

NASA Langley Research Center Capabilities – Unmanned Aerial Systems –

NASA Langley Research Center (LaRC) is working to spread the benefits of NASA research and technologies to companies and organizations in the unmanned aerial systems (UAS) sector. LaRC has decades of experience and knowledge in building safe, reliable and robust highly automated systems. LaRC is now working to leverage that experience, rigor and collective NASA knowledge in developing the technology of unmanned vehicles, with a primary focus on aerial vehicles.

LaRC Support of Agency Missions:

- **UAS in the National Airspace Systems (NAS):** NASA is working in partnership with the FAA and the aviation community to solve the technology and regulatory challenges of fully integrating UAS operation within the NAS. A key area of contribution is Sense And Avoid/Detect And Avoid (SAA/DAA) algorithms for large UAS.
- **UAS Traffic Management System:** NASA is working with the FAA and aviation community to solve the technical challenges of controlling the airspace in which UAS and other vehicles operate, focusing on the airspace nearest the ground.
- **High Altitude Long Endurance (HALE) Vehicles:** LaRC is pursuing system concepts and technologies to enable this class of vehicles that show potential to revolutionize earth-observing remote sensing, global and space communication, and various emergency applications.

LaRC Capabilities:

- **Innovative Technologies:** The Autonomy Incubator is an internal cross-discipline development center whose technical focus is safe reliable mobility and manipulation in dynamic, unstructured and data-deprived environments. It is investigating detect and avoid technologies, search and rescue under the canopy, visual odometry, sensors, package delivery, real-time collaborative Multi-UAV 4D trajectories and innovative vehicles.
- **Prototype Vehicles:** LaRC has the capability to design, build and operate prototype vehicles in support of aeronautics and space technologies. Recently, a Langley team developed a remotely piloted battery powered plane (the GL-10) with 10 engines that can take off like a helicopter and transition to efficient horizontal flight like an airplane.
- **Testing Facilities, Indoor and Outdoor:** The Autonomy Incubator has over 70,000 cubic feet of indoor flying space for testing. There is also an on-site, FAA-approved 100-acre range operated by the new LaRC UAS Operations Office in Class D airspace for UAS weighing less than 25 pounds.

LaRC is seeking opportunities to further engage with the UAS sector through participation in industry seminars, partnerships with industry or government organizations or site visits to specific companies. In addition, LaRC has broad engineering and research capabilities evolving from its primary space missions that it is interested in sharing to promote new domestic technologies and economic growth.

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