

Near Earth to develop system to expand the use of unmanned aircraft systems in the national airspace

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PITTSBURGH—The Small Business Innovation Research program (SBIR), funded by the National Aeronautics and Space Administration (NASA), has awarded a development contract to Near Earth Autonomy Inc. (Near Earth) to expand the use of unmanned aircraft systems (UAS) operating in the national airspace, in particular to enable safe take-off and landing in constrained environments. The project, named “Autonomous, Safe Take-Off and Landing Operations for Unmanned Aerial Vehicles in the National Airspace,” will develop a small, lightweight payload capable of obstacle detection and avoidance even in the absence of GPS signals. Serving as Principal Investigator, Dr. Sanjiv Singh, Near Earth’s CEO and Chief Scientist, will lead the project.

The work funded by NASA will address three key challenges associated with operation of small UAS near buildings, trees, wires, and other obstacles commonly found in the environments these aircraft are expect to operate: (1) estimate the aircraft state when GPS signals are intermittent or absent, (2) produce dense, registered perceptual data from a wide field-of-regard for obstacle detection and avoidance, and (3) meet the first two challenges using a sensing and computing payload with the appropriate size, weight, and power for a small UAV, and that is cost effective for operators. The work, now in proof-of-concept phase, has already shown GPS-free, accurate mapping of indoor and outdoor areas in a package that meets the payload constraints of some of the most common quadrotors in the market.

Near Earth (<http://nearearth.aero>) is a privately held, spin-off from Carnegie Mellon University. The company develops comprehensive solutions for manufacturers and users of low-flying aircraft that need to operate in all weather conditions, and in hostile unprepared environments. Near Earth bridges the gap between aerospace and robotics with complete systems that improve safety, efficiency, and performance and expands the types of missions where aircraft are used, enabling manned and unmanned operations. Currently, the company leads key efforts in perception, motion planning, and human-machine interfaces as applied to cutting edge programs developing next generation capabilities for aviation.