

US Multiple Unmanned Vehicle Contracts

Aptima has been awarded three contracts for developing technologies to improve the control and functions of unmanned air, land, and sea vehicles (UxVs) and their integration into military operations. The Army and Navy contracts address a continuum, scaling from how individual unmanned vehicles, such as drones, can be operated with fewer personnel, to the coordination of teams of UxVs used in joint military operations.

Having evolved from a battlefield curiosity to today's use in urban warfare - for surveillance, to detect and disarm IEDs, and as weapons systems - UxVs are a part of the US military's transformation. The pursuit of a 'mixed initiative' force of the future that combines humans and robotics requires that unmanned vehicles systems possess greater intelligence by learning from humans, and that human operators wield greater control over the types and number of unmanned air, land and sea vehicles that can be coordinated simultaneously across missions.

Aptima will address UxVs at the individual, networked, and 'team of teams' levels - illustrated by three of the contracts below:

COSMIC (Collaborative Optimization System for Mixed-Initiative Control) - For large scale military operations, such as fleets conducting searches and monitoring large bodies of water for mines and safe ingress and egress, COSMIC will provide a collaborative environment allowing human operators onboard naval combat systems, carriers, or aircraft, to coordinate multiple unmanned vehicles. Building on Aptima's MiDAS project (Mission Displays for Autonomous Systems), COSMIC will help ensure optimal performance of UAV controllers functioning as a team in order to accomplish multiple missions occurring simultaneously. COSMIC's tools will facilitate the processes that include global resource planning, mission monitoring, and re-planning. Integrated with Lockheed Martin's ICARUS (Intelligent Control and Autonomous Replanning of Unmanned Systems), COSMIC will reduce the human operator workload while improving the shared situation awareness across the entire mission team.

C2RAD (Command and Control of Small Robotics Assets Display) support the human operator in the field using a robotic vehicle as a forward observer, C2RAD will provide an integrated display that both maps and shows locations of red, green and blue entities, such as snipers, obstacles, and friendly forces, and shares that data with other troops and command.

MIMIC (Mixed Initiative Machine Instructed Computing) will help unmanned air systems perform more independently, capturing the knowledge of human operators, and embedding in the control devices the decision-making skills of UAV commanders as to how they generate, select, and execute maneuvers in evading and deceiving the enemy.