NIST, Ensemble, Ezassi, and IU RedLab Announce Winners of NIST UAS Wireless Data Gatherer Challenge

DC, UNITED STATES, April 30, 2025 /EINPresswire.com/ -- Ensemble Consultancy, Ezassi, and the Indiana University RedLab announced the winners of the final phase of the NIST UAS Wireless Data Gatherer Challenge (UAS 6.0), sponsored by the U.S. Department of Commerce's National Institute of Standards and Technology (NIST) Public Safety Communications Research (PSCR) Division.

First Responder UAS Wireless Data Gatherer Challenge

The three-phase competition offered a prize pool up to $760,000 to support the development of advanced uncrewed aircraft systems (UAS) capable of gathering wireless data to improve real-time situational awareness for public safety missions. The challenge called for innovations that integrate expertise across and beyond the UAS ecosystem, including artificial intelligence (AI), radio communications and mapping, Internet of Things (IoT), and cybersecurity. These technologies aim to improve operations in radio-complex outdoor environments where traditional communications infrastructure or satellite connectivity may be unavailable.

Across three progressive stages, the challenge culminated in a live, in-person event where teams demonstrated systems consisting of a single, battery-powered, sub-55 lb. UAS at a potential market value below $20,000. These systems were equipped with hardware, software, and ground control stations capable of:

-Conducting autonomous radio surveys to locate and inspect wireless ground sensors
-Acting as a communication relay device from data collected by sensors simulating environmental conditions such as temperature, humidity, and pressure
-Communicating and transporting data from the sensors to a centralized command server in near real-time for an extended period

In April 2025, the seven finalist teams traveled to Indiana's Muscatatuck Urban Training Center (MuTC), where they navigated a series of test courses and simulated public safety scenarios such as a wildland fire or search and rescue operation. Teams demonstrated their UAS systems' ability

to locate, retrieve, and transmit sensor data under real-world conditions by testing their systems in four scenarios: Positive Aircraft Control, Endurance, Collision Avoidance, and Survey Acuity.

The top-scoring teams for each test received a Best-in-Class award for their performance. Additional Best-in-Class awards were given to the team with solutions that were the most affordable, the most portable, and the most valuable by first responders choice. The NIST judging panel consisting of NIST and public safety experts certified the award of the following NIST-funded cash prizes for this challenge's final stage:

Top 3 Overall Winners:

1st Place – United First Responder Technology Coalition (UFRTC): $100,000
-Best Single Scenario Score – Positive Aircraft Control ($10,000)
-Best Single Scenario Score – Survey Acuity ($10,000)
-First Responders' Choice ($5,000/tied)

2nd Place – Engineering Dynamics: $75,000
-Best Single Scenario Score – Endurance ($10,000)
-Best Affordable Solution ($10,000)
-Best Highly Portable Solution ($10,000)
-First Responders' Choice ($10,000)

3rd Place – Flyt Aerospace: $50,000
-Best Single Scenario Score – Collision Avoidance ($10,000)
-First Responders' Choice ($5,000/tied)

The top three teams shared their innovative approaches and technologies at FDIC International 2025 during a session on "Drones and Autonomous Systems: Expanding the Fire Service Toolbox." Additionally, the top two teams, UFRTC and Engineering Dynamics, will present their winning solutions at the 5x5: The Public Safety Innovation Summit 2025 in Bellevue, Washington, June 3-5, 2025.

The winning teams showcased UAS systems designed for real-time sensor data retrieval in complex communications environments. The top solutions featured extended RF range, long-distance data transmission, and advanced commercially available platforms enhanced with AI, onboard computing, and powerful zoom capabilities. These advanced UAS solutions demonstrated improvements in situational awareness for a public safety mission by giving first responders faster access to critical information, allowing for well-informed decision-making, while operating in challenging, diverse environments.

"When we started our UAS research program using prize challenges in 2018, we examined UAS

energy sources to improve the flight time of a drone carrying a 10-pound payload," said Terese Manley, NIST PSCR UAS Research Portfolio Lead. "Understanding the design trade-offs necessary to support the use case with a drone under 55 pounds with more than 20 minutes of continuous flight time proved difficult. With technological advancements improving in recent years for capabilities such as flight time, autonomy, and stability, we have been able to explore more complex use cases and features that focus on the payload and how a UAS may augment public safety operations in a disaster or for daily use. For example, indoor 3D mapping, image detection, and onboard computations have allowed us to investigate sensor data collection with mapping. The potential for UAS continues to empower innovators worldwide in further pushing technological boundaries for public safety."

The National Institute of Standards and Technology promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards and technology in ways that enhance economic security and improve our quality of life. To learn more about NIST, visit www.NIST.gov.

About Ensemble Consultancy
Ensemble is an 8(a) Small Business Administration-certified digital consultancy delivering best-in-class open innovation, digital transformation, and strategic communication services to U.S. federal agencies. With more than 25 years of combined experience and a well-established approach to prize challenge management, customer service, and program delivery, we fuse our practiced understanding of government needs with highly qualified staff to provide clients faster, more efficient, more comprehensive solutions for meeting complex, mission-critical objectives. For more information, please visit ensembleconsultancy.com.

About IU RedLab
The IU RedLab formerly Crisis Technologies Innovation Lab (CTIL) is a collaboration between the Luddy School of Informatics, Computing and Engineering (SICE) and University Information Technology Services (UITS) to accelerate research and practice on the use of next generation technologies in the front lines of emergency and crisis response. RedLab brings together academia, researchers, entrepreneurs, engineers, data scientists, and innovators together to get innovative solutions rapidly adopted for the greater good. For more information, please visit redlab.iu.edu.

About Ezassi
Ezassi Inc. empowers organizations to accelerate innovation through advanced software solutions and strategic advisory services. By combining cutting-edge AI technology, deep industry expertise, and proven methodologies, Ezassi helps organizations streamline their innovation processes, from ideation to strategic execution. For more information, please visit ezassi.com.

Julia Carlson
Ensemble Consultancy

jcarlson@ensembleconsultancy.com