GOLDEN HORDE
NETWORKED COLLABORATIVE WEAPONS

What is it?

The Golden Horde initiative, chosen as an Air Force Vanguard program in 2019, will integrate datalink radios and collaborative behaviors on inventory weapon systems to demonstrate the mission effectiveness of networked collaborative weapon capabilities for our warfighters. This effort will validate an integrated system where different technologies work together to defeat targets.

Golden Horde uses a collaborative autonomy approach referred to as “play calling.” A “play” is an established collaborative behavior enabled (or disabled) when certain predefined conditions are met by the swarm. Golden Horde uses a collection of plays called a Playbook. Loaded prior to the mission, the Playbook provides a choice of plays from which the weapons can choose.

Golden Horde does not use artificial intelligence or machine learning to make determinations independently regarding which targets to strike. The system only selects from set plays and cannot violate defined Rules of Engagement.

Why is it important?

Current weapons generally fly a pre-designated mission. If the enemy does something unexpected, preprogrammed weapons are ineffective, and additional weapons may be required to complete the mission. Networked, collaborative and semi-autonomous weapons are advantageous since they observe and react to the enemy in real time, helping weapons overcome adversary defenses before the enemy can respond with effective countermeasures. This capability will enhance mission success rates by providing adaptability, flexibility and responsiveness in attacks and by increasing the speed and accuracy of target destruction.

How does it work?

Networked collaborative weapons share data, interact, develop and execute coordinated actions or behaviors. They use shared data to improve information across an entire group of weapons – sometimes called a swarm – thereby improving the effectiveness of the entire swarm. When each weapon shares measurements of a target’s location, combining this information reduces errors since it creates a more accurate target location for all to reference. Ultimately, this supports the use of lower-cost sub-systems in place of more expensive systems without sacrificing capability.

Marked by enterprise-wide support, Vanguards are part of the transformational science and technology portfolio identified in the S&T 2030 Strategy. These innovative programs push boundaries by integrating several technology components to deliver new game-changing capabilities. By covering multiple domains and encompassing multidisciplinary solutions, the Air Force aims to deliver game-changing new operational capabilities that provide warfighters with superior advantages on the battlefield.

Weapons and Demonstrations

- **Collaborative Small Diameter Bomb I (CSDB-I)** - Applications and Research Associates, Inc. (SARA) is the prime integrator.
- **Collaborative Miniature Air-Launched Decoy (CMALD)** - Georgia Tech Applied Research Corporation (GTARC) is the prime integrator.
- **Demos begin late 2020** and ultimately lead to an integrated capstone test event with CSDB-I and CMALD weapons working together to prosecute simulated targets in the fall of 2021.