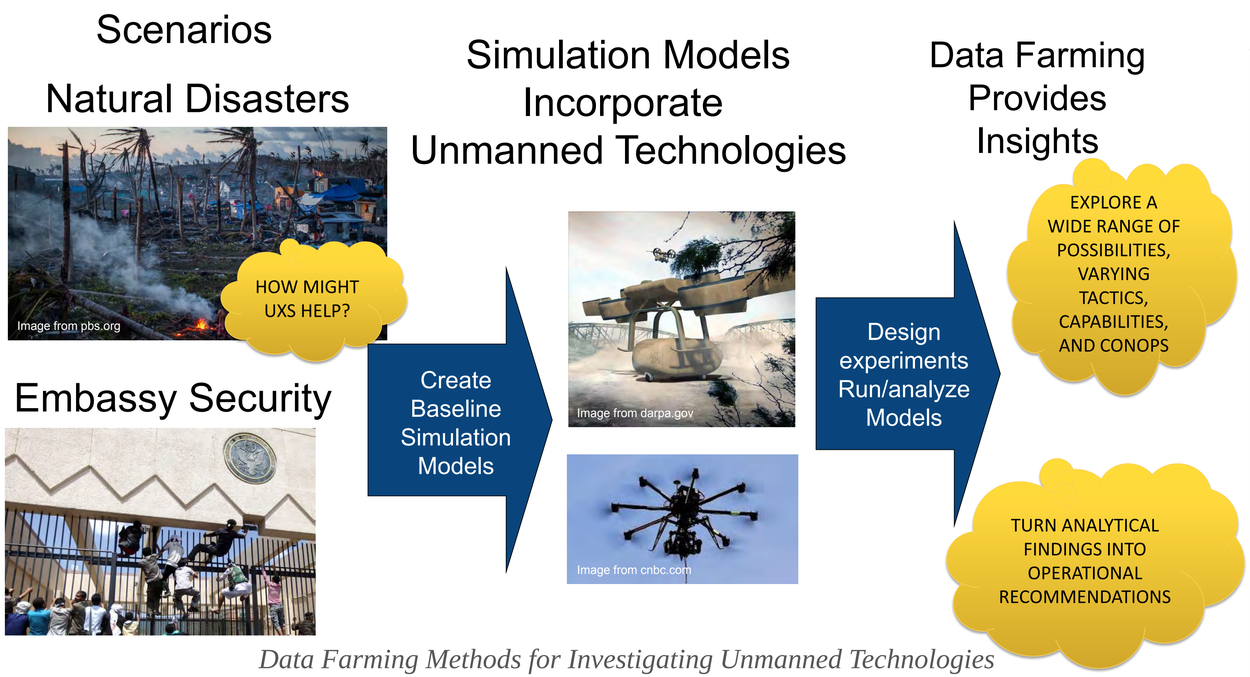
Innovations in unmanned technologies for humanitarian assistance, nonlethal weapons, and

Naval Postgraduate School



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—aerial, ground, surface, and underwater—in a wide variety of operational environments
- 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 UAS for humanitarian relief efforts in PACOM
- Use of UAS to support quick reaction team for embassy security
- Effects of degraded communications on ground combat operations, with air-breathing sensors and a mix of manned and unmanned assets

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 the relationship between various mixes or capabilities of UxS, and the ability of ground combat operations to overcome or mitigate degraded communications on the battlefield, may help in developing appropriate tactics for UxS and sensor employment. Improved UUV trials may assist UUV procurement and shorten facilitate rapid fielding of new UUV platforms.
- Improved data farming methods will facilitate rapid scenario generation and rapid exploration of new concepts for UxS, in a variety of application areas.

CRUSER Consortium for Robotics and Unmanned Systems Education and Research

FY17 Call for Proposals

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