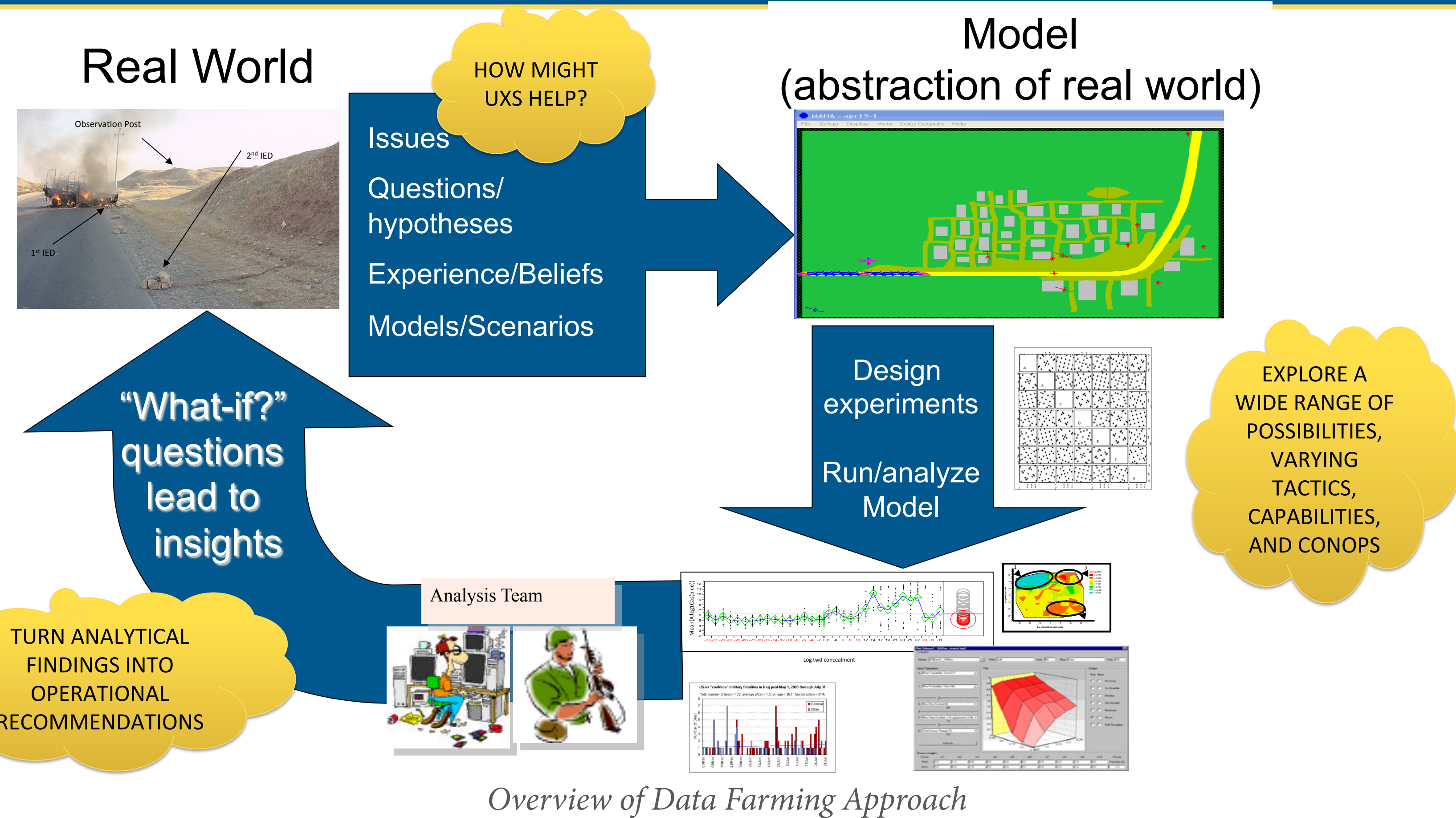


# Closing Capability Gaps: Data Farming Methods for New Concept Exploration in the CRUSER Community



NAVAL  
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SCHOOL



Overview of Data Farming Approach

- 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 large-scaled simulation experiments, and more flexible metamodels for assessing the results.
- Students will apply data farming methods to explore a large number of “what if?” questions related to their simulation experiment.

SEED students research on UxS-related topics, such as:

- Effects of degraded communications on ground combat operations, with air-breathing sensors and a mix of manned and unmanned assets;
- Insights on UUVs/USVs from GAMET (General Analytical Minefiled Evaluation Tool);
- Effective planning and dynamic rescheduling for physical UUV trials

SEED faculty research will focus on improved data farming methods:

- Adaptive, sequential design of experiments;
- Metamodels for exploring complex response surfaces

- 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.