

Texas Advanced Cyber Tech & Innovation Collaborative (TACTIC)

Designation Application

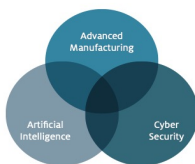
Introduction: Advances in Artificial Intelligence (AI), Machine Learning (ML) and Data Analytics occur daily, changing how we train, educate, work, live and play. The use of sensors, Internet of Things (IoT) devices, data analytics, AI, and ML necessitate the integration of essential industries such as transportation, energy, communication, healthcare, finance, education, public safety, and governance, creates interconnected, smart manufacturing and smart communities. Technology, then, must be considered infrastructure and must include cyber-ready security. The most significant challenge facing a rapid and broad adoption is the threat of cyber breaches and compromised cyber security. With critical infrastructure systems and industries of national significance, the Greater Southwest Houston Region (GSHR) is a prime area for the creation of a Technology Hub and a large, well-trained, tech savvy workforce.

We propose the creation of The Texas Advanced Cyber Tech & Innovation Collaborative (TACTIC) whose goal is to create a regional model of a coordinated Technology Hub, advancing and protecting the capacities of our region that can serve as a national and global model. The objectives of TACTIC are to develop technological enhancements, create new technology, provide AI, data analytics and cybersecurity training and education and workforce upskill to ensure a high-skilled workforce. TACTIC will provide incentives and opportunities for high tech entrepreneurs and attract national and global industry partners to our region to create and grow equitable, globally beneficial, profitable jobs that will remain in the United States (US) and protect our nation.

Region: TACTIC includes portions of the Houston-The Woodlands, Sugar Land, TX Metro Area (Brazoria, Fort Bend, Waller, portions of west Harris counties) and Wharton County, which is divided into both the El Campo micropolitan statistical area, and the Houston-The Woodlands, Sugar Land combined statistical area. By focusing on the GSHR, TACTIC gains geographical diversity (urban, suburban, and rural communities), access to key industries, protection of critical infrastructure (transportation systems, communication networks, water, and school systems), and active inclusive community engagement. See Infographic Page 2.

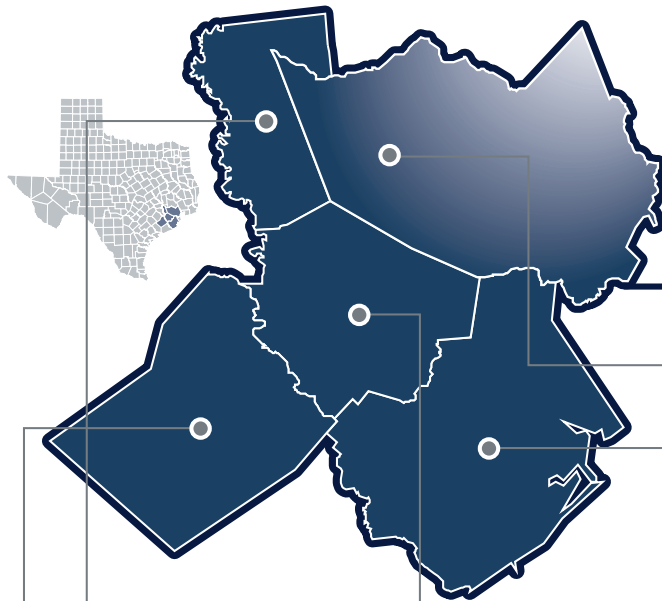
Technologies Considered: Based on the industries identified; transportation, energy, communication, healthcare, finance, education, public safety, and governance, combined with our supply chain opportunities and the unique geographical diversity of our region, creates interconnected, smart manufacturing and smart cities. TACTIC spotlights the intersection of Advanced Manufacturing, AI, and Cybersecurity. See Infographic Page 2.

Entities: Representatives from all five required entity type are represented in our consortium. See Infographic below.



TEXAS ADVANCED CYBER TECH & INNOVATION COLLABORATIVE

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ENTITIES WITHIN THE REGION

Institutions of Higher Education:
University of Houston (UH)*, University of Houston Victoria (UHV) at Katy*, Houston Community College (HCC) Northwest and Southwest*, Wharton County Community College (WCJC)*

**Hispanic-serving and Asian-American and Native American Pacific Islander-serving institutions, and Texas State Technical College*

Local Government:
Fort Bend, Brazoria, Waller, Wharton and west Harris Counties

Industry Groups:
AT&T, TanCHES Global Mgmt. Inc., Union Pacific, Kansas City Southern, Port Freeport

Economic Development

Organizations:
Fort Bend Economic Development Council, Katy Economic Development Council, West Houston Association, Houston-Galveston Area Council

Workforce Training Organizations:
Workforce Solutions

ASSETS OF HIGHER EDUCATION INSTITUTIONS

Houston Community College Northwest & Southwest campuses, both offer Cyber Security Analysis micro-credential training and education programs, with the SW campus housing the Advanced Manufacturing Center for Excellency

Texas State Technical College, with its Military Friendly School designation, offers programs for cybersecurity and digital forensics

UH at Sugar Land's Division of Technology within the Cullen College of Engineering has over 4,000 diverse students. By 2025, UH at Sugar Land will have two technology buildings to house all technology programs

UH Victoria at Katy's Computer Information System's degrees is an interdisciplinary program focusing on business and computers

Wharton County Junior College has four locations in Wharton, Matagorda and Fort Bend counties offering programs in Information Security Analysis Specialty

WALLER COUNTY

Key Assets:

- Strategic location along major transportation routes facilitating the movement of goods and people
- Adjacent to the west side of Harris County and has attracted numerous international businesses to relocate their distribution centers and national headquarters in the area including:
 - Grundfos, the world's largest water pump manufacturer,
 - Daikin/Goodman, a global Fortune 1000 company which manufactures residential and commercial HVACs

WHARTON COUNTY

Key Assets:

- "Texas Golden Triangle" between Austin/San Antonio, Dallas/Fort Worth, and Houston/Beaumont
- The fastest growing region in the US
- Strategically located on the I-69 corridor, the primary US-Mexico-Canada trade route
- Well known for its thriving farming and ranching sectors

FORT BEND COUNTY

Key Assets:

- One of the most rapidly growing counties in the US
- 50% of the county is still relatively undeveloped
- Benefits from land adjacent to rail lines, major highways, three Class I Rail lines, two US Interstates, and the Sugar Land Regional Airport facilitating efficient transportation
- Boasts a diverse and skilled workforce, with a wide range of industry opportunities

BRAZORIA COUNTY

Key Assets:

- Economy is driven by medical, biotechnology, manufacturing industries, major petrochemical plants, agriculture industry, and the Port Freeport—the fastest growing port in Texas

WEST HARRIS COUNTY

Key Assets:

- Offers a robust infrastructure, including access to major highways, rail lines, and George Bush Intercontinental Airport
- Home to the Houston Energy Corridor and Westchase District

Regional Innovation Officer (RIO): TACTIC will conduct a national search for its RIO. The ideal candidate will have the needed education, work experience, innovation mindset, proven track record of managing successful projects leading to inclusive, positive regional economic impact. Responsibilities include at a minimum:

- Creating a comprehensive communication strategy to ensure effective interchange of ideas and solutions amongst consortium members and partners.
- Directing the structure, management, scheduling and planning of consortium workshops.
- Project management.

Environmental and Climate Responsibilities: Energy efficiency is fundamental to the coalition's operations and can be achieved through the adoption of energy-efficient hardware and optimization of data center cooling systems. TACTIC will require responsible management of electronic waste and will promote responsible sourcing and procurement practices to ensure vendors and partners adhere to ethical and sustainable business principles. TACTIC will account for current and future weather and climate-related risks, such as hurricanes and coastal flooding by implementing a resilient infrastructure and engaging the community on strategies to mitigate the impacts of these risks.

Equity: TACTIC is committed to expanding the number of high-skill, high-paying jobs and ensuring that the economic benefits of the project are shared by all in the region. Utilizing census and free/reduced school lunch eligibility data, TACTIC will identify individuals from underserved and underrepresented communities, veterans, and non-resident-born individuals, to create specific recruitment initiatives and incentives. Through a multifaceted approach, TACTIC will prioritize the following key strategies to ensure Advanced Manufacturing, AI, and Cybersecurity training and education flows from school districts through the STEM workforce pipeline to institutions of higher education:

- collaborations with regional school districts
- skill development, mentorship, scholarship support and training programs
- job creation efforts and job placement programs
- attraction of high-tech companies to the region

Technology-Based Potential of the Region and Global Competitiveness: The global advanced manufacturing market is projected to reach \$228 billion by 2027, an 18.5% increase over the next five years¹. Similarly, the global AI market is expected to reach \$190.61 billion by 2025². The increasing adoption of AI technologies across various industries is driving this market expansion. The GSHR ranks number one in the region and state for Innovation Index scores and 27th in the nation³. Its commitment to cultivating a technology ecosystem coupled with incentives for tech companies and a focus on emerging technologies demonstrates dedication to fostering innovation. These efforts enhance the region's capacity to attract local and international businesses and maintain a competitive edge in the global market. By harnessing technology to improve rural, suburban, and urban infrastructure, energy efficiency, transportation, and public services, the region showcases its readiness to adapt to evolving industry demands and create sustainable, technologically advanced communities. This forward-thinking approach positions the region as a leader in leveraging innovation for societal and economic growth. Fort Bend County had a 30% increase in manufacturing establishments over the past ten years⁴. Our ambitious goal is to increase the number of advanced manufacturing and affiliated

establishments by 50% in the region and train 28,000 (approximately 10% the regional K-12 enrollment) high tech skilled employees with an average salary of \$74,000 within the next ten years⁴.

Regional Assets: See Infographic Page 2.

Role of the Private Sector: The private sector's knowledge and experience will bridge the gap between research and practical application, ensuring that research findings are effectively translated into solutions to enhance local economic competitiveness. The private sector's ability to identify market needs, develop products and services, and navigate the business landscape will also be instrumental in bringing cutting-edge technologies and innovative solutions to the region. In addition, by providing necessary resources, the private sector will support infrastructure development and job creation. Their financial backing will enable the implementation of projects and the advancement of key sectors, such as technology and cybersecurity, which require substantial investment for research, development, and implementation.

Regional Coordination & Partnerships: As the lead, Fort Bend County facilitates collaboration and coordination among the consortium members. It acts as the central point for information exchange, decision-making, and resource allocation. The county's strong economic base and strategic geographical location make it an ideal hub for the consortium's activities. Members bring their unique expertise and resources to the consortium's mutual goals. This model fosters effective communication and cooperation among the members. It supports streamlined coordination, efficient use of resources and shared expertise, and ultimately leads to an impactful approach towards advancing tech-based initiatives, innovation, and economic competitiveness in the GSHR, the US and the world.

TACTIC will build from existing initiatives:

- Fort Bend Technology Taskforce, formed in 2019, supports regional tech companies.
- The Fort Bend Chamber of Commerce's annual Tech Expo.
- The Central Fort Bend Chamber's Healthcare, Tech and Manufacturing Days provide educational tours for over 900 students annually.
- UH's \$10M US Department of Transportation grant for the creation of CYBER-CARE.
- UH's Center for Information Security Research and Education.
- HCC's National Centers of Academic Excellence in Cybersecurity (NCAE-C).
- Workforce Solution's training and education programs for scholarship support training.

Equity and Diversity: Fort Bend County's population is the most racially diverse in the country - 32% Anglo, 25% Hispanic, 21% African American, and 21% Asian⁵. TACTIC will prioritize mirroring Fort Bend County's diverse demographics to foster inclusive community engagement through outreach programs, workshops, and partnerships with community-based organizations. TACTIC will also promote supplier diversity, by utilizing HUB vendors, promoting economic inclusion, equal access to resources, information, and equitable labor force participation by providing opportunities for businesses from underserved communities not only to participate in business contracts, but also, to be involved in decision-making processes of the consortium.

Composition and Capacity of the Regional Workforce: The counties included in TACTIC have a regional laborshed of over 3.4 million people and anticipate a significant population growth by

2040.^{6,7,8,9,10} To address the growing workforce needs, TACTIC will create a STEM workforce pipeline by collaborating with the local school districts' Career and Technical Education (CTE) programs. These school districts currently serve approximately 283,620 students, graduating thousands of students each year, creating a significant workforce pipeline¹¹. Leveraging partnerships with educational institutions and implementing early college programs, TACTIC provides high school students with the skills necessary for jobs in AI/ data analytics and cybersecurity. Creating opportunities to gain industry-specific expertise and earn college credits. As consortium members, Workforce Solutions will continue to connect with employers with job-ready employees ensuring our region is a great place to work and do business.

Innovative “Lab to Market” Approach: TACTIC will develop an innovative lab-to-market approach to accelerate the transformation of Advanced Manufacturing, AI and Cybersecurity research and ideas into market-ready solutions. The process begins with the establishment of the Advanced Manufacturing and Innovation Lab located at the UH Industry Partnership Zone in Sugar Land, TX. The lab will serve as a collaborative space where stakeholders explore, develop, and refine advanced manufacturing and AI concepts, provide access to state-of-the-art resources, and expertise necessary for experimentation, prototyping, and testing of novel cybersecurity solutions. The lab will be outfitted with the latest, commercially available communication technologies such as Fiber, 5G, and Edge computing to facilitate rapid research and seamless market deployment. To support commercialization, TACTIC will provide resources and guidance for intellectual property protection, business model development, market research, and regulatory compliance. This approach bridges the gap between research and market and enhances smart advanced manufacturing, AI and cybersecurity readiness and resilience. Our supporting evidence of this method is the UH Technology Bridge, which has created over 350 student businesses and launched 49 spinouts⁶.

Impact on Economic and National Security: TACTIC's success in becoming globally competitive in the Advanced Manufacturing, AI, and Cybersecurity core technologies area aligns with national priorities and has multiple positive implications. First, in terms of climate change, TACTIC will focus on digital twinning. During Hurricane Harvey, consortium member TanCHES was able to create a digital twin of the City of Richmond's 911 system ensuring no disruptions of emergency management services. Secondly, by strengthening supply chain resilience, TACTIC helps address the vulnerabilities exposed during the COVID-19 pandemic. By fostering local innovation, production capabilities and regional assets, TACTIC reduces dependence on foreign supply chains, ensuring a more robust and secure domestic supply network. Thirdly, TACTIC's emphasis on accelerating the pace of innovation supports national goals of staying at the forefront of technological advancements. By fostering a collaborative ecosystem and promoting R&D activities in AI and cybersecurity, we enable the rapid development and deployment of cutting-edge technologies, ensuring the US maintains its competitive edge globally. Finally, TACTIC's success in creating a positive regional economic effect is crucial for job creation, attracting investment, and driving economic growth.

Texas Advanced Cyber Tech & Innovation Collaborative is well-positioned in a diverse community with vast technological expansion potential to strengthen regional and national economic security and sustainability, leading to US job growth and global competitiveness.

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