



NASA SBIR 2016 Phase I Solicitation

A3.02 Autonomy of the National Airspace Systems (NAS)

Lead Center: ARC

Participating Center(s): LaRC

Develop concepts or technologies focused on increasing the efficiency of the air transportation system within the mid-term operational paradigm (2025-2035 time frame), in areas that would culminate in autonomy products to improve mobility, scalability, efficiency, safety, and cost-competitiveness. Proposals in the followings areas in product-oriented research and development are sought, but are not limited to:

- Autonomous and safe Unmanned Aerial Vehicle (UAV) operations for the last and first 50 feet, under diverse weather conditions.
- Autonomous or increasing levels of autonomy for, or towards, any of the following:
 - Networked cockpit management.
 - Traffic flow management.
 - Airport management.
 - Metroplex management.
 - Integrated Arrival/Departure/Surface operations.
 - Low altitude airspace operations.
- Autonomy (or self-management) -based architectures for the entirety, or parts, of airspace operations.
- Autonomous systems to produce any of the following system capabilities:
 - Prognostics, data mining, and data discovery to identify opportunities for improvement in airspace operations.
 - Weather-integrated flight planning, rerouting, and execution.
 - Fleet, crew, and airspace management to reduce the total cost of operations.
 - Predictions of unsafe conditions for vehicles, airspace, or dispatch operations.
 - Performance driven, all-operations, human-autonomy teaming management.
 - Verification and validation tools for increasingly autonomous operations.
 - Machine learning and/or self-learning algorithms for Shadow Mode Assessment using Realistic Technologies for the National Airspace System (NAS).
 - Autonomy/autonomous technologies and concepts for trajectory management and efficient/safe traffic flows.
 - Adaptive automation/human-system integration concepts, technologies and solutions that increase operator (pilot and or controller) efficiency and safety, and reduce workload to enable advances in air traffic movement and operations.