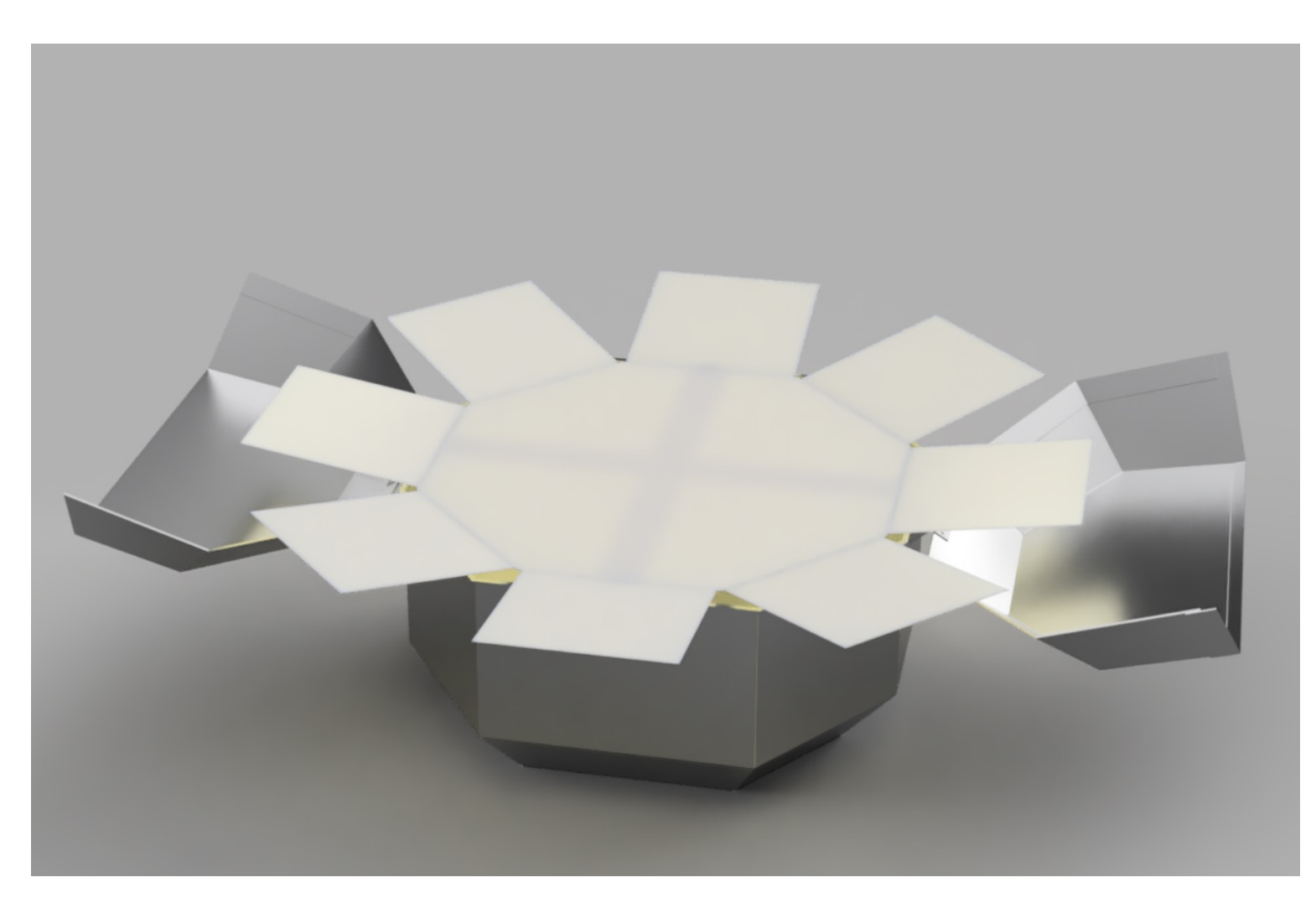
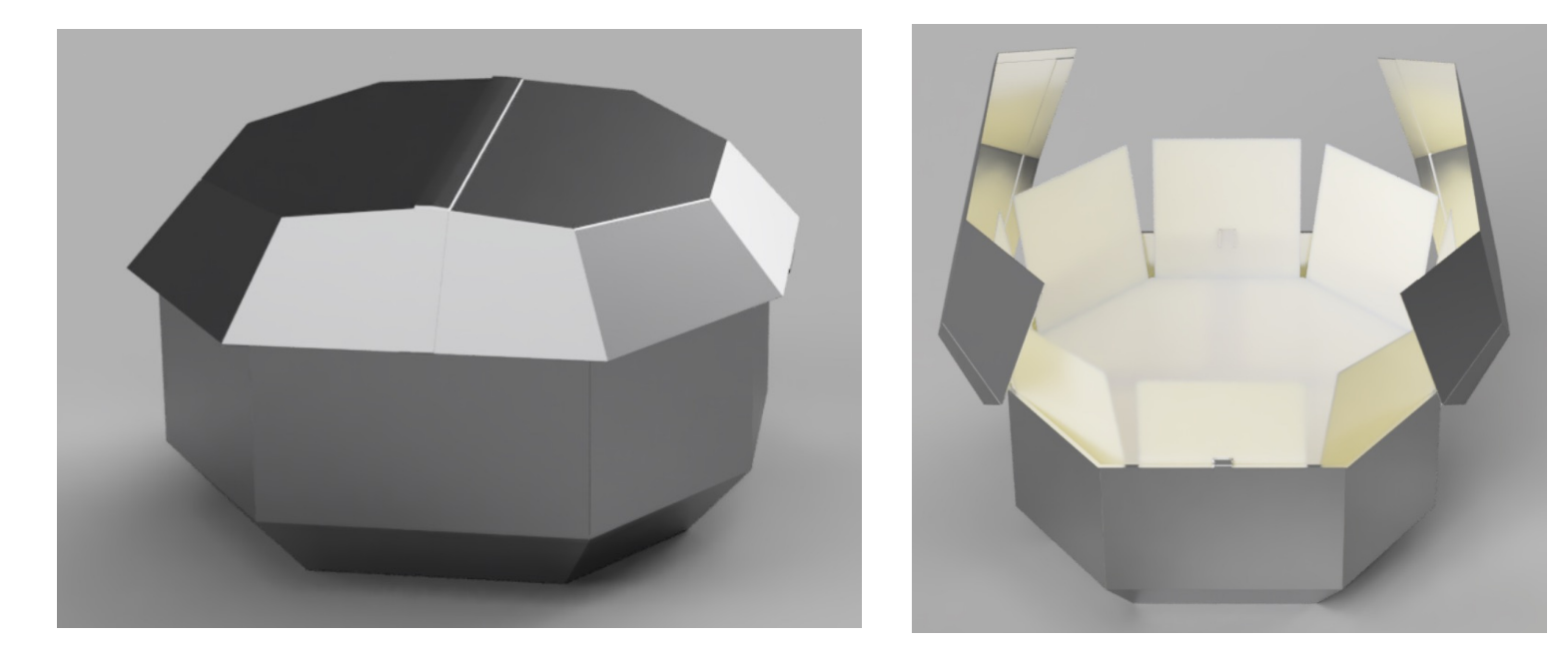
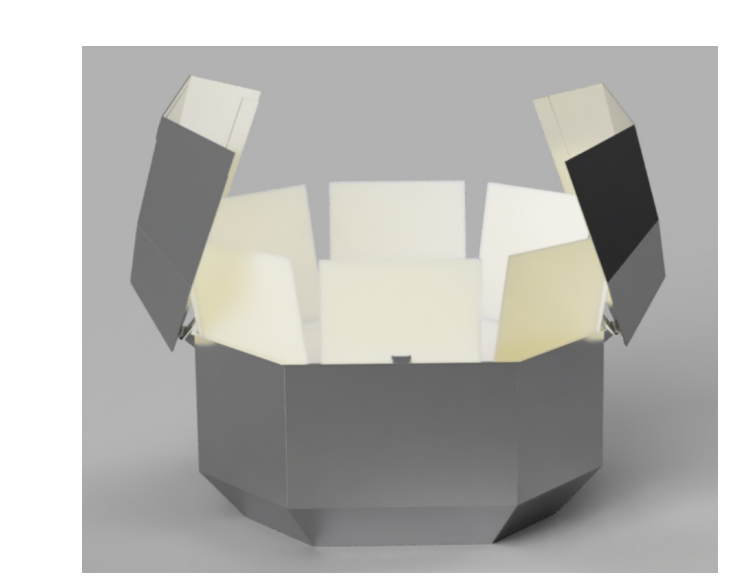


Major Outcomes/Progress

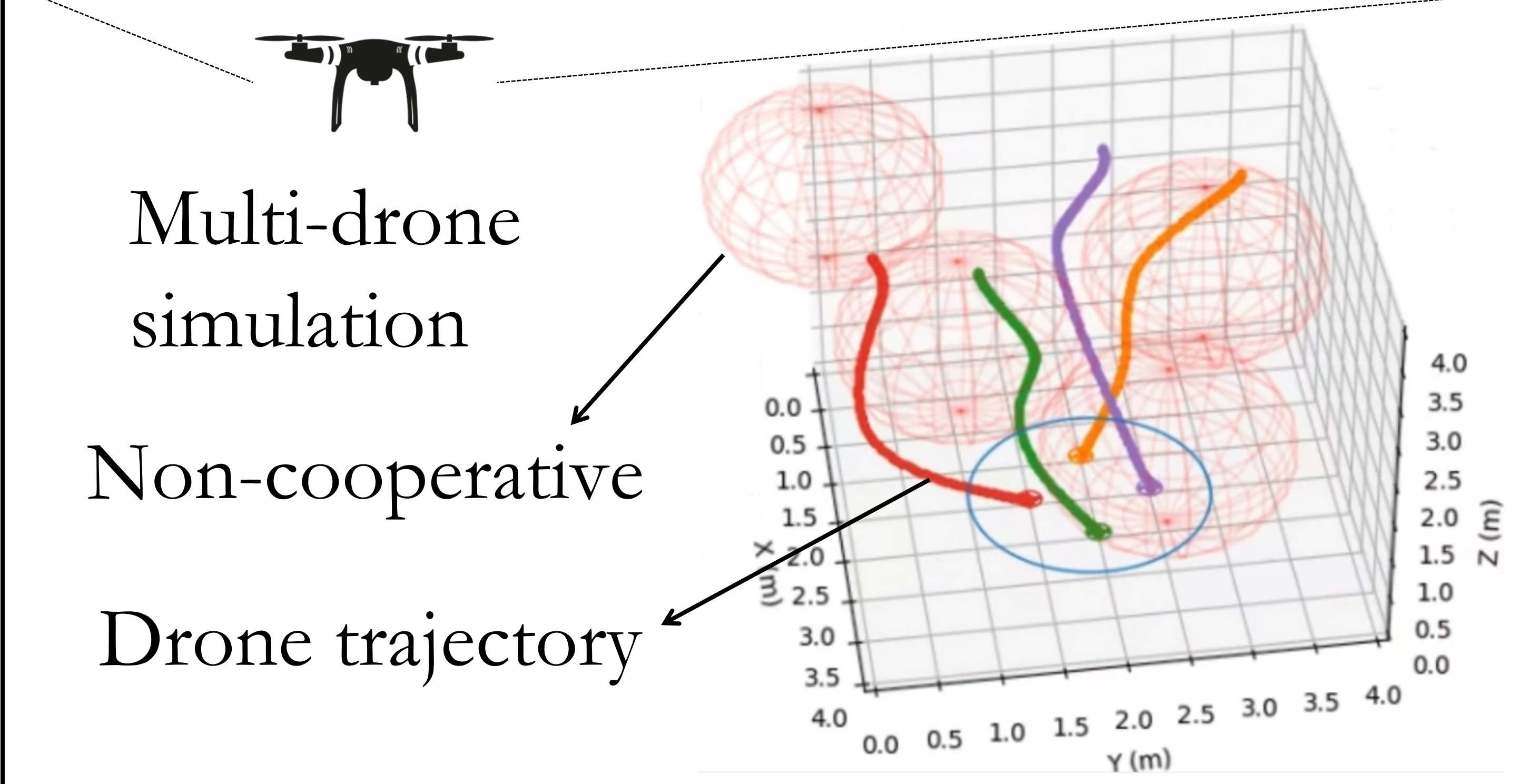
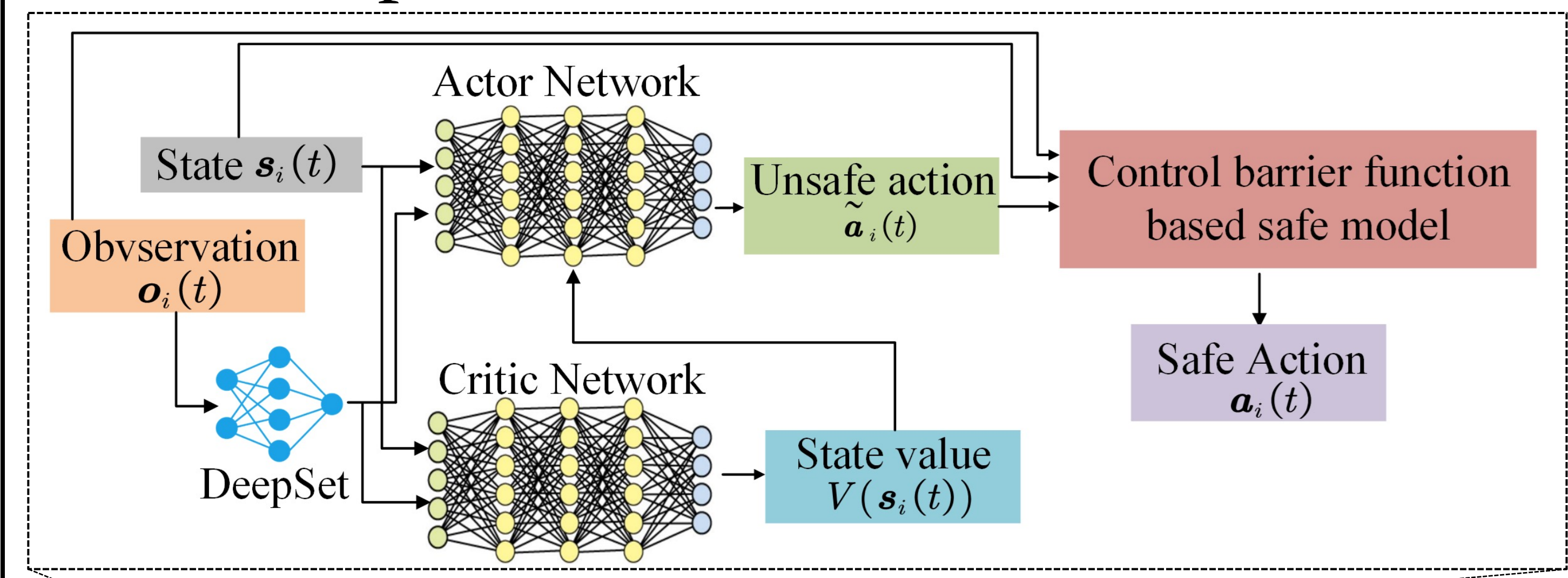
- Solar panels and LiPo battery
- Inverter
- Charge system
- Contact tiles



- Portable vertiport base
- Drone capsule
- Expandable landing platform



- Autonomous drone landing and takeoff at vertiport in harsh environment



Broader Impact

- Create methods for state agencies to prioritize the orphaned well plugging
- Provide tools for environmental protection agencies to regulate the methane emissions

Future Goals

- Vertiport assembly and testing
- Multi-drone landing/takeoff prototype
- Source determination algorithms
- Regulatory agencies survey