

Application Title: Innovation Lab for Secure and Resilient Supply Chains

Lead contact for RDF Application:

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Key Participating Units:

* College of Engineering	* College of Agriculture and Life Sciences	* Mays Business School
* Health Science Center	* Texas A&M Center for Applied Technology	* Secure America, Mfg USA Institute
* College of Architecture	* Bush School of Government and Public Service	* College of Veterinary Medicine and Biomedical Sciences
* College of Pharmacy		

Anticipated Request Amount (\$): \$1,914,750.00

Overall Scope/Objective: The request presented will provide for stimulation funds for the development of the Innovation Lab for Secure and Resilient Supply Chains (iSERS) to be located within the RELLIS campus. iSERS will fill pressing gaps for interdisciplinary research efforts across TAMUS by providing **the physical proving ground for all SC technologies**. iSERS embraces from its onset a transformative multidisciplinary paradigm; it will provide a reconfigurable lab for designing, testing and evaluating supply chains (SCs) for security, agility and resilience while focusing on four (4) verticals critical for Texas A&M, the state and the US: (i) **defense**, (ii) **food**, (iii) **pharmaceuticals**, and (iv) **SCs for pandemics, disaster preparedness & response**. The **Covid-19 pandemic** is a stark example of today’s VUCA (volatile, uncertain, complex, and ambiguous) environment and it will reshape forever global SCs; companies and federal agencies alike, are realizing that efficiency cannot be the sole economic virtue as it often comes at the expense of resilience. The US is already reassessing its SCs to ensure the supply of critical lifesaving equipment (personal protective equipment/PPE, medicals supplies, etc.) and the integrity of its national security thus accelerating the repatriation of relevant production. The Lab will further support the development of digital SC twins, digital dynamic, real-time and time-phased representations of the physical often multi-enterprise SC. In a nutshell: iSERS will be developing the necessary **science-based strategies that industry and government need to implement in the disruptive VUCA post-Covid 19 era**.

Research Infrastructure: iSERS will be comprised of a 5,000-sq. ft. **reconfigurable testbed to design and assess SC resilience, agility and security** by applying AI, IoT, automation, autonomy, 3D printing, and cloud-based and Blockchain technologies. It will consist of both traditional and cutting-edge automated warehouse and distribution center modules. These will contain necessary storage, retrieval, transport, conveyance and materials handling equipment to serve as accurate testbeds for SC research. It will further include a research hall for **strategic SC network design & testing, SC mapping, simulation, big data-driven decision support models, optimization and IT dashboards**.

Units that will benefit: iSERS represents a strategic investment for Texas A&M as it will complement, add value and unleash new opportunities for other assets of TAMUS while further increasing the research capabilities of researchers across the BCS campuses. Units that will benefit include: (i) **College of Engineering**; (ii) **Mays Business School**, (iii) **AgriLife**; (iv) **Bush School of Government and Public Service**; (v) **Health Science**; (vi) **Global One Health/College of Veterinary Medicine & Biomedical Sciences**; and (v) **School of Pharmacy**. iSERS will further support **two key initiatives of TAMUS**: (i) the **MOU with the Panama Canal Authority** (SCM, Blockchain, and emergency management & training for pandemics); and (ii) the **Texas Division of Emergency Management (TDEM)**. iSERS will also enhance the following initiatives within RELLIS by providing end-to-end innovation proving ground SCM capabilities: (i) the manufacturing testbeds of the *Secure America* Manufacturing USA Institute; (ii) the vertically integrated Hypersonics Production Accelerator; and (iii) the various assets of the Bush Combat Development Complex.

Enhancing external funding: iSERS represents a strategic investment for TAMU as it will benefit researchers across departments and colleges, expanding their research by embracing a holistic end-to-end SC paradigm. It will serve as a distinct enticement for state and federal agencies, industry and academic collaborations (discussed throughout the rest of the proposal), thus promoting public private partnerships across its four verticals. Collaborations with industry could also lead to equipment donations for testing, evaluation and training proposes (e.g. on-going discussions with *Amazon*).