National Aeronautics and Space Administration

Grounded Theory Analysis of UAS Incidents and Accidents

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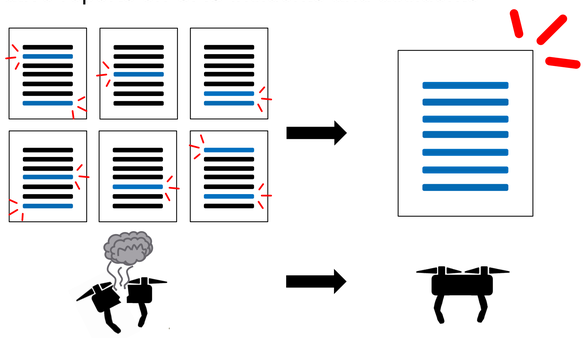
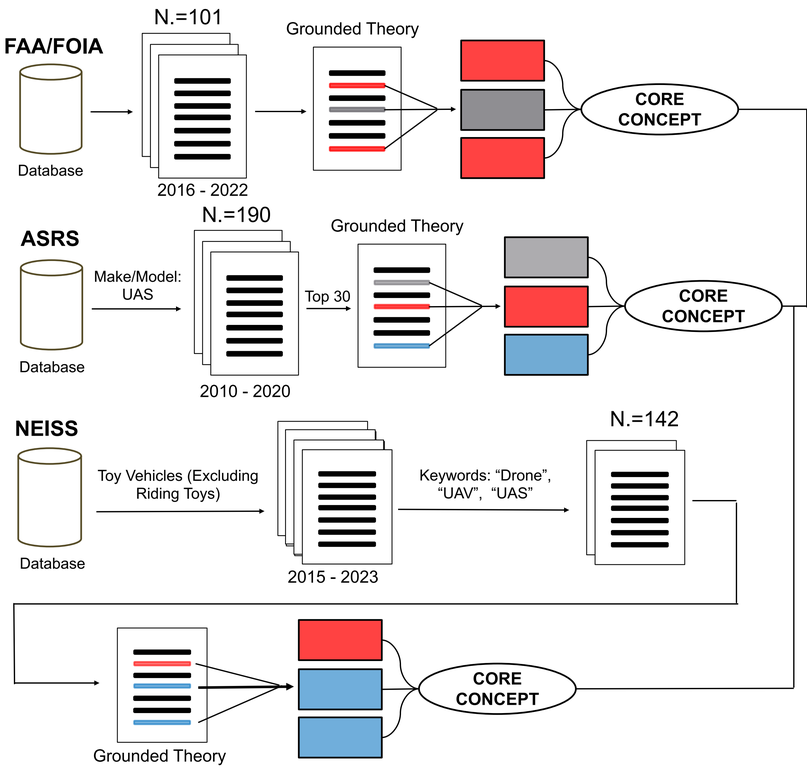
Introduction

Purpose: Improve aviation safety and regulation by analyzing patterns in narrative reports on UAS incidents and accidents



Method



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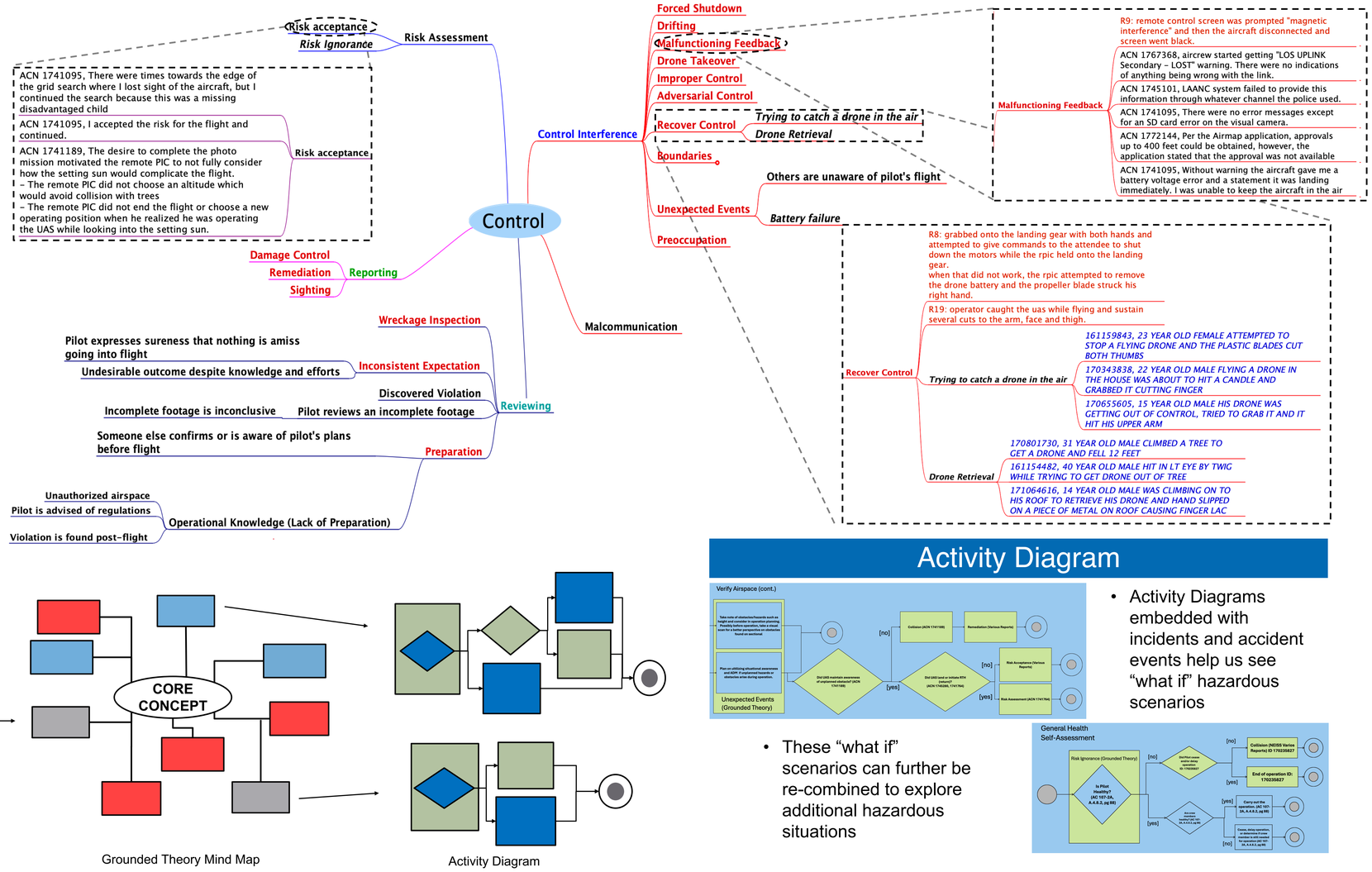

Grounded Theory Mind Map

Activity Diagram

Threats to Validity

- Incomplete/Nondescript Narratives
- Search Bias
- Specialized Vocabulary
- Data time range (i.e. ASRS, 2020)

Related Work

- C. Paradis, S. Mbaye, M. Davies, C. Werner. A Grounded Theory of UAS Reported Accidents. To appear on AIAA Aviation'24.
- B. Glaser, A. Strauss. The Discovery of Grounded Theory: Strategies for Qualitative Research.
- S. Gorucu and Y. Ampatzidis. Drone Injuries and Safety Recommendations. AE560/AE560, 06/2021. EDIS 2021.

Activity Diagram

- Activity Diagrams embedded with incidents and accident events help us see "what if" hazardous scenarios
- These "what if" scenarios can further be re-combined to explore additional hazardous situations

Conclusion

Core Category: **Control**

- All elements of faulty UAS flight is characterized as a fight for control

Most Common Cases

- Recover Control (FAA, NEISS)
- Operational Knowledge (ASRS)

Acknowledgments

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