0-6902: Texas Technology Task Force

Background

This phase of work on the Texas Technology Task Force project further positioned Texas as a leader in mobility and innovation. In alignment with the mission and goals of TxDOT, the Task Force updated the Emerging Technology Portfolio, broadened its stakeholder outreach to new heights, and delivered several strategy and innovation publications. In addition, the Task Force was engaged with the USDOT Smart City Challenge, providing expertise to the City of Austin's team and working with TxDOT to launch the Texas Innovation Alliance as an action network of regional mobility partners and research institutions. Deliverables such as the Emerging Technology Portfolio, white papers on critical technologies, and the Strategy and Innovation Plan will continue to provide unparalleled value to TxDOT and the state. In its next phase, the Task Force will focus on enabling and integrating technology and the core services of People, Portfolio, and Plan will remain.

What the Researchers Did

The research team completed the following tasks as part of its mission to identify new, transformational technologies that have the potential to change transportation in the medium to long term. The research team conducted Task Force Meetings to provide TxDOT leadership with trusted, independent guidance related to emerging technologies. They evaluated and prioritized critical technologies through white papers, updated the Emerging Technology Portfolio, and launched the Texas Innovation Alliance. The research team updated Task Force membership, bringing new expertise on board to advise TxDOT on newly identified technologies. The research team presented at industry and research conferences, sharing the success of the Task Force

and soliciting informal feedback on operations and discovering emerging technologies. The Communications Strategy was developed to foster a culture of innovation, develop and strengthen partnerships, and differentiate Texas as a leader. The Strategy and Innovation Plan was enhanced to highlight Texas as a leader, advance innovation by partnering with industry, and evaluating and sharing lessons learned during the process. Finally, the research team created a Transition Plan to facilitate knowledge transfer and goal alignment as the Task Force moves into its next phase.

What They Found

The research team has broadened collaboration with other agencies, elected officials, industry, and research institutions, building awareness of emerging technologies, assessing potential applications for implementation, and identifying opportunities for Texas. The research team conducted an in-depth discussion around unmanned aerial vehicles (UAVs), published a

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white paper on potential applications, which in turn generated discussion in TxDOT's Aviation Division to advance UAVs for the purpose of rail and bridge inspection. Building upon the momentum of the USDOT Smart City Challenge, the Texas Innovation Alliance was formed, bringing local, regional, and state decision-makers together to address the most pressing transportation problems. The Strategy and Innovation Plan was published, highlighting ways in which TxDOT could continue its leadership position nationally, partner with industry to advance innovation, and develop performance measures to share the results of its research. The Emerging Technology Portfolio was updated, refreshing the work on next-generation vehicles as well as information and communications, and including others such as blockchain, artificial intelligence, hyperloop, and virtual/augmented reality. The team evaluated critical emerging technologies via two white papers. The first, *Texas Economic & Environmental Sustainability*, recommends considering economic and environmental interdependencies in charging infrastructure, policies, and fleets to encourage economic development across all sectors. The second, *Improving Freight Operations in Texas*, recommends that TxDOT partner with industry to deploy 5G and DSRC connectivity, streamline procurements, reduce port bottlenecks, and optimize urban delivery. The research team found that the Task Force is vital to the success of TxDOT and Texas to prepare the state for the future of mobility by assessing emerging technologies and identifying practical applications for Texas.

What This Means

If pursued, the actions outlined here will help TxDOT remain at the forefront of technology, increasing safety, reliability, and efficiency for all Texans. The UAV program demonstrates the ability of the Task Force to bridge discovery into implementation, identifying an emerging technology and developing an application for TxDOT. The white papers facilitate knowledge sharing and building institutional expertise throughout TxDOT leadership, divisions, districts, and other stakeholders. The Texas Innovation Alliance serves as an entrepreneurial implementation mechanism that aligns local, regional, and state priorities. The updated Emerging Technology Portfolio identifies new technologies, raising them to the attention of TxDOT leadership and evaluating viable technologies for real-world deployments. The Strategy and Innovation Plan helps TxDOT remain a forward-thinking agency, plan for the coming years, and is an integral part of technology discovery at TxDOT.