

REDAC Subcommittee on Aircraft Safety (SAS)
Open Recommendations
To be discussed and disposed in 2015 Spring Meeting
On March 24 – 25, 2015

SAS Fall_2013_3: Alignment of Human Factors Research

Recommendation: The Subcommittee recommends that, for funding and functional purposes, FAA explore the possibility of closely aligning human factors research requirements with the other research areas they support, even though those issues might fall outside the traditional human factors portfolio.

Not addressed at the 2014 Fall meeting. **REMAIN OPEN**

SAS Spring_2014-1: Weather and Decision-making

Recommendation: There is a significant body of knowledge about how people deal with probabilistic information for decision making in situations involving risk. It is recommended that the Weather program get sufficient understanding, using such information where appropriate, to help them design weather forecast displays, decisions support tools, and associated training that make use of probabilistic weather information.

Not addressed at the Fall 2014 meeting. **REMAIN OPEN**

SAS Spring_2014-2: UAS R&D Strategy

Recommendation: The FAA should develop a holistic implementation plan to include a detailed R&D strategy which would address the research needs from both the regulator and airspace operator perspectives.

The SAS requested further details on the UAS R&D plan reflecting deliverable validation milestones against the published FAA Integrated UAS Roadmap. **REMAIN OPEN**

SAS Fall_2013_3: Alignment of Human Factors Research

Finding (3): The Subcommittee also remains concerned that the funding for human factors research seems to receive a lower priority than might be warranted due to a misunderstanding of how this research supports the broader R, E and D effort it's connected to. The Subcommittee understands the concern from human factors research managers that the proper researchers be assigned to relevant projects and the need for human factors experts to be designing and conducting the research. As the aviation industry moves more toward data driven, evidence based risk management, the contribution that human factors research makes to an R, E, and D effort and its importance might be better recognized if human factors research is embedded in the larger R, E, and D effort rather than conducted independently.

Recommendation: The Subcommittee recommends that, for funding and functional purposes, FAA explore the possibility of closely aligning human factors research requirements with the other research areas they support, even though those issues might fall outside of the traditional human factors portfolio.

FAA Response: The FAA agrees with the Subcommittee finding regarding the importance of human factors research in all aspects of aviation safety. We are working to closely align human factors research requirements with the research programs they support and will assess the progress and identify additional opportunities for alignment, as needed. We will provide a status report on our progress at the March 2014 meeting and include an example of programs that are aligned.

- to be discussed by Mark Orr

SAS Spring_2014_1: Weather and Decision-making

Finding: Information about the likelihood of predicted weather events has the potential to lead to better operational decisions by airline operations center personnel, pilots, air traffic controllers, and flow management specialist. To make use of such information in the design of weather displays and in decision support tools and in the training for their use requires an understanding of how these people deal with probabilistic weather information.

Recommendation (1): There is a significant body of knowledge about how people deal with probabilistic information for decision making in situations involving risk. It is recommended that the Weather program get sufficient understanding, using such information where appropriate, to help them design weather forecast displays, decisions support tools, and associated training that make use of probabilistic weather information.

FAA Response: The Federal Aviation Administration (FAA) agrees with the Subcommittee to leverage the significant body of knowledge that exists on probabilistic information for decision making in situations involving risk. The FAA plans to conduct a thorough literature review and looks forward to presenting progress in this area to the Subcommittee this fall.

- to be discussed by Steve Abelman

SAS Spring_2014_2: UAS R&D Strategy

Findings: The FAA provided the Human Factors and Aircraft Safety Subcommittees the opportunity to review the FAA's *Integration of Civil UAS in the NAS Roadmap* which they released in November 2013. While a major step in the right direction, the Subcommittees found that the roadmap was at a high-level and did not on its own contain sufficient detail with regard to specific milestones and dates for the Subcommittees to make informed recommendations to the FAA on research requirements, priorities, and gaps. The Subcommittee believes that access to the FAA's Unmanned Aircraft Systems (UAS) Airspace Integration Concept of Operations and the "integration plan" currently under development would be important.

In addition, the Subcommittees have the following observations:

- Given that the FAA has no formal role in influencing the selection and/or execution of research conducted at the FAA UAS Test Sites there is a potential for missed opportunity and concern that the FAA may not get useful research results from the effort.
- While there appears to be an urgent need for research to inform FAA decisions and planning efforts, much of the research will not produce results for several more years. As a consequence, much of the research may be late to need.
- Sensor fusion research seems focused on a solution that is associated with a design concept which may be the purview of a proponent. It would seem more appropriate for FAA research to be focused on results which would be the basis for establishment of standards and/or inform certification approaches.
- The following UAS integration research is either minimally addressed or apparently missing from the FAA's research portfolio: air traffic management procedures and capability enhancements; operational procedures development; ground station and communication requirements, the effectiveness of existing and planned procedural mitigations; and mechanisms for the safe response to failures and other contingencies.

Recommendation (2): The FAA should develop a holistic implementation plan to include a detailed R&D strategy which would address the research needs from both the regulator and airspace operator perspectives.

FAA Response: The UAS Integration Office and NextGen Research and Development Integration Division will leverage the work of the Interagency Planning Office (IPO) (formerly JPDO), the Science and Research Panel and our Government and industry research partners to build and update a UAS R&D research inventory to address key research needs. This R&D strategy will leverage the ongoing IPO research inventory and mapping effort that will be completed in Fiscal Year (FY) 2014. The strategy also leverages the ongoing commitment to develop joint research priorities with the Science and Research Panel on areas of mutual research interest. The UAS Integration Office and NextGen Research and Development Integration Division will continue our effective collaboration with the FAA Air Traffic Organization (ATO) Operational Concepts, Validation and Requirements, and Air Traffic Procedures directorates to incorporate their airspace operator perspective in the resulting research inventory and research execution plans. This perspective will help identify and incorporate Air Traffic Management (ATM)-related research for validation of the FAA UAS ConOps concept level requirements. Our continued coordination with the ATO Airspace Services Directorate will also help us plan for research related to future airspace and related air traffic operations requirements. The resulting research inventory will provide a continuing mechanism to collaborate by incorporating regulator and airspace operator research needs in specific research efforts, when practical, and identifying where closely-related research efforts can leverage related results when joint research objectives are not practical. This strategy may also provide a single common reference for research activities to be used in collaboration with our government and industry partners.

We do not see the need to publish a holistic implementation plan to document our R&D strategy as noted in this recommendation. We feel that the R&D strategy we are implementing will address research needs from both the regulator and airspace operator perspectives. We will brief the Subcommittee at the next meeting on progress we have made in implementing our R&D strategy.

- to be discussed by Chris Swider