TEXAS TECHNOLOGY TASK FORCE

Executive Session and Meeting Minutes
December 7, 2023

11:00 AM | EXECUTIVE SESSION: Whitepaper Topics and 2024 Planning – *Task Force Membership*

- TxDOT and Task Force members identify three priority research topics to guide 2024 whitepaper development, including 1) Digital Twin technology, 2) Ensuring innovation across Texas using broadband and digital mobility, and 3) On-Demand transportation services.
- TxDOT and Task Force members acknowledge the importance of battery recycling and ongoing seaport investments as two topics important for further research, though not a current priority.
- Task Force members propose the creation of an event dashboard to be used by Task Force members and audience participants as a method of sharing ongoing TxDOT priorities, updates, and discussion needs.

TASK FORCE MEETING

Objectives:

- Identify the increasing role robotics play in the logistics ecosystem from warehouse movement to delivery.
- Outline the shifting demographic and user needs of the Texas transportation system now and in the future.
- Consider the innovative technologies and systems Texas seaports are adopting to facilitate growing demand.

Key Takeaways:

- Industry investments in automated and robotic systems continue to grow organically across portions of the supply chain, primarily in response to inefficiencies and pressure points that would otherwise require substantial long-term infrastructural investments.
- As the Texas population continues to quickly change, it is important to ensure that a representative set of current and future voices are present upon planning and implementation of new technologies and systems.
- The Port of Corpus Christi is projected to continue increasing the volume of goods traded, faced with the need for long-term infrastructural upgrades. The Port is faced with moving larger volumes of goods with less infrastructural capacity, a major opportunity for innovative technology solutions.

1:00 PM | Kickoff – Darran Anderson*, TxDOT and* Andrea Gold*, UT Austin*

- Andrea Gold, UT Austin, and Darran Anderson, TxDOT, kick off the meeting by welcoming new and returning participants.
- Darran shares updates on federal policies and programming, including the Digital Infrastructure Strategy working in collaboration with Federal Highways on I-35 and I-10 projects, a recent V2X summit in southeast Michigan, and correlating V2X grant applications due January 17th and February 2nd.
- 13 local Texas agencies were awarded planning grants as part of USDOT's Safe Streets and Roads for All (SS4A) Discretionary Grants.
- The Texas Advanced Air Mobility Task Force is set to meet on December 14th, considering opportunities to advance deployments and attract industry operation in Texas.
- Darran honors Tom Lambert, a retiring Task Force member, and applauds his impact and influence within Houston METRO and across Texas.
- Darran outlines the agenda items for the day's discussion, recognizing the efforts of the UT Austin team in bringing together the knowledgeable speakers present today.

- Andrea Gold reiterates the mission of the Task Force, discusses goals and motivations for the day's topics, and recognizes TxDOT's efforts in assisting the coordination of the Task Force meeting.

1:15 PM | Robotics and the Evolving Logistics and Supply Chain Ecosystem

Moderator: Paul Evans, *SwRI*

Paul opens the conversation by outlining the dynamic role robotics play in the supply chain, ranging from processing to sorting and transport; noting that the use of robotics can look very different in each of these links. Paul continues by discussing the impact robotics and automation may have on the workforce, identifying employment or training models that may serve as opportunities to seamlessly transition the adoption of these technologies. The conversation concludes with discussions on what role TxDOT can play in planning for and managing this transition towards the use of robotics in an ecosystem as expansive, and transportation dependent, as the supply chain.

Rich Steiner, *Gatik*

- Inherently, the supply chain is a fragmented industry. Meeting the needs of the dramatic growth of goods movement in recent years requires more trucks, more trips, and more drivers. Automation of the middle-mile can soften strain from excess demand within the existing supply chain infrastructure capacity.
- Building the trust of industry partners with the use of autonomous systems requires continual engagement, ongoing information, and training sessions with stakeholders, within both the private and public sectors.
- Rich notes the concerns regarding workforce impacts resulting from increased automation. He recommends actively recruiting from within the trucking sector as a method of harnessing their industry expertise, and notes that human oversight is still a core function of autonomous trucking technology.

Daniel Covarrubias, *Texas A&M International University*

- The Laredo port of entry oversees over 20,000 freight truck crossings every day. The American and Mexican port authorities utilize complex digital infrastructure and technology that is not interoperable, limiting potential system efficiency.
- Primary innovation at the port of Laredo includes digital identification and processing capabilities. The use of robotics may serve as an opportunity for automating drayage as a method for expediting crossing times and use during off-peak hours.
- Currently, electric freight vehicles comprise very few of the port crossings each day largely due to limitations in range for long-haul vehicles. As electric vehicles are resold by larger companies to drayage companies, the use of electric vehicles may become more frequent.
- AI technology does not pose a threat for workforce replacement, but rather as a training opportunity for current employees to integrate AI applications within existing tasks.

Mitchell Rodriguez, *Fox Robotics*

- Industry operators are increasingly eyeing adoption of warehouse robotics and automation in response to labor shortages and the increasing competition across the industry following investments in these technologies that are improving efficiency.
- For an agency looking to invest in this technology, it is crucial for OEMs to build trust with stakeholders to invest in Robotics as a Service (RaaS) on lease rather than solely via major initial capital investments.
- Mitchell notes the existing prominence of electric warehouse forklifts and acknowledges an increasing industry push towards hydrogen fuel adoption.
- Warehouse robotics envision a "co-bot" future rather than one that is fully autonomous, where existing employees are upskilled to understand and run alongside the automated systems.

2:15 PM | Needs of a Chancing Texas: Preparing the Next Generation Mobility System

Moderator: Dottie Watkins, *CapMetro*

Dottie opens the conversation by describing the rapid demographic changes Texas is experiencing, and that are projected, including an average older population, different races, and concentrated urban population centers. The discussion begins by reframing what transportation is thought of and what role technology can play in preparing for current and future mobility users. Panelists next consider methods for developing advanced systems that can uplift users that might experience the greatest benefits. Next, when considering the demands of urbanization the panelists note the importance of a multimodal mobility network, one that can build from TxDOT's developing statewide multi-modal plan. This panel concludes by further considering opportunities to implement effective systems that can make the biggest impact on current and future Texans.

Camille Williams, *Transportation Council*

- At the most basic level, sidewalk and construction disruptions can impose some of the most challenging mobility hurdles. Technology can be harnessed with the use of advanced alerts or notices of these mobility disruptions to further integrate and personalize the mobility system for users.
- Transportation influences almost every aspect of people's lives and is inherently integrated into employment, housing, childcare, etc. Transportation and advanced technologies must coordinate and integrate with these other systems to build a resilient and successful mobility system.
- It is important to develop technologies thoughtfully and with users in mind by connecting with stakeholders and beneficiaries to support community-based decisions. Technology needs to be enacted and developed in a way that promotes fair outcomes for its users.

Tara Goddard, *Texas A&M University*

- In considering future population changes, it is important to reflect on the fragile points within Texas's existing infrastructure. For example, a single crash on a rural highway can disrupt vehicle flow for miles and hours.
- It is important for transportation agencies to plan with a regional approach in mind, leveraging multi-modal infrastructure to integrate across city and county lines as urban regions continue to grow in population and scale.
- Transportation agencies should integrate the practice of using the mobility network and the multi-modal systems as a core practice of workplace activities.

Kelly Porter, *City of Fort Worth*

- A stable and reliable broadband connection is one of the best ways to ensure that current and future Texans have access to services and social connections and should be thought of as a public utility.
- In the face of continual emerging transportation technologies, transportation agencies should prioritize practicality, even when innovative solutions are simple or low-tech.
- It is vital to ensure that an agency is training and hiring staff that are representative of the changing population.
- As Texas's urban populations continue to grow, TxDOT should increasingly coordinate with local and regional land-use planners to develop systems that integrate into existing and planned multi-modal transportation ecosystems.

3:30 PM | The State of Texas Ports: Current Trends and Tribulations – Leslie Ruta, *Port of Corpus Christi*

- The Port of Corpus Christi is the third largest port for crude oil exports in the world and has doubled the size of its staff since 2016.
- Growth in the movement of goods at the Port of Corpus Christi is expected to continue into 2035, and then to plateau at that volume for at least the following ten years.
- Fog is a major challenge for port operations, resulting from the aging infrastructure and lack of navigation systems in place. Further, traffic congestion from trucks dropping off agricultural products is a major challenge that is undergoing improvements via intelligent transportation system equipment to manage and schedule truck drop off times.
- The Port of Corpus Christi is faced with challenges from aging infrastructure, like docks and cargo handling equipment. Federal grants increasingly support infrastructural upgrades.
- Federal Build America, Buy America requirements pose challenges to acquiring infrastructure that is not made domestically, which would significantly increase the time and expense compared to purchasing equipment that is already made internationally.

4:00 PM | Closing Remarks & Adjourn – *Darran Anderson, TxDOT & Andrea Gold, UT Austin*

- Darran remarks on the great discussions that both panels held and expressed gratitude for each speaker. These discussions display the importance of Texas as an innovator and as a stronghold of transportation and mobility conversations.
- The next Task Force meeting will be held on February 27th at the Port of Corpus Christi, and today's meeting recording and minutes will be released in the coming days.
- Darran again thanks speakers, Task Force members, TxDOT, and the UT Austin team, and adjourns the meeting for the general audience.