NSF Engines: Type 1: An Inclusive Innovation Ecosystem and Economic Development Engine for Transforming North Central Texas and Southern Oklahoma Logistics Industry.

Award number 2301952

Dr Khaled Abdelghany, khaled@lyle.smu.edu Dr Terrance Pohlen, pohlen@unt.edu Dr Andrey Voevodin, andrey.Voevodin@unt.edu Eric Griffin, egriffin@dallaschamber.com



Dr Gautam Das, gdas@cse.uta.edu Michael Gaffney, mgaffney@se.edu LaKesha Raynor, Iraynor@DallasCollege.edu Victor Fishman, victor@tradfw.com James Grimsley, jgrimsley@choctawnation.com **NSFENGINES** DEVELOPMENT AWARD

What exactly is an engine?

- A regionally-centered multi-sector coalition of partners and stakeholders across industry, academia, government, nonprofits, civil society and communities of practice, all working together in a topic area of regional relevance, as well as national and societal significance, and led by a full-time CEO to:
 - Drive R&D innovation to achieve regional economic growth
 - Build an inclusive innovation ecosystem that will thrive for decades to come





Vision

To be the world leader in logistics innovation.

We will achieve this vision by:

- Advancing autonomy, electrification, digital logistics, and workforce development across the supply chain
- Capitalizing on our strategic position
 as North America's distribution center
- Bringing together the university, corporate, entrepreneurial, venture capital, and government stakeholders needed to make this vision a reality



Type 1 and 2 Engines

Type 1 – award to our team in May 2023

- Development or "planning" grants
- \$1M each
- Duration 2 years
- 44 such grants were awarded earlier this spring out of 700 applications

Type 2

- Full grants Proposal is due Spring 2025
- Up to \$160M each
- 10 years

NSF Engines Development Awards

Explore the Map





Why logistics?

The TEXOMA Region (TR): The service region includes North Central Texas and Southeastern Oklahoma bordered on the South by the Dallas-Fort Worth (DFW) metroplex and on the North by the 10½ counties within the Choctaw Nation.

TR is the largest inland port and one of the most significant bottlenecks in our nation's freight system, demanding a transformative change in logistics and supply chain innovation for long-term resiliency and agility.



- Over 889,687,000 tons of freight transit the region with value of \$1.1 trillion/year
- Over \$57 billion in logistics spend in the region
- TEXOMA region is employing over 450,000 workers in logistics with a continuing labor shortfall
- Largest inland port in North America, fourth largest in intermodal, second largest in warehousing



Logistics Innovation



Logistics innovation ecosystem: Key stakeholders

An interconnected set of logistics institutions within a geographic region whose connectivity allows each organization and researcher to leverage the knowledge, resources and specialized capabilities of others institutions and individuals.





Key Stakeholders

Nonprofits: Worlds.io Entronix North Texas Innovation Alliance GasItUp/ChargeItUp Galaxy UAS Texas Trucking Association BlueYonder Unmanned Experts **Dallas Regional Chamber** Interstate Traveler Co/ Anatak Southern Oklahoma Development Assoc. Hydrogen Superhighway Hermes North American Strategy for Competitiveness TruWeather Solutions Autonomy Institute (NASCO) Startup Runway Tangerine Texas Research Alliance Avianco America's Future Series Dallas College Center for Advancing Innovation Southern Methodist University MassChallenge Southeastern Oklahoma State University Entrepreneur Perot Jain University of North Texas **Brazos Innovation Partners** University of Texas—Arlington Interfaces Ventures Austin College Dallas Regional Chamber Innovation Ecosystem Choctaw Nation of Oklahoma **Risk Capital** University Stakeholder North Central Texas Council of Governments Other stakeholders: Model Best by Southwest National Security Innovation Council Southern OK Development Association Frisco Independent School Dist City of Dallas Gordon England, former Workforce Solutions of Greater Dallas 盦 SECNAV and DepSECDEF Dallas Workforce Czar Lee Levy, Maj Gen, USAF, ret Dallas County and Dallas County Public Worksemment Corporate Stoke Toyota Motors NA NT Logistics DFW International Airport WSP National Renewable Energy Lab (NREL) Titus Transportation Inland Port of South Dallas County Bell Flight Oncor Peterbilt Motors Hillwood Properties, a Perot Company Port of Plaquemines Parish, Louisiana Baylor Scott & White Medical AECOM Denton Municipal Electric Lockheed Martin **BNSF Railway** Frisco EDC Microsoft Denton Economic Development Partnership



Proposed Type-2 Engine Structure

Governance board provides stability and specific directions based on long-term view: Industrial real estate, major corporations, IP lawyers, Federal agencies, EDCs, THECB



Advisory board provides input

Investment committees evaluate pre-screened innovation proposals and determine which to fund: venture capital, corporate venture capital, NSF (universities), government agencies

How you can participate?

- a. Identify what you believe are the major challenges logistics executives/inland ports will confront over the next 2 to 15 years?
- b. Describe the innovations needed to address and overcome these challenges.
- c. Collaborate on one the Engine's governance or advisory boards
- d. Recommend other key stakeholders to participate in the Engine and innovation development
- e. Contact me at <u>pohlen@unt.edu</u> or one of the other key personnel developing the Texoma Innovation Engine



Discussion questions

- a. What are your current innovation needs
- b. What are your future innovation needs in the areas of:
 - a. Autonomous Systems
 - b. Electrification
 - c. Digital Logistics
 - d. Workforce development
- c. What are the needs of your community?

