

Channelized Wing Hybrid Electric Vertical Takeoff and Landing UAS Assessment Event – Assessment Criteria

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Problem Statement: SOF requires Unmanned Aerial Systems (UAS) with channelized wings in concert with a Hybrid Electric powerplant, in combination with Vertical Takeoff and Landing (VTOL) runway independence for intelligence, surveillance, target acquisition, and reconnaissance (ISTAR) operations with the air vehicle being capable of at least or greater than 14-hours of endurance with 20 lbs. of payloads, beyond-line-of-sight (BLOS), and avionics while maintaining cruise altitude of 10,500 ft. MSL.

Desired Operational Characteristics and Performance Attributes for System (*whitepapers should reference ALL characteristics and performance attributes below and annotate their system's abilities to meet the desired technology as well as deficiencies. Also identify improvements that could be achieved to further meet requirements in a rapid six to twelve month development effort as well as those that are impossible to meet with these time constraints*):

- Technology Readiness Level (TRL): 7 minimum
- OEM country/system production facility country: US preferred
- Max Ground Takeoff Weight (MGTOW): 330lbs or less preferred
- Air vehicle dimensions/wingspan: less than 24 feet preferred
- Aerodynamic Concept: System must be designed with Channelized/channel wings
- Power: System must be powered by a hybrid electric powerplant
- Fuel: Gasoline acceptable but Heavy Fuel (JP5, JP8 etc.) strongly desired
- Launch and Recovery: VTOL with ability to launch and recover out of a 50'x50' box with 50' walls on each side
- Communications: System must have BLOS C2 as well as a backup LOS C2 link. The above applies to both C2 of the aircraft as well as payloads
- Network: UAV and payloads must be on a secured encrypted (Commercial) network where air and ground computers and payloads can easily communicate
- Open Architecture: System must be open with freely non-proprietary published ICD boundaries (mechanical, electrical, and software) to allow easy third-party integration of payloads and other subsystems without requirement for OEM vendor involvement
- Electrical Power for Payloads: Minimum of 250W but 500W is desired
- Endurance: When equipped with BLOS, all avionics, and additional 20lbs payload (including all cameras, SIGINT, etc.), demonstrate sustained sortie duration of 14-hours at a cruise DA of 10500' MSL and land with a 30-minute fuel reserve and capacity to execute 2 aborted landings
- Cruise speed: Level speed min cruise of 55 KTAS but 125 KTAS is desired
- Service Ceiling: Must be capable of reaching DA of 17000' MSL at GTOW required to meet endurance requirement.
- Max Payload capacity (with 1hr of fuel): 30 lbs. but 100 lbs. is desired
- Maritime Capable: Must be capable of operating from land or a moving steel ship at sea
- Human-machine interface: system must be able to operate with the Vigilant Spirit vehicle management system