Attendees
TxDOT Greer Building | 125 E 11th St. | Austin, TX
December 3rd, 2018

James Kuhr (TxDOT)
Rocio Perez (TxDOT)
Phillip Hempel (TxDOT)
Stacey Strittmatter (TxDOT)
Ted Trepanier (INRIX)
Bryan Mistele (INRIX)
Rep. Celia Israel (Texas House)
Josh Johnson (SwRI)
David DiAngelo (Milligan Partners)
Kevin Pete (TxDOT)
Tom Black (Gartner)
Rudy Vargas (Verizon)
JD Stanley (IoT/AI)
Christopher Poe (TTI)
O. D. Montán (Verizon)
Jon Barfoot (Verizon)
Laney Schorp (Via)
Pamela Galban (Verizon)
Otto Hernandez (Verizon)
Jeff Dailey (CTRMA)
Mia Zmud (CTRMA)
Mike Heiligenstein (CTRMA)
Casey Wells (TxDOT)
Loretta Brown (TxDOT)
Terry Martinez (TxDOT-SLA)
Melanie Alvord (TxDOT-FED)
Joe Magruder (OOG)
Nick Wood (TTI)
Torii Slezinksy (Verizon)
Patrick Targun (PackDeck)
Russ Brown (Verizon)
Jonathan Sierra-Ortega (Transportation Committee)
Chris Nordloh (TXDPS)
J. Sam Lott (TS CTTR)
Peter Smith (TxDOT)
Roger Beall (TxDOT)
Sonia Gaillard (OOG)
Trevor Theunisen (UBER)
Chris Miller (UBER)
Kristal Palmer (Verizon)
Blair Who
James Huang (TxDOT)
Mike McElroy (TxDOT)
Greg Rodriguez (Best Best & Krieger)
Paul Wageman (Winstead)
Gregg Hansen (GM)
Jorge Riveros (COA ATD)
Jeff Schitt (Loblolly)
Todd Hemingson (Capital Metro)
Amy Fong (UT Austin)
David Arredondo (UT Austin)
Hali Hoyt (UT Austin)
Morgan Avera (UT Austin)
Kristie Chin (UT Austin)
Andrea Gold (UT Austin)
C. Michael Walton (UT Austin)
Shelley Row (Shelley Row & Associates)
Harry Voccola (HERE)
Tom Lambert (Houston METRO)
Steve Dellenback (SwRI)
Michael Morris (NCTCOG)
Darran Anderson (TxDOT)
Yvette Flores (TxDOT)
Alexa Silvers (TxDOT)
Kent Marquardt (TxDOT)
Brian Cassidy (Locke Lord)

TEXAS DEPARTMENT OF TRANSPORTATION

TEXAS TECHNOLOGY TASK FORCE

Meeting Notes
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December 3rd, 2018

Objectives:

1) Identify the trends and technologies reshaping the freight and logistics industry and implications for freight ecosystem owners and operators
2) Collaborate on a strategy for navigating upcoming state legislative and regulatory initiatives and federal discretionary funding opportunities for automated vehicle testing and deployment
3) Identify private, public, and not-for-profit initiatives in mobility data sharing development and develop a shortlist of opportunities and needs for multi-sector coordination

9:00 AM | Welcome & Opening Remarks – *Darran Anderson, TxDOT & C. Michael Walton, UT Austin*

- Darran Anderson from TxDOT and Dr. Walton from UT Austin kicked off the meeting by welcoming participants and asking for introductions. Darran also highlighted the attendance of various elected officials and their representatives, and partners in the room from other state agencies.
- Dr. Walton presented the meeting objectives for the day.

9:30 AM | Progress Update – *Andrea Gold and Amy Fong, UT Austin*

- The University of Texas at Austin (UT Austin) research team delivered a presentation on the background and overview of the Texas Technology Task Force. They overviewed the history of its formation, its objectives and mission, and the activities it conducts. They also briefed the audience on the upcoming activities, such as the refresh of the Emerging Technology Portfolio, formation of subcommittees, upcoming white papers, and the Technology Utilization Plan. They highlighted the meeting's objectives, including understanding trends in freight disruption, discussing regulatory initiatives for connected and automated vehicles at the state and federal level, and identifying initiatives and opportunities for public, private, and not-for-profit data sharing.

9:45 AM | Disruptors: Freight & Logistics – *Kristie Chin and Morgan Avera, UT Austin*

- The research team presented an overview of disruptive trends, supply chain futures, technologies, and policies impacting freight and logistics. Major trends included: e-commerce, on-demand, and workforce changes. Supply chain futures included: last-mile and crowdsourced business models, third-party logistics, and co-loading. Technologies included: automation and robotics, blockchain, 3D printing, and IoT and digital infrastructure. Policies included: trade and tariffs, digital identification, and inspection and automation.
- Key takeaways included the need for collaboration between public agencies and developers of new technologies; collective buy in for technologies where scale is needed to realize full benefits; and an adaptive policy environment to enable the safe implementation of new technologies.

10:00 AM | Texas Connected Freight Corridors Progress Update – *Chris Poe, TTI*

- Chris Poe of the Texas Transportation Institute (TTI) presented a progress update on the Texas Connected Freight Corridors (TCFC) project. He highlighted the vision to create a sustainable connected vehicle (CV) environment covering the Texas Triangle with support for V2V and V2I applications.
- The project's primary objective will be to improve roadway safety. If those applications are successfully deployed, best practices and lessons learned will enable other applications to be more readily deployed.
- The project team which includes TxDOT, Southwest Research Institution (SwRI), UT Austin, and private stakeholders will connecting with companies to utilize technologies that have already been developed.

- The project will engage with public and private sector to identify their needs.

10:15 AM | Panel Presentations: Innovations Driving Freight & Logistics Disruption

- The first panel of the meeting was moderated by Harry Voccola (HERE) with panelists Kameron Simmons (Starsky), Trevor Theunissen (Uber Freight), and Orlando Montan (Verizon)
- Harry Voccola framed the discussion by noting that the meeting's freight panel objective is to discuss complex and emerging freight challenges including the workforce shortage. The transportation sector will need to address challenges head-on to remain economically competitive. He then invited each panelist to provide an overview of their role.
- Trevor Theunissen is a policy subject matter expert at Uber. He overviewed some of Uber Freight's current initiatives, including working to bring dynamic pricing to freight, matching drivers with a load before they finish current delivery, and reducing market efficiencies. Uber Freight helps small carriers compete with large carriers, enables faster load booking, and a more flexible working life for employees which encourages them to stay in trucking. They have also recently launched Powerloop which is a company that owns a pool of trailers to lease out to drivers. Their vision for the ideal future is pre-loaded trailers that drivers can pick up and then drop off at end points.
- Kameron Simmons from Starsky Robotics oversees public policy and government affairs. He highlighted some of Starsky Robotics' current initiatives, including working to make trucks that operate autonomously on highways and are remote-operated for the first- and last- mile. This approach aims to alleviate issues with lack of workforce and high driver turnover by letting drivers work as teleoperators. Teleoperations can be used where completely automated driving systems (AVs) struggle to operate, which will accelerate market entry of automation.
- Orlando Montan spoke on behalf of the Verizon Smart Communities team, which works with cities and municipalities on smart communities applications such as smart lighting. Verizon is focused on 5G deployments and aiming to roll out more deployments in 2019.
- The panel first discussed the benefits of shippers providing pre-loaded trailers for AV and teleoperations. Uber Freight demonstrated interest in co-loading and partnerships with AV freight operators. One current uncertainty in the regulation surrounds determining when a commercial driver's license is needed for teleoperations or automated trucks. It was noted that AV trucking could have appeal to technologically-minded youth, addressing anticipated workforce shortfalls.
- Several comments were raised pertaining to deployment, implementation, and partnerships. Meeting participants praised Texas' history of building connections between public and private sectors. It was noted that many industries, including the transportation industry, are learning to start with a small deployment to prove the concept and expansion from there. Often, forming a partnership is a matter of finding public and private entities with interests that align; there is often something that each side can offer, so that both benefit. Building partnerships is also essential in the emerging conversation about data sharing. Partnerships are essential to enabling benefits of these technologies that advance public agency and industry goals. Public and private entities need to come together at one table to directly communicate about their needs and challenges. Each will need to consider the 'what's in it for you' perspective with regard to public private partnerships: what are the goals of public sector and what are the goals of private sector with different time horizons? All parties should also consider how goals differ and align across dimensions of infrastructure, service providers, and users (such as drivers, ports, etc.)?
- The conversation also focused on private sector needs. The private sector must be prepared to answer what they want from the public sector. For instance, well-striped lanes are key when finding a place to pilot automated driving systems, and TxDOT has been helpful meeting those needs. New technologies can stimulate and revive longstanding conversations, like to need to focus on the basic infrastructure needs that benefit everyone. Uber stated that data is an asset they can share, but they need to know what the public sector is looking to achieve to package the data for that need. Verizon stated that they could benefit from access to infrastructure and in return they can deliver smart cities applications.
- Several trends were noted during the discussion. First, many emerging transportation technologies are reliant on connectivity. It was also noted that much attention is being put into freight routing solutions. Additionally, curb space utilization is an emerging topic that is not exclusive to the freight sector; there may be the initiative to

transition to a method where public sector can work with private sector to suggest a pick-up or drop-off location for freight.

12:30 PM | Roundtable: State and Federal Updates and the Path Forward

- The roundtable discussion on Connected and Automated Vehicle (CAV) initiatives was moderated by Melanie Alvord (TxDOT Federal Affairs) with subject matter experts Bryan Mistele (INRIX), Jorge Riveros (City of Austin), and Brian Cassidy (Locke Lord).
- Melanie Alvord invited each of the panelists to give lightning round remarks. Jorge Riveros discussed City of Austin (CoA)'s coordination with technology manufacturers to consider an AV deployment on 3rd street between Waller Creek and the convention center. CoA is also working with INRIX on their AV Road Rules initiative. Bryan Mistele highlighted INRIX's focus on the ACES (autonomous, connected, electric and shared), or what they have identified to be the megatrends that are having a major impact on the world. He emphasized that these should not be four independent spaces and that they can work together to leverage sensors on vehicles. Brian Cassidy introduced the areas that his practice focuses on: the development of transportation and other infrastructure projects by public and private entities. He advises clients on complex procurements, public-private partnerships, regulatory compliance, and all aspects of the planning, design, financing, operation and approvals required for major infrastructure projects.
- The discussion shifted to the convergence of multiple trends in the transportation sector and initiatives at the local or regional level. INRIX's "ACES Northwest" could be replicated in the South. In Seattle, it is a collaboration of private companies working together to identify legislative opportunities. Recently, their main focus has been on curbside management, universal permitting of AVs (to secure the ability to perform pick-ups and drop-offs across cities), and developing first floor parking garages for AV pick-up and drop-off. The conversation also included an update on AV initiatives in Texas. CoA announced they have received approval to deploy an AV pilot program.
- The conversation also covered the importance of crafting careful legislation or selectively not over regulating the AV industry. It was commented that public and private sector entities should focus on what industry needs to support innovation and deployment; there is no reason that private industry organizations or public entities should become the regulators of transportation technology. Becoming a regulator could only create barriers to deployment. There was also multiple comments that praised the current regulatory environment in Texas: one of the reasons companies are coming to Texas to grow their innovative transportation initiatives is because of the predictability within state law and policy. In consideration of the notion that the Texas legislature should refrain from over-regulation, the question was posed: what should the government do when technology is enhancing the environment, but when it isn't self-regulating? One insight was that a viable focus for legislation and licensing is on safety. Additionally, public information requirements could make private company's business details transparent, potentially deterring private companies from working with government. Governments should be transparent with the effects of public information requirements and take a role in educating industry leaders in protecting their innovative but proprietary information. Shelley Row shared a framework for how to decide when to regulate: when the market cannot achieve good outcomes on its own; when there is a need to scaffold equitable access; and when there is uncertainty in implementation, addressing how entities and technologies will work together, and best service the population.
- Next, the discussion moved to the recently released federal guidance document, AV3.0. AV3.0 has suggested a regulatory framework for AVs in Texas. There are nine entities that will focus on rulemaking under AV3.0, assisting in driving the integration of AV forward, with practical, safe, and sustainable methods of operation. AV 3.0 should help better understand needs for interoperability at a community and state level, assisting in a smooth implementation of AV into the existing transportation system.
- The Task Force also discussed Texas' opportunity to be a leader in AV deployment and implementation. They considered whether Texas such an open state that, from a business model perspective, it could pilot and implement AVs without other, nearby states, joining. Although it is possible due to Texas' size and history of leadership, transportation sector professionals must also prove that the technology can integrate and is desired by our residents. Another perspective highlighted that venture capital entities in Seattle and California do not want to

operate just within one state; they need more people (consumers) to drive revenue. Texas has a population of nearly 30 million, making it a perfect place for innovation in transportation.

2:00 PM | Panel Presentations: Visions for Coordinated, Smart, and Shared Mobility

- The second panel of the day was moderated by Tom Lambert (Houston METRO) with panelists Todd Hemingson (Capital Metro), Greg Rodriguez (Best, Best & Krieger), Trevor Theunissen (UBER), Ted Trepanier (INRIX), and Gregg Hansen (GM Maven). The focus of the conversation was public, private, and not-for-profit sector coordination in mobility.
- After the panelists provided some opening remarks, the conversation moved to public and private sector collaboration. Uber acknowledges challenges in data sharing in the past and indicated initiatives to share data for specific public use cases. The public agency perspective echoed the willingness and need to participate in collaborations with new mobility companies like Uber. One of the trends the public transportation industry is observing is that competition for ridership is growing due to the introduction of new mobility services, and ridership in some transit agencies is markedly decreasing. New mobility options must be integrated with transit options so that riders complement rather than substitute entirely.
- The conversation scanned various private sector initiatives and perspectives. Uber is working on a single payment platform application where consumers can find all mobility options in one place, both public and private. Uber will also try to use congestion pricing to encourage consumers to use transit, and further increase the interplay between private and public offerings. For data sharing standards, Uber championed NACTO's SharedStreets initiative. INRIX concurred that sharing data at all is a critical first step, but also added that scalable real-time data sharing should remain the ultimate objective in data sharing initiatives. However, they also noted that data standards are not agreed upon yet; finding a unified standard will be the final hurdle before more thorough cooperation.
- Greg Rodriguez also shared the legal and regulatory perspective he holds from helping other public entities craft data sharing agreements with private sector partners. He recommended that data sharing contracts be sealed with writing, not just a handshake. This connects with Uber, INRIX, and other private sector perspectives which have broadly indicated strong interest in data sharing, but need the public sector to be more specific about what type of data they want to have access to. Private/Public data sharing requires specificity in order to be effective.

3:30 PM | Closing Remarks and Next Steps – *Darran Anderson, TxDOT & C. Michael Walton, UT Austin*

- In conclusion, Darran Anderson highlighted the diversity of perspectives shared during the day's meeting and the important insights gathered especially as Texas approaches its biennial legislative session.
- Dr. Walton concurred with Darran and commented on the importance of state leadership in transportation initiatives. He thanked the UT team, STR and RTI at TxDOT, Task Force Members, and TxDOT leadership.

4:00 PM | Adjourn