National Aeronautics and Space Administration

Modeling Mitigations and Hazards in UAS Emergency Response Operations

Terrance Fung
University of Michigan

Julianne Rodriguez
Florida International University

Elizabeth Rachwald
Carondelet High School

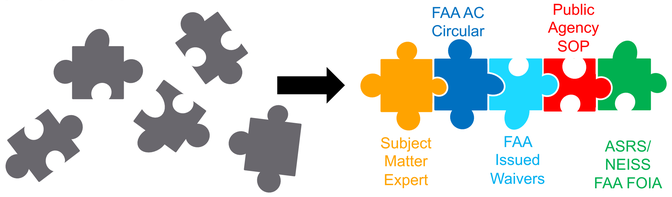
Carlos Paradis
KBR, Inc

Misty Davies
NASA Ames Research Center

Charles Werner
DRONERESPONDERS

Introduction

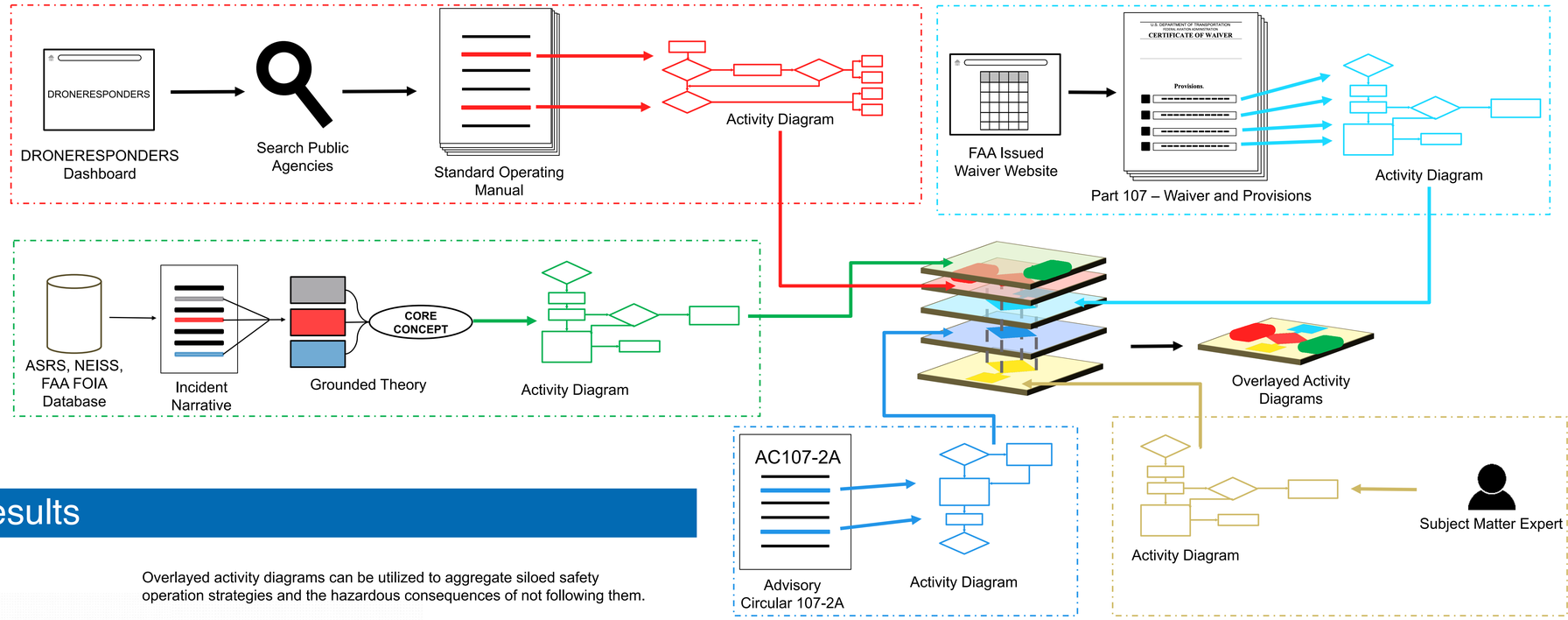
Purpose: To define UAS safety procedures from mitigation and hazards information silos



Related Work

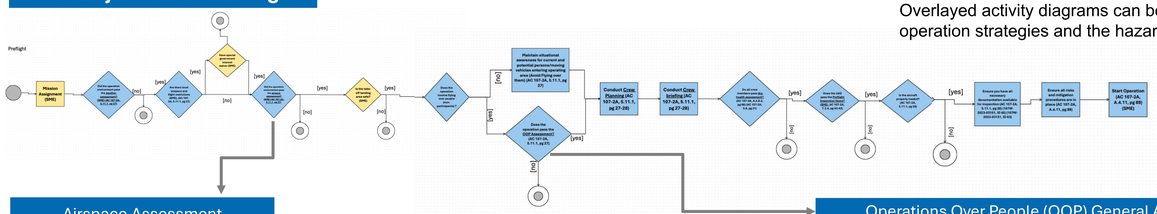
- E. Jordan, C. Paradis, M. Davies and C. Werner, "Textual and Network Analysis of Part 107 Waivers", in *2024 IEEE/AIAA 43th Digital Avionics Systems Conference (DASC)*.
- C. Paradis, S. Mbaye, M. Davies, C. Werner, "A Grounded Theory of UAS Reported Accidents", in *AIAA Aviation 2024 Forum*.
- S. Cigal, "Comparative Analysis of Small Unmanned Aircraft Systems Operations Manual", M.S. Thesis, Embry-Riddle Aeronautical University, 2019.
- H. Ray, Capt. R. Singer and N. Ahmed, "A Review of the Operational Use of UAS in Public Safety Emergency Incidents", *2022 International Conference on Unmanned Aircraft Systems ICUAS*.

Method



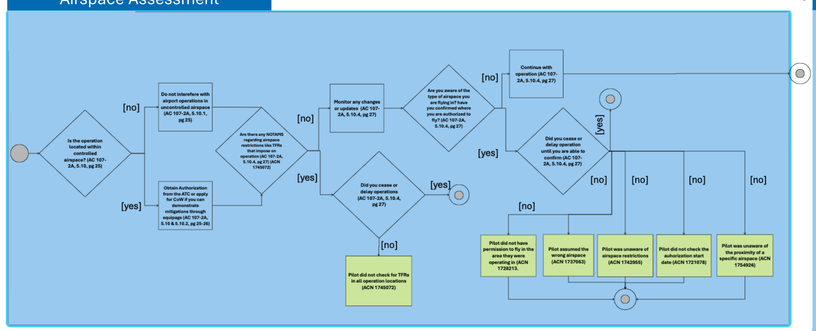
Results

Advisory Circular Pre-Flight

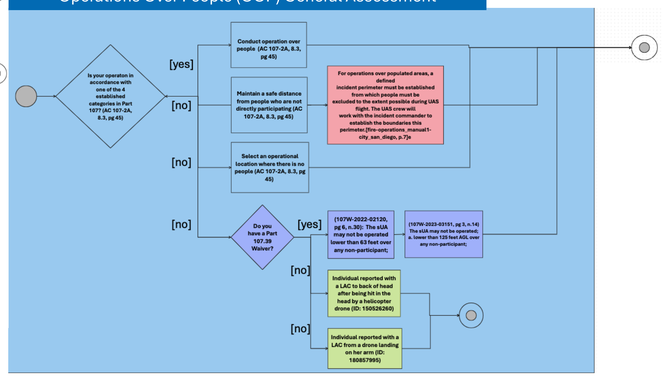


Overlayed activity diagrams can be utilized to aggregate siloed safety operation strategies and the hazardous consequences of not following them.

Airspace Assessment



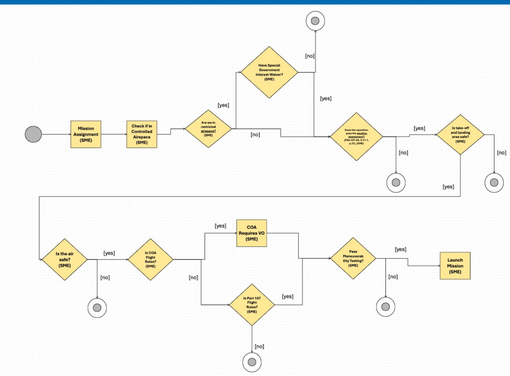
Operations Over People (OOP) General Assessment



www.nasa.gov

Subject Matter Expert Pre-Flight Diagram

Subject Matter Expert Emergency Response operational procedure transcription was used as basis for the additional activity diagram layers of mitigations and hazards.



Acknowledgments

University of Michigan · FIU Florida International University · Carondelet High School · DRONERESPONDERS