ETV, New Mexico Colleges Awarded NASA Phase I STTR

The collaborative innovation addresses Industry 4.0 digital transformation initiatives in Building Information Modeling and Facility Management.

ALAMOGORDO, NEW MEXICO, THE UNITED STATES OF AMERICA, May 19, 2021 /EINPresswire.com/ -- Emerging Technology Ventures Inc. ([ETV](#)), an Otero County-based autonomous systems and analytics company, today announced that it along with its research and development partners,

Emerging Technology Ventures logo.

Navajo Technical University ([NTU](#)) and New Mexico Institute of Mining and Technology ([NMT](#)), were awarded a NASA Phase I Small Business Technology Transfer (STTR) contract. Together, the team proposed researching and demonstrating a "Digital Twin (DT) Data Acquisition System for Institutional Facility Management." The innovation addresses Industry 4.0 digital transformation

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initiatives in Building Information Modeling (BIM) and Facility Management (FM), which have created critical demand for up-to-date digitized building assets for practical implementation in predictive, condition-based maintenance (CBM) strategies in FM.

The effort supports NASA search for innovative, transformational, model-based solutions in the area of "Digital Twin" Institutional Management of Health/Automated Decision Support of Agency Facilities that would greatly enhance operational efficiencies, the

quality and robustness and trustworthiness of information, the ability to identify and analyze risks earlier, and the overall velocity and robustness of knowledge transfer and decision making across the Agency. This includes interactions with internal/external partners and supply chain that are made possible through an overarching Model Base "Anything" Digital Twin Enterprise model(s).

The team's proposal uses autonomous, multi-modal sensor systems, including unmanned ground and aerial systems, Internet of Things sensors, and analytics to create DTs representing the near real-time status of the built environment for Facility Management. Cliff Hudson, ETV CEO, stated, "We're excited about this opportunity as it strengthens the collaborative ecosystem that is evolving between NTU, NMT, and ETV. It extends our core KeenAI technology and leverages our recently completed work from our Navy SBIR project for aircraft mission readiness to a new market sector."

The project will bring together multiple programs and facilities at NTU well suited for the application of drones for autonomous facility inspections, stated Dr. Peter Romine, associate professor and Head of the Electrical Engineering program at NTU. The Center for Digital Technologies was founded by Harold "Scott" Halliday in 2012 after spending several summers at NASA Marshall Space Flight Center (MSFC) with a team of NTU students learning how to use laser and white light scanning to produce digital models of NASA equipment and laboratories. Faculty, staff, and students from The Center for Digital Technologies, Metrology, Electrical Engineering, Industrial Engineering, and Building Information Technology will have the greatest immediate contribution to this project.

Drs. Mostafa Hassanalian and Arvin Ebrahimkhanlou of the Mechanical Engineering Department are the faculty members involved from NMT. "This project aims to integrate drone technology for inspecting NASA facilities," said Dr. Hassanalian, who has multiple research projects on the design and demonstration of drones for various applications. "Our challenge is to investigate the feasibility of integrating several emerging technologies, such as drones, internet-of-things (IoT), and digital twin for the purpose of monitoring NASA facilities," said Dr. Ebrahimkhanlou whose research is in artificial intelligence (AI) and structural health monitoring (SHM). "We are excited to collaborate with NASA, ETV Inc., and NTU on this project," said Hassanalian and Ebrahimkhanlou.

According to Jim Reuter, associate administrator for the agency's Space Technology Mission Directorate (STMD), NASA selected 289 small businesses and 47 research institutions to receive Phase I SBIR/STTR funding this year. More than 30% of the awards will go to first-time NASA SBIR/STTR recipients, of which ETV is one. "We are excited to have a large cohort of new small businesses join the NASA family via the SBIR/STTR program," Reuter said.

About Emerging Technology Ventures

ETV is a New Mexico-based, woman-owned, HUBZone small business focused on the development of integrated cross-domain autonomous systems solutions and data analytics in the precision agriculture, critical infrastructure protection, public safety, and Defense sectors. KeenAI, ETV's Core technology, is an agile, extensible architecture that autonomously senses, understands, decides, and acts to deliver actionable intelligence in complex environments. Our architecture is also scalable for human-robot interaction realizing that many real-world applications will employ human-robot teams for task execution. Its architectural framework cues

and drives response mechanisms through multi-modal sensing and fusion, a neural network engine for analysis and decision, and user workflow integration. For more information, visit www.etvamerica.com.

About Navajo Technical University

NTU began as the Navajo Skill Center in 1979 to meet the immediate needs of an unemployed population on the Navajo Nation. In 2013, NTC became NTU - becoming the first university established in the Navajo Nation. In 2018, NTU became the first Tribal College/University (TCU) to be awarded ABET Accreditation for its Electrical Engineering and Industrial Engineering Programs. Today, NTU is one of the premier institutions of higher education in the nation, providing a unique balance between science and technology and culture and tradition. Much of what guides NTU's success is our mission and our identity rooted in the Diné Philosophy of Education.

About New Mexico Institute of Mining and Technology

NMT is a Hispanic-Serving Institution (HSI), public, undergraduate, and graduate-level research university, devoted almost exclusively to STEM disciplines. The fall 2020 enrollment at NMT included about 2000 undergraduate (32% Hispanic and 5% American Native) and 488 graduate students, with 180 full and part-time PhD-level faculty members. NMT has over 20 active Ph.D. and MS-level graduate programs and its graduate instructional program is classified as "Doctoral, STEM dominant" by the Carnegie Foundation for the Advancement of Teaching. NMT was ranked #14 (#1 public university) on the 2020 NSF report of Baccalaureate Origins of US-trained Science and Engineering Doctorate Recipients.

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