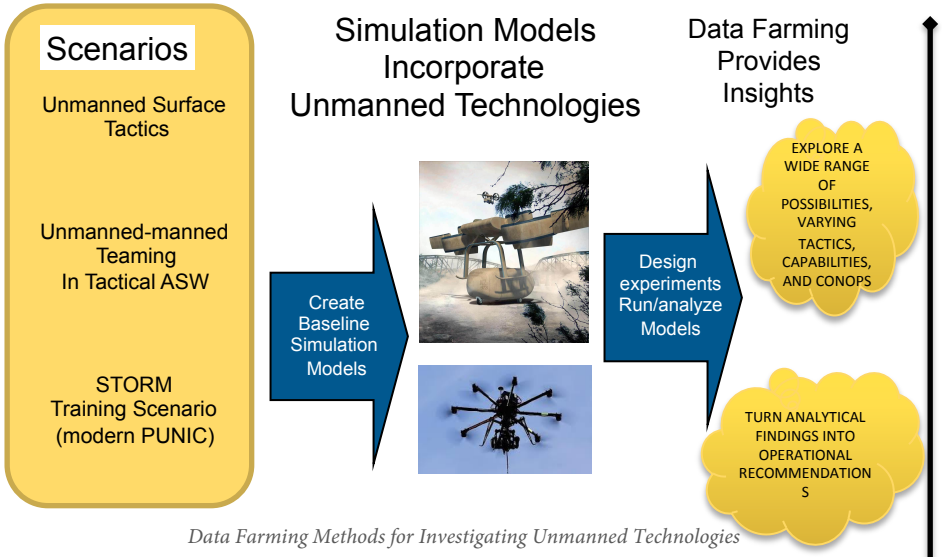
Data farming explorations of the tactics and benefits of unmanned systems and unmanned-manned teaming

CRUSER
Consortium for Robotics and Unmanned Systems Education and Research



Data Farming Methods for Investigating Unmanned Technologies

- Students will build agent-based or discrete-event simulation models to explore the potential use of unmanned vehicles—surface, underwater, and aerial—in a wide variety of operational environments
- Students will test the capabilities of the Navy's Orchestrated Simulation through Modeling (OSM) agent-based platform to model UxS technologies and employment
- Faculty will develop improved data farming methods, such as improved design of experiments (DOE) tools for rapidly gaining insights in complex environments
- Students will apply data farming methods to explore a large number of "what if?" questions related to their simulation experiment.

SEED student research will apply data farming methods to investigate innovative uses of unmanned autonomous systems, on topics including

- Use of USVs for Surface Action group (SAG) versus SAG
- Integration and employment of ACTUV and P-8 for a tactical anti-submarine warfare mission
- Impact of C2 plan thresholds on plan execution and campaign outcomes

SEED faculty research will focus on improved data farming methods:

- Adaptive, sequential design of experiments
- New methods for handling multiple responses

- Operational impact: Understanding the relationship between various mixes, capabilities, and employment of UxS may help develop new tactics and concepts of operations for UxS in the application areas described. For example, understanding how to employ USVs in a SAG vs SAG scenario may assist with requirements development and analysis of alternatives. Understanding the sensitivity of ACTUV/P-8 teaming to false contacts may lead to more robust ASW tactics. Understanding how thresholds that determine whether to advance to the next C2 plan phase may provide insights on where replacing manned with unmanned systems may be Improved data farming methods will facilitate rapid scenario generation and rapid exploration of new concepts for UxS, in a variety of application areas.

NPS
FY18 Call for Proposals

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