

Unmanned Aircraft Systems Human Factors Considerations

Purpose

- The Unmanned Aircraft Systems (UAS) Human Factors Considerations research will address human factors safety concerns that are unique to UAS, both in public use and civil operations as well as perform research that supports development of standards, regulations, and guidance for civil UAS. The four key research categories identified are function allocation, control station requirements, pilot training and certification requirements, and visual observer requirements

Background

- Several organizations have identified human factors issues unique to UAS, including the US Air Force Accident Investigation Board, the National Transportation Safety Board, the US Department of Transportation, National Aeronautics and Space Administration, RTCA Special Committee (SC)-228, and others. A compilation of issues from incidents, accidents, pilot observations, research studies, discussion forums, and preliminary regulatory gap analyses of the Federal Aviation Regulations include:
 - The proper allocation of functions between system and pilot in various operational scenarios
 - Information requirements for adequate pilot awareness of normal and non-normal system state and surrounding airspace
 - Pilot distraction from individuals other than crew and ambient noise
 - Variable training programs across organizations
 - Visual observer performance limitations in various operational and environmental conditions

Projected Benefit of Research

- Address human factors gaps in knowledge that are currently a barrier to the safe, efficient, and timely integration of UAS into the National Airspace System
- Inform operational approval restrictions for small UAS based on collision risk to person and/or property
- Inform development of modified and/or new regulations, standards and guidance regarding flight deck/control airworthiness, operations that may influence control stations and pilot tasks, and crewmember training and certification

Research Approach

- Develop function allocation strategies for UAS human-machine functions
- Develop minimum standards and design guidelines for UAS control stations
- Develop recommended crewmember training and certification requirements, to include pilots and other crewmembers

Research Partners

- The FAA's Center of Excellence for UAS Research, Alliance for System Safety of UAS through Research Excellence (ASSURE): Drexel University, University of North Dakota, New Mexico State University, and The Ohio State University

Status

- Research began September 2015 and results are expected in September 2017