DEGRADED VISUAL ENVIRONMENT MITIGATION (DVE-M)

Degraded Visual Environment Mitigation (DVE-M) is a disruptive capability improvement that will allow U.S. Army Aviation assets to maintain an asymmetric advantage on the battlefield, much like the adoption of night vision technology in the past.

Degraded Visual Environment (DVE) is “reduced visibility of potentially varying degree, wherein situational awareness and aircraft control cannot be maintained as comprehensively as they are in normal visual meteorological conditions and can potentially be lost”. Currently, as visibility degrades, aviation operations become more dangerous, less effective, and often impossible or deadly. The goal is to convert DVE into a combat multiplier by creating an advanced capability. This will enable commanders to conduct deliberate operations in DVE with confidence that their crews will be safe and their missions successful.

DVE-M references 11 different environments- nine ambient and artificial DVE, and two aircraft-induced DVE. Mitigating DVE means providing the aircrew with the means to precisely control aircraft attitude and accurately negotiate terrain and obstacles throughout the operational flight profile.

There are three key technology components which are mandatory for any comprehensive DVE solution: Flight Controls, Cueing, and Sensing…we will only mitigate the DVE problem by addressing all three as a system and driving it with robust complex computing resources.

- Flight Control – Modernized Control Laws (MCLAWS) brings advanced flight control logic to legacy flight control systems using existing control architectures, then expands to coupled flight control modes and Next Generation Autopilot (NGAP) capabilities.

- Cueing - Develops an Integrated Cueing Environment (ICE) that optimizes human performance to operate in and exploit degraded environments in all modes of flight using combination(s) of visual, aural, and haptic cues.

- Sensing - Integrates full spectrum, state-of-the-art DVE sensors with multi-modal fusion techniques and a distributed architecture for DVE pilotage, 360° SA, and growth to multi-function capability.

IMPORTANCE TO THE ARMY

Over the past 10 years, there have been 87 rotorcraft accidents due to degraded visual environments resulting in 108 fatalities and over $880M in material losses. The Center's DVE Mitigation program's purpose is to increase aircrew safety and survivability and provide operational advantage.

OUTLOOK FOR THE FUTURE

DVE-M is fully funded and on target to demonstrate capabilities by 2020 with potential "spin-off" interim technologies. A high level of interest is growing throughout DoD as well as among NATO and U.S. allied countries as demonstrated by the strong international support for recent DVE-M NATO European Flight Trials.

The technology vision is coming to be recognized as not only an important military endeavor, but as vitally important to civil and commercial operations as well. DVE-M meets the Army priorities of readiness and future force.

In Partnership with DEVCOM Army Research Laboratory and DEVCOM C5ISR Center

FOR FURTHER INFORMATION:

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