Motivation

- Because of Warfighter demand, the DoD’s investment is increasing tenfold in unmanned aircraft systems (UASs) this decade. However, cross-platform coordination is lacking and cost & schedule growth are concerns.
- Industry uses modular product architectures to manage product families to increase market share, increase economic order quantities and shorten time to market. Models are developed for these purposes.
- The DoD focuses on delivering a capability for the best value. Models for using modularity in this purpose have not been developed. These models could improve cost, schedule and performance of acquisition programs.
- This research will characterize the benefits of a modular architecture strategy to acquire UASs.

Research Questions

How much value can be gained by adopting a modular strategy to acquire unmanned aircraft systems?
- How much investment can be saved by acquiring a modular UAS ground segment?
- How much quicker can capability be fielded using a modular approach to UAS ground systems?
- What best practices for UAS ground system modularity exist?

Research Approach

1. Develop functional and physical models of representative UASs.
2. Identify and characterize the signals and levels of automation that exist in UASs.
3. Analyze emerging clusters of form and function in system architectures.
4. Compare clusters between different UASs and missions.
5. Identify similarities (opportunities for module development and reuse) between systems and missions.

Expected Contributions

Expand theory – apply platform optimization methods to government organizations and products
- Government products deliver a capability vice seeking profit

Methods – usually developed for profit ventures – to be developed, modified and applied to government applications