Adaptive CPH systems have the ability to learn and adapt structure and organization based on data acquired from collection assets including its manned and unmanned nodes.

### Goals & Objectives
- Develop a probabilistic CPH modeling approach that supports mutual adaptation within the CPH system based on analysis of observations made by humans and data collected by cyber-physical elements
  - Create a probabilistic pattern structure and library that can become the basis for a future bidirectional decision system
  - Create the means by which human actors can adapt trained patterns and create new ones

### Methodology
- Key features:
  - In addition to determining the best probabilistic match to a given observation, we evaluate the "distance" from the observations comprising the best match to the current observation
  - If "distance" is "small," then observation is a likely member of the pattern observation set
  - If "distance" is large, then observation may belong to a new pattern.
  - We let a human judge the results of analysis made by the pattern matching system, and trigger updates to existing patterns, or addition of new patterns.

### Future Research
- Identify CPH system of interest to DOD
- Prototype CONOPS
  - Operational context
  - Sources of disruption
  - Need for mutual adaptation
- Refine Adaptation and Learning Concepts
  - Supervisory learning
  - Data sources
  - Data collection constraints

### Contacts/References