



NASA STTR 2018 Phase I Solicitation

T4.03 Coordination and Control of Swarms of Space Vehicles

Lead Center: JPL

Technology Area: TA4 Robotics, Telerobotics and Autonomous Systems

This subtopic is focused on developing and demonstrating technologies for coordination and autonomous control of teams and swarms of space systems including but not limited to spacecraft and planetary rover teams in a dynamic environment.

Possible areas of interest include but are not limited to:

- Coordinated task planning, operation, and execution.
- Relative localization in space and on planet surface.
- Close proximity operations of spacecraft swarms including sensors required for collision detection and avoidance.
- Fast, real-time, coordinated motion planning in areas densely crowded by other agents.
- Human-Swarm interaction interfaces for controlling the multi-agent system as an ensemble.
- Distributed fault detection and mitigation due to hardware failures or compromised systems.
- Communication-less coordination by observing and estimating the actions of other agents in the multi-agent system.

Phase I awards will be expected to develop theoretical frameworks, algorithms, software simulation and demonstrate feasibility (TRL 2-3). Phase II awards will be expected to demonstrate capability on a hardware testbed (TRL 4-6).