



RRPD-V with re-designed gravity-fed guided submunition

## Problem Statement

- Utilize low-cost commercial-off-the-shelf components to develop an autonomously guided rapid-response payload delivery vehicle (RRPD-V) to deliver multiple gravity-fed guided submunitions (GSMs) which are actively guided to intercept and neutralize unmanned systems (UxS) threat(s) with a non-lethal fouling mechanism.
- Leverage existing detection abilities for incoming aerial UxS swarms and engage at ranges up to 1 sm. At intercept, the RRPD-V deploys multiple GSMs to defeat an equal number of UxS.
- The approach relies on system development and refinement through a series of flight-test campaigns for incrementally developing, improving, and validating the various flight systems.

## Impact

- Autonomous guided rockets/missiles are typically associated with extremely high price points; however, with the rapid development of microprocessors, controllers, inertial sensors, GPS locators, etc., and subsequently increased availability and reduced cost, makes it possible to create a disruptive, low-cost tactical system for the Warfighter.
- This development seeks to enhance the Warfighter capabilities by providing an autonomous, robust, rapid-response means to deliver a payload to a point in space. Such a vehicle can symmetrically counter aerial UxS swarms or be modified to deliver critical supplies for expeditionary force sustainment.
- Success is determined by achieving integration of commercial-off-the-shelf components into a tactical guided rocket and autonomously navigating to a defined point in space, as well as flight demonstration, guidance, and validation of the gravity-fed guided submunitions.

## Transition

- This effort is particularly interesting to USMC, Navy, and Army end users.
- A proposal is currently submitted to USTRANSCOM for \$3.2M over 3 years. If awarded, the effort will result in integrating an autonomous and adaptive, real-time optimal guidance control algorithm with the RRPD-V for expeditionary force sustainment.
- Additional transition partners include Navy Futures Command and US Army Futures Command, which are interested in the RPPD-V for autonomous sustainment/re-supply and high-altitude communications relay deployment for reliant and resilient comms.
- Discussions continue with DARPA and ONR Code 35 for further development of the counter aerial UxS swarm gravity-fed guided submunitions.