



A software-defined behavior specifies how a robot interacts with its environment (e.g. obstacle avoidance, search, coverage)

Problem Statement

- How rapidly improve UxV NCS autonomy to support diverse DoD mission areas?
- How to integrate and optimize system behaviors?
- How to ensure system performance while integrating many potential behaviors (scale up)?

Research Goal: Develop a methodology for integration of composable, interoperable behaviors into an open source, autonomy architecture for a collaborative, multi-vehicle, Networked Control System.

Impact

- The ability to rapidly integrate software-defined behaviors offers the potential to rapidly increase autonomy in UxV NCS across ALL DoD.
- Applies to a wide set of DoD warfare specialties and mission areas.
- “Commoditizes” the behavior as an app. Enables independent behavior development.
- Addresses fundamental “scaling up” problem – integration and optimization of multiple behaviors to generate composable well-behaving NCS

Transition

- USSOCOM is aggressively looking at integrating UxV NCS into Special Operations missions
- PMS-406/408/340 have a variety of systems that can be combined to form an UxV NCS to improve a wide selection of maritime mission objectives.
- USMC is actively pursuing UxV teaming for expeditionary mission objectives (MCTSSA)