

## **Wednesday, November 18, 2020, TxSTIC Zoom Meeting**

### **Welcome and Introductions**

Shelley Pridgen, TxDOT RTI

I want to welcome you. I'm just going to set up this meeting, it's we have a good meeting lined up for you. And thank you for joining us for the 11th meeting of the Texas STIC. At TxDOT we generally incorporate safety into our events and safety's our mission zero. And since we're not in a location where I need to talk about exits or, you know, ways to deal with emergencies. Let me just take this moment to say I hope everyone is staying safe and doing their best to minimize risk. During the ongoing COVID-19 pandemic. Unfortunately minimizing is really all we can do right now. it cannot be eliminated, and this pandemic has impacted some of us directly. Our colleagues and family members despite our best efforts. Some of us even joining us for this meeting today have been impacted directly. So, I just wanted to take a moment to say that you may notice a theme today, sharing innovation. The goal of this meeting is to ensure that you leave with an understanding that not only are we here to learn from one another. We are also here to inspire each other by sharing our innovative stories. I hope you keep that in mind. Today as we go through the presentation ways that your member organizations have been able to push through the challenges of this pandemic and to meet other demands through adaptation and creative thinking, as we go through this agenda. So also, be thinking of which topics and innovations share today that might help your organizations to meet the challenge you might be facing. And so, with that, I would like to introduce Darren Anderson. He is the director of strategy and innovation at TxDOT, and most of you are familiar with him. Darren. Welcome.

Darran Anderson, TxDOT Director Strategy and Innovation

Yeah, I'm excited today to go through the topics of the agenda. I'm just going do a little overview of what's been going on in our world in TxDOT that has a relationship to the car stick and I guess first, the most, most important is on the 22nd of October, there was a what was called the National STIC network meeting. And I participated in that and it was kind of a kickoff and show of these everyday counts around the research top like that they have available and this this round, or this version. And that was fantastic. I mean I think what's really in, you'll hear more. I don't want to talk too much about it but I think everyone of the research projects has pertinence to both TxDOT elements as well as to local and local transportation and Metropolitan Planning are they so I think there's a lot of applicability across the transit transportation spectrum as well as potentially to other state agencies, I think that's fantastic and I think another new wrinkle that they added that we're going to kind of do today as well as they also brought in innovative efforts, outside of everyday counts that other state DOTs, had been doing. And we're looking to try and really capitalize on that thinking, both at the National and the state level to make sure that we're not just focused on in, you know, a specific research project but if there are other innovations happening out there that, that would be of use across Texas that we want to we want to share those as much as possible, not only from within Texas, but try to bring ones that we see outside of Texas back to you and share those and then work to gives you the opportunity to use or learn more about those. We also had our annual short course within TxDOT that's kind of a, you know, the focus of that is on educating our engineering efforts and making sure that they maintain their continuing education requirements, it's expanded, somewhat to also address other activities within the department and inform what's happening there and obviously there's a lot of heavily influenced

research component to that because we bring research projects that the, the university as well as is our is our people have been working on those and share the results of those and help spread the information. We get NCHRP research releases periodically, I thought I should highlight that yesterday I believe or very recently, they published one on pandemic operations in our research that is an actually has that if you'd be interested to see what would it cover I think it's focused on state DOTs but it might have some actual applicability if you're trying to look for a playbook to apply some of the lessons learned that they've gathered. Of course, our research program itself is doing its annual problem statement development. We're getting far along in the process. It won't be long before we release those out to all our state research universities and ask for their proposals to those problem statements. And those will be for beginning of fiscal year 21 is when those would kick off, so we'll be selecting the proposals over the spring in awarding those and then plan to initiate those at the beginning of fiscal year 21. Just to wrap it up then a couple other big you know activities are the Association of State Highway Transportation organized organizations AASHTO met I think last week or the week before everything blurs together but a number of significant activities at the national level that they were sharing in discussions about what the future looks like related to transportation and we're looking to consume all that and share that out as best as we were able to grab that point in time and of course things change over time and certainly our federal highways, Texas partners know quite a bit about what's going on. We also held the Texas mobility summit from our innovation lines in the last couple of months and that was a very well attended event and had a number of our state and local leaders, talk about their particular concerns and transportation so is everything from rural to environmental to what's going to happen in the next legislative session and a number of topics transit, and where we have Can we move forward on those issues and I think that that effort continues to grow just like this stick does. And then finally, the last thing is we continue to work on the statewide connected and autonomous vehicles taskforce. We've held a number of subcommittee meetings we are drafting white papers are trying to get those ready for a December 3<sup>rd</sup> full meeting of the taskforce, and then subsequently to release those to the governor's office into others and direct it so aggressively working through Thanksgiving and into the into the beginning of December, but you know this is, this is what it's all about. It's great that we're getting things moving and we're able to share what we're going to cover today. Thank you.

Al Alonzi, FHWA Texas Division, Division Administrator

I thought I would, you know, talk very briefly just within the context of, you know, very introduced to the concept of we're in this pandemic. And it just, it just struck me that, you know, in the middle of March FHWA was able to essentially have everyone work 100% remotely from home. And, and here we are and we're in we're still doing that, to a large extent. And it happened transparently. We had been practicing what might happen for several years and in this case we had thought strategically. The technology was available for us to continue to operate and interestingly, and when I think when this pandemic is over as we're in this real-world real-time experiment. You know things are likely going to change them. I don't think that we're going to be 100% back to the way we were pre pandemic. And there's been a lot of innovation, even going on right now in terms of new ways that that we are working, and it sort of reminds me of what the STIC is all about. Right, so when the everyday council initiative from federal highways was initiated 6, 7, 8 years ago now. It was about fostering a collective collaborative culture of innovation. Throughout the multitude of agencies that are responsible for transportation, not just highways but across all modes. And so, a STIC was set up in all the states including here in Texas to do, to do just that. To facilitate rapid implementation of innovative technology and innovations are more than just the

everyday counts initiatives that you'll hear a little bit from my team here shortly, but innovation means different things to everyone could be very autonomous vehicle levels or something very simple as well. If it's new to you, new donate and stable that, by definition, is innovation right and so we come together to talk about the kinds of innovation that are important, and fill a need for us here in Texas, and we made a lot of progress and not a lot of really positive things. And it's thanks to you, because it really requires your engagement. And that's really our responsibility and the success of today will really involve your engagement and require that engagement. Even though we're doing it a little bit differently than perhaps we've done it before. And so, you know, I look forward to hearing an update from what's been happening recently, but more importantly the discussion that takes place in the morning is what I'm really looking forward to and. And I just want to say thank you and turn it back over.

## **EDC-6 – “Innovation for a Nation on the Move”**

Kirk Fauver, FHWA Texas Division, Research & Transportation Planner

Today the passport will be filled with new innovations that are going to be talked about. As part of everyday counts round 6, which kind of cover FY21 to 22. And these new technologies and advancements are going to be shared with you. And as well there's going to be an EDC virtual summit next month on December 8<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup>, I think Shelley is going to tell you a little bit more about it. If you haven't registered for that, please do so soon because we have over 100 participants from the state of Texas alone. I think over 1200 participants nationwide. So that'd be a good opportunity to learn more about these innovations that we're going to be talking about with the subject matter experts from around the country. But first, I'd like to show you a short five-minute video on these innovations that are being pursued as part of everyday counts around six. It's called innovation for a nation on the move.

Okay, I guess we're starting with EDC six PowerPoint. Now, and there's seven new innovations that we're talking about. Some of them have been around for a while so I can't call them new ones, public involvement like we're doing today crowdsourcing prop operations and crowd sourced data can be obtained whenever and wherever people travel allowing agencies to capture real time what happens between sensors. We use it as part of Waze and other types of technologies that are crowd sourced to improve traffic incident management and operations. Let's talk a little bit about crowdsourcing cost savings and we can use it for the purposes of operations and real time driver information. E-ticketing is the second innovation in digital as belts. And lead ticketing was converting paper-based materials like ticketing systems and as built plans into electronic workflows and digital as bills, enhancing the accessibility of highway project data. That includes 3D design models and other metadata and enhancing the full usability of as built mines for operations maintenance and asset management. We're talking about the third one next generation traffic incident management programs aimed to shorten the duration and impact of roadway instance and improve the safety of motorists crash victims and responders, new tools data and training mechanisms are available that can benefit both new and existing TIM programs including local agency and off interstate applications. Strategic Workforce developments. The demand for highway construction maintenance and operations is growing. The workers are at the same time faced with emerging technologies that require them to have new skills. The highway construction workforce partnership is the new resources and innovative strategies for identifying training and placing the workforce needed to fill the gaps, they're needed to support the nation's highway system. Our next innovation is targeted payment overlays, the pavement overlays

represent a significant portion of highway infrastructure dollars, state and local agencies can maximize this investment and help ensure safer and longer roadways by employing innovative overlay procedures that will improve pavement performance, reduce traffic impacts and reduce the cost of pavement ownership. Our next innovation is ultra-high-performance concrete for bridge preservation and repair. It's a new material for bridge construction has been popular to port for field cast connections between prefabricated built bridge elements bridge preservation and repairs and emergency is an emergent merging and promising application for UHPC. And this UHPC based repair solutions are robust offers superior strength, durability, and improved lifecycle costs over traditional methods, state and local agencies can void UHPC for breach preservation and repair to maintain or improve bridge conditions. And our final innovation their number seven. Innovation is virtual public involvement like we're doing today, public engagement during transportation project planning and development. Helps agencies, identify issues and concerns early in the process which ultimately can accelerate project delivery virtual public involvement strategies supplement traditional face to face information sharing with technology platforms that increase the number and variety of methods agencies can use to inform the public receive feedback and collect and consider comments. So those are the seven new innovations for FY21 to 22. They're based on people products and process, that's the same for this year-round. Every two years we'll have a new round of innovations. And we've gone back to 2010 with now we have over 58 innovations, I think, was 86 round six, and I'm here to take any questions that you would have, what we're planning to do is to a state caucus, perhaps next month, around the third week of January, and to gain further insight on which innovations you guys choose to move ahead with breath flight 21 and 22. This is kind of like a menu of options we can select several of these from the menu or just a few. Depending on the interest by the STIC members and TxDOT on in the other stakeholders and as part of the stick process. We're probably going to do a survey out to the STIC membership to survey is going to ask you to rank, maybe prioritize which ones you think are relevant for the state of Texas, and what we can move forward with the list from, from the state caucus from the, from the surveys that we do into the state Congress that we'll look at maybe towards the end of January.

So, for additional information you can sign up for EDC News and the Innovator Newsletter. You can get it on your mobile device. And with that, there's a website for innovation, and I believe the video that you saw is on that website with audio, hopefully, and that's all I have today. And if you have any questions are filled with any questions that you would have.

### **Questions & Comments**

Shelly Pridgen - So I was just wondering, is there a difference between some of those EDCs that we've seen before. And notice how we seen crowdsourcing before Can you explain for everyone just the difference between EDC-5, and EDC-6 crowdsourcing.

Kirk Fauver - Well some of these innovations have been carried forward from the previous EDC-5 like virtual public involvement as you mentioned Shelly and crowdsourcing for advancing operations. And what we're trying to do is bring it into Metropolitan Planning organizations as part of their transportation planning process and integrate that more into the statewide and metropolitan planning process. Often, and try to do it at the statewide level, as well as part of the statewide planning process to look at ways that we can integrate our planning and operations in a more seamless fashion. And so that's what we're trying to do we're trying to pursue these again in the CDC six round to look at statewide applications, not just at the local levels.

**Q | Shelly Pridgen** - So if somebody in the STIC is interested or somebody who's just participating today, they're interested in finding out more about what the EDC, what will this do for them since they're locals or they might be outside of the DOT. And if we could just maybe explain how, how they can get, or what they would get out of it how it helps and benefits them.

**A | Kirk Fauver** - I think good answered question there's got to be an EDC virtual summit next month and I would suggest that the local public agencies, PMOs, sign up and register for that because the subject matter experts will be able to get into more detail on each one of these innovations, we will just approach it at a high level, today just to offer an introduction to the innovations that we're pursuing as part of EDC-6 but if you want more details. There's going to be like breakout sessions, there's going to be, you know, 30 minutes, one on ones, you know, with the subject matter experts including elevator conversations and so forth. And you can interact with subject matter experts as part of the breakouts. And I would suggest that the LPA or the local public agencies and MPOs if they want to find out how this benefits them to speak to them to interact with him on the virtual platform that we're going to have December 8<sup>th</sup> to the 10<sup>th</sup>.

**C | Kirk Fauver** - One thing that we forgot to mention that there are STIC incentive funds at \$100,000 for each one of these innovations that are being pursued. We can apply for those to the state DOT's in TxDOT on to RTI for areas that want to implement at the local level and perhaps deployed in their region. So, there's stick incentive funds and there's also aid funds accelerating innovation deployment funds that are at \$1 million, so if you have an idea of. If you have any suggestions on what we should use these funds for EDC-6 then we should coordinate with Shelly and Kevin Pete over at RTI and try to get a proposal put together to get, get the funding implemented authorized.

**Q | Darren Anderson** – If a local entity wants to get information on a project can they just do that and then not worry about state ranking of projects?

**A | Kirk Fauver** - Well, if, if a local area wants to pursue one of these innovations I would suggest, working with RTI and our divisional office to kind of help develop maybe a peer exchange or a one on one with our headquarters or Resource Center, and try to get things launched in a coordinated fashion. And that way we can kind of do, maybe a workshop or a peer exchange and try to get things started in that way, like we did for crowdsourcing we did a peer exchange, not too long ago maybe a year ago. And that was very successful we we've had a lot of good feedback from that type of workshop so there's workshops and training available for those that want to kind of coordinate their efforts a little bit better with the federal and state agencies.

**C | Al Alonzi** - That is, if anyone wants specific information on any of the EDC projects they can certainly go to the website and, and click on links for any of those and if they want more information like Kirk was talking about, then certainly I would go to Kirk, and he can point you in the right

direction and do those next level items that he was talking about in terms of peer exchanges and that kind of thing.

**C | Kirk Fauver** - One of the things that is interesting on the website, they're going to be fact sheets for each one of these innovations. And those fact sheets are at least two resource subject matter experts that we can call upon to bring training, or to ask questions. they're like, subject matter experts for that innovation. So, we have 14 out of the 7 innovations we have 14 subject matter experts that are available on call. What have you to, to answer your questions to kind of facilitate thing information exchange or, you know necessary to implement some of these new innovations was in the state of Texas?

### **EDC-5 – “Innovation for Weather Responsive Management Strategies”**

Kenneth Perrine, Research Associate, Center for Transportation Research the University of Texas at Austin

The most exciting development that we've had is that we now have sensor kits that we're going to be using to equip for vehicles in the Abilene district for winter weather. The other development that our researchers have been working on is trying to integrate multiple data sources into common visualizations. So that Traffic Operations personnel can be able to view, very quickly. What is happening in their district, not only the weather, the temperatures, but also being able to see interpolations of the temperatures in between the weather stations idea of what remote areas of roadway might look like, and also be able to add on the INRIX speed data that already appears within the center.

### **Questions & Comments**

**Q | Kirk Fauver** - this sensory equipment that you have. How do you think it's going to help textile in terms of weather, you know, extreme weather events and maintenance activities going on up in the north panhandle area for example?

**A | Kenneth Perrine** - That's exactly why our experiment areas Abilene because they do experience, multiple winter weather storms each year. And the most exciting part is those sensors that would be equipped non-invasively on cue winter weather operations vehicles, mainly so that operations personnel can know exactly where those vehicles are actually treating roadways and be able to see historic records have automatically been collected, which could really improve the accuracy and also allow for better learning of how to more efficiently. Perform winter weather operations in the future. I also like the idea of more sensors. I think this can benefit many areas of Texas. Texas, where if there's more sensors and more ability for effective visualizations to appear within operation centers, then decision makers can really have a lot of better data to make decisions on. I think that can provide a lot of benefit in terms of responsiveness, but also cost savings.

**Q | Shelly Pridgen** - I'm also wondering so what are your plans soon. For this, this project, what are we going to do over the, over the winter and early spring, do you have any plans?

**A | Kenneth Perrine** - We are going to have our sensors operational. We're working with Verizon now on making those final connections into their telemetry system vehicle management. And with that, we are also working with our researchers to come up with a game plan for trying to analyze data. After times we experience winter weather. So, with that, we want to be able to gain insights on what can we learn from these sensors that we have deployed, not only the winter weather maintenance vehicle data but also the weather stations that we have. And with that, be able to highlight and document the plan so it can be used for future years. Especially for TxDOT. If they are to increase the number of sensors on roadways. We also want to have a game plan for being able to deploy additional winter weather operations vehicle sensors. With that, I think there'll be a lot of opportunities for either ICS or aid funding.

**Q |** - if other districts or cities, counties are interested in what is happening in this project. How do they get engaged or follow up?

**A | Kenneth Perrine** - One of the big things that we are going to be working toward when we give our workshop in the spring, is to be able to document and present our findings in a way that they can be reproduced in any other district in TxDOT. We especially we're working with the engineering firm in Abilene to design the sensor kits in ways that use off the shelf parts in very cost-effective ways. And to be able to design sensor kits in a way that they can be installed, and removed from vehicles, without impacting their operations. And these are things that we really want to pass on because I think this will be very relevant for other districts, especially those that have vehicles that are multipurpose vehicles that are used for winter purposes during the winter but other types of vegetation management, for example, during the spring. And I think there'll be a lot to share in that way. And these are also variables that will be archived, along with the data research or the Ctr research library, and redistributable among textile and other districts that are outside of Texas.

**Q | Shelly Pridgen** - Natalie I hate to do this to you, but I might need you to elaborate. Are there any road conditions sensor on vehicles that is to report this information back to the TMC Natalie, do you want to speak to this question at all?

**Q | Natalie Bettger** - Is there any sensors that are being placed on vehicles that look at road conditions so as they drive them over to the pavement can do you have that as part of the project, and then I do have one more question and I'll just go ahead and ask I was going to put it in the chat. Is there a map that shows roadways that were treated, that's available to the public because for example, years ago when we had the cobblestone ice within our region? It would have been nice to know what roadways were clear, meaning you know maybe okay to drive on and which ones were just not in good condition at all. That could have been shared with the public so that

they had to go somewhere they would know what route maybe to take to provide that traveler information to them so those are the two questions I have Thank you.

**A | Kenneth Perrine** - So, with the current project we have deployed to mobile eyesight sensors and these sensors are specifically designed to look at pavement temperature, but also, they characterize the ice conditions on the pavement. We have one installed up and hobbling and we also have one on a hero vehicle, or we're planning to have it on a hero vehicle in the Austin district. That's incident response vehicle, and we're excited to be able to look at that data. When it's available because they will basically sample all over the district, wherever the treatment or incident response activities are happening. And these are things that we can gain experiences on and be able to learn from. Right now, the data from those sensors goes into a proprietary web app, but that can also be viewed within the Traffic Operations Center. In the future, it's possible to integrate that data into the existing IT infrastructure that TxDOT has the other. Making treatment activity available to the public. I think fits very nicely into the overall goals that Devon Humphries is working on with the ArcGIS enterprise system that TxDOT is evaluating and currently in the process of deploying. And with that. Right now, we're looking at just getting the data into the system and they've already been able to visualize where fleet vehicles are well within maps. The idea is to augment that with breadcrumbs, or other historic information about where treatment activity has happened, and the overall plan for the enterprise system is to have public portals, various variations of the applications that are on that portal, or that enterprise system that are available to the public. How that integrates into direct drive Texas, or into new systems has yet to be seen but I think there's going to be a lot of potential using tools that have already been developed, things that can be generated very quickly, new types of applications that can be made available to the public.

**Q| Brian Moen** – Should a local agency work through TxDOT or FHWA to see if we have something that might be clickable. And then the other question is about will the weather system data, then be used to see if treatment policies should change, or measure how effective they are, if they are correlated to safety data.

**A | Kenneth Perrine** - I will leave the answer to the funding to Kirk or others from my understand is that RTI is a great resource. And I hope that they'll be able to speak more to that, but I would like to answer the question about the use of the weather data and correlating with safety, because while the activities that we're going to be working on with this project to is to give questionnaires to operations personnel after the winter season, with some questions that really do have to do with whether the availability of data the visualizations did help them better understand how to properly respond to safety incidents on the roadway. If they're able to use some of the data sources to have a better idea of safety incidents such as the speed data. And that's information that we will be compiling into our workshop and final report materials.

**A | Kirk Fauver** - Speaking to the funding question that Brian had yes to work through TxDOT RTI, if you have a funding need that you want to see funding to STIC instead of funds from the 100K, or through the aid \$1 million grant program to Federal Highway Administration because TxDOT generally are passed through state agency that we pass the money through. And we

authorize, our funds through our famous our fiscal management information system. And that, in that way just coordinate with TxDOT RTI, we can get it figured out.

## **BREAK – Q & A**

**Q | Ugonna Ughanze** - CB technology is DSRC still an available communication to use by public agencies for SPAT, which is signal phasing and timing, or should other means of communication like modems or fiber be what is?

**A | Darran Anderson** – So far, more technically I will say that Federal Communications Commission is looking at the 5.9 gigahertz issue in ruling in. Well, I believe it's this week. It's still up in the air I mean they're leaning heavily toward opening the you know the bottom 45 megahertz of that spectrum, and not only doing that opening that to unlicensed WiFi but also keeping the 30 megahertz. For safety applications for transportation but opening that up also to 5G cellular not just DSRC with a potential intent to shift all of that to 5G cellular in the next couple of years. And there's a lot of discussion about, regardless of that regardless of what the solution set is for the type of waveform, that you still have a lot of concern over interference from the lower 45 megahertz. We don't know what the ruling ultimately will be we're waiting to see there's also a lot of pushback from certain congressional representatives and so a lot of it's a waiting game but someone said about it at five zero this morning so we may have already got our answer. That being said, if that's the case and if that holds then, you know, the writing's on the wall, you'll need to look at 5G solutions are shifting to those over time and frankly, they're probably if you're not procuring items right now, you know they've been holding on allowing any new licenses for DSRC. And I'll start with that and see if Jeremy has any more relevant information.

**A | Yue Zhang** - I just wanted to mention it. Yeah communications are a, is very critical, but also the applications use cases you know we can prepare ourselves you know. So given you the communications, how would you use in that communications to implement some of the applications to address our, like issues or challenges so I think that's something that we still can do while waiting for this a communications issue, have been said or done.

**C | Ugonna Ughanze** - To an extent. I'm just worried if we're going 5G we will have to be paying the private industry to every month for communication. I mean, whichever way, all I want to know is what direction

we're headed and how we can, you know, stretch our dollars as much as we can so. So that's all I needed to know so whichever way is still okay, but I need to just know what direction we're headed.

**C | Darran Anderson** – Just not to take away from the presenters, but we are working on that issue too. We were very well aware of the potential for what it means is you know as the digital highway infrastructure gets built; you know not I'm not talking about our having I'm talking about the digital communications infrastructure in it's not just a transportation issue it's an it's all public

type of agencies issue of what it what would be their access to that system. And if we're going to allow it to be a part of public right away, be that state or federal lands. You know, there needs to be serious discussions about in kind use without, you know significant fees over time being charged with but we're working on that that's, I mean that's a very hot issue right now and I appreciate you emphasizing that.

## **EDC Virtual Summit Discussion – “TxDOT Homegrown Innovations Overview”**

Shelley Pridgen, TxDOT RTI Division, Research Project Manager

If any of these innovations seem interesting to you, we can definitely get you in touch with that person you can use that Contact link if you want, or just contact me and then I can get you in touch with them however that works best for you in some cases it's TxDOT research projects so I'll go ahead and get started the first one. GoCarma will be addressed in the presentation by Natalie after my presentation. Okay, the wrong way driver pilot project from CTRMA, they told us about this December 2019 meeting. This was a big push last year, and they were kind enough to let us use this project for one of the homegrown Texas homegrown innovations, and by investing in these technologies the mobility authority is basically setting the example of how technological innovations, solve real world problems by helping to mitigate accidents and ultimately save lives. I've heard some questions about that project regarding, you know, isn't this a lower statistic but I think you know wrongly driving is a pretty big one, just because of the severity of the crashes and, you know, when I was the hazmat coordinator in the Dallas district. It was one of the, you know sad things that would happen and we had a few of them while I was there, and when there was, I was woken up a mill the night and there was a hazmat incident, a lot of times there was wrongly driver involved. So, I think that's an important topic, and I'm glad they were able to let us use that.

Okay so this one's interesting it came from the Houston district through some facilitation with our very own Wayne O'Dell who's also on this call. It's called Swift and basically it's a planning tool, and the acronym stands for sustainable ways to integrate future transportation, and the TxDOT Houston district partnered with a calm, and they were able to come up with this tool that basically helps in their planning efforts, so they can consider land use, before the design phase of roadway corridor projects, which is a big issue. A lot of times, land use doesn't get considered and you'll find developers come in, well before the road is anywhere near built and we have a lot of issues with timing of those things. And having the appropriate project to meet the needs of that area. So that's going to help the Houston district deliver the right projects to meet the needs of the Metroplex and the communities within. So that's a pretty good not good one I think, and I was happy they were able to contribute that one. We'll probably hear more about that one, maybe in the next meeting. And so, you all can learn more about it and they have another tool that we'll talk about here in a minute it's probably the 5<sup>th</sup> or 6<sup>th</sup> project. I don't need to say much about it, we have the city of Frisco team here to discuss it. after Natalie. And so that's going to be a fun one to talk about and very on topic and relevant today.

With involvement from the Houston District of TxDOT. And this is another Performance Base, planning, it's a corridor planning or prioritization tool. And so, it helps them they have two of them the prioritization tool which is the CPT and then the corridor evaluation tool which is the CET. It's a mechanism that helps them rank corridors by me and includes all the TxDOT on system roadways within the Houston district. And it basically can help it automates part of the workflow with support an innovative data pond and basically, it's a pilot for the transportation planning and programming division of TxDOT tools that they prepared for the districts to use. So, Houston is doing that pilot.

And now we're talking more about TxDOT research, you may have heard of some of these projects before this one particularly concrete medium barrier for flood prone areas. We heard about this at the last meeting as well. So, it was another good, good one to choose. So basically, after roadway flooding events that occurred during Hurricane Harvey, it was determined that there was a need or at least overwhelmingly clear that there was a need for crashworthy median barrier that is designed to accommodate the flow of the floodwater during the severe weather events

This one is near and dear to my heart. I've gotten to know him well over the last year or so. And so, we've heard from Mohsen a few times at previous meetings as well. And I believe in August, we talked about this project some. So, this is an AASHTO sweet 16 winner for high value research and right now we're at a point where the project is over and we're just looking at ways to implement and bring that home and across the state of Texas. So that's what we're looking at right now with this one. This is a very interesting project just because it gives a lot of tools back to the district and the maintenance sections, they can look and see, you know, do we need to focus on this area because segment failure is a big issue especially in the North Central Texas area.

So, this is our 9<sup>th</sup> innovative project for homegrown innovations, and this one is interesting because of the topic. So, we're looking at an implementation project for pavement rehabilitation and design strategy for heavy loads and energy development areas. So, the basis of this one is to help provide the right solutions at the right time for the TxDOT districts severely impacted by this activity because, big heavy loads can do a number on a roadway and if they're trying to repair it you can have issues with timing.

### **Innovation 1: "GoCarma"**

Natalie Bettger, NCTCOG Congestion Management and System Operation | Senior Program Manager (STIC Member)

I'm just going to discuss our auto occupancy detection technology project. In this project automatically detects the number of people in a vehicle. So the main goal of the program was to solve a problem related to applying the correct toll based on the number of people in the vehicle as well as decreasing the violations of folks that were taking advantage of the discount that were not HOV users and so there's really two things we were trying to solve with this, and we're trying to use technology to help us do that.

### **Questions & Comments**

**Q** | Ugonna Ughanze - Is this, similar to the Xerox program used in California? What feel safe elements to reduce mistakes.

**A** | Natalie Bettger - So my understanding of the Xerox at least when we went out for procurement for this was it is a switchable tagging type system, or it required a picture of somebody taking pictures inside a vehicle so this is not anything like that there's no roadside devices. As part of this deployment it's all on people's smartphones and using GEO fencing around the manage lane facilities to look okay, how many people were in the car. I see two people, they get the HOV status or, I see one person, they're not HOV status. So, it's a little bit different than the Xerox program, meaning that it's not a switchable type tag there's tags that switch HOV versus SOV again that would be a self-declaration type system. And then there's other technology where they take pictures inside a car and you drive by and it takes your picture to try to count how many people

were in there and we're not in the, in the business of taking video or pictures of people with this application.

**Q | Ugonna Ughanze** - Yes, to an extent I appreciate that. I just have one more follow up question if you mean. You said something about somebody having two phones, some of us have one for the office and one that is private. Cell phones. Okay. What if you have a child that doesn't have a phone with you in the car and you have to drop the child off in school or in a daycare prior to get into work and used to have to use the to manage lanes does it take into consideration that you have two people. Yes, I understand you say it doesn't take pictures. However, you can identify people in a vehicle. Is that correct?

**A | Natalie Bettger** - It uses Bluetooth technology to identify devices in the vehicle so if a younger child doesn't have a smartphone or the parent would not want to put it on a smartphone the app, there is such thing as an occupant pass, which is a little disc shaped pass that you keep, like in a child's diaper bag or backpack it's, it's not active unless it's connected to a cell phone, but it would recognize that person that child that older adult that maybe doesn't have a smartphone in the vehicle, so it would get the toll rate when that child or their occupant pass is in the vehicle but when you take it out of the vehicle to drop them off that occupant pass would not be in the vehicle and so any tolls they pass after that would be charged at the full toll rate not the HOV discounted rate.

**Q | Shelly Pridgen** - what are the costs like associated. Are you seeing like cost savings or just potential for savings all around how does it, how does it look for NCTCOG, its costs?

**A | Natalie Bettger** - So I mean our initial setup of the program, obviously cost a little bit to get it initiated. But then we pay just an annual fee to Carma to maintain it so we can expand it to other corridors, like I said, and there's not an additional cost for that. And so, it's very close to the cost we were extending for our enforcement. The manual enforcement, that was out there, but it does provide some safety type saving some congestion type savings on top of that effort.

**C | Shelly Pridgen** - I do agree that even though there were those disadvantages. Initially I can see how you made this really worked well. And I think the benefits, pretty much would like you said kind of nullify that cost and initial costs and then that maintenance costs. So, I think you're on the right track and I imagine if anybody's interested in this and other areas that they could probably contact you and find out more.

**A | Natalie Bettger** - They're welcome to contact me we did set our contract up and it could be utilized by other folks in the state. So, there is the opportunity for that obviously I'll get you in contact with our procurement team who knows more the details behind that, but the contract was set up so it could be expandable with, you know, throughout the state of Texas. That could be built off our contract so you might not have to go out for a new procurement as we already went out for procurement to procure this technology.

## **Innovation 2: "SAFER"**

Susan Olson, City of Frisco | Assistant Director of Information Technology

I'm here to talk to you about safer, which is situational awareness for emergency response. And in 2008. The city of Frisco leadership had a vision to provide first responders critical information through a common operating picture. Though the city originally invested in a third-party solution. We found it didn't adequately accomplish the mission, and in its entirety, and no existing commercial off the shelf product that we could find really could accomplish that mission.

City staff quickly realized the in-house development of a geospatial platform for situational awareness, taking advantage of the city's GIS system was essential. Hence safer was born. One of the keys to the success of safer has been the partnerships that have been built between the city of Frisco and the school, district, as well as the collaboration between city departments specifically fire, police, traffic engineering and IT working closely together to innovate. Since its infancy safer has grown into a highly effective multilateral program increasingly dependent upon integrated systems. It is. along with 911 our very most critical app in the city.

## Questions & Comments

**Q | Darran Anderson -** What's the opportunity for sharing this?

**A | Susan Olson -** Over the last year in a way that we can begin considering sharing the product. I've had described. Originally we purchased a software application to present most of this information, and the vendor didn't have a web based solution so we built a web based solution and after a little bit of time, this is number of years ago, we found most of our first responders were using the product that we built. So, we started, enhancing that product and sunsetted the one that we purchased, we never really intended on building a product. And so, nor did we intend on sharing it, it just kind of happened organically. So, this last year. David Schuster came on board who is our senior software developer who's built our news product. And part of his charge over the last year was to take all the code and organize it in such a way that perhaps in the future we can start sharing with other entities we'd like to expand. Um, with our surrounding municipalities and entities, at minimum, we'd like to be able to do that and then given resources and opportunity, sharing with others we've, we've spoken with several entities in Texas, as well as outside of Texas about the opportunity and the interest that there might be and sharing, so it's just a matter of time and resource.

**Q | Darran Anderson -** When you say you built it on, so it's built in overlaid on ArcGIS Online is that how it's architect.

**A | Susan Olson -** No, I'm the product is a desktop application. At this point, most of our users access it that way. And it was built in ArcGIS runtime. And so, we do have plans to expand to build a mobile app device and native device app ArcGIS Online products, though we have been probably over 100 applications that we've built on ArcGIS Online and they're fantastic. It doesn't really allow for the customization that we require with this product and the. It's just more conducive to building a product than using an ArcGIS Online web app or customizing one.

**Q | Natalie Bettger -** Do you all have performance measures on improvements on response times or other measures related to response and clearance of crashes that you could share.

**A | Susan Olson** - Yes, we report that inflammation is part of the CTD grant opportunity that we had that went into effect in 2018, I believe, at the end of each year, we report that information back out to the CoG so they can you know you can it's easy to see what the average response times and such work, so we can share that information, and we'll be building the next report here in the next few weeks. As a matter of fact

**C | Brian Moen** - Susan mentioned Natalie we send that information over I think the first year we saw anywhere from 30 to 45 second decrease in response time. The following year that number wasn't as large but at the same time fire saw a 25% increase in the number of calls for service, so we were still down. You know maintained an improvement despite answering seeing an increase in the number of calls and we didn't add any stations or resources so it worked out, in that sense, I think some of the other things when we look at the TIM timeline on your time declare, we built those are those are report as well what we're seeing they're working with the police department I think to start to begin to place more focus on that now what can we do to improve that time that the roadway is, is closed and that clearance time can we begin to reduce those or benchmark those types of things. And then the secondary crashes are the CAD systems able to keep track of that as well. I think we're seeing probably sometimes maybe where the officers aren't radioing that back all the time, so those numbers have been low I think this last year and we thought the data for 2019. It showed zero secondary crashes that occurred the previous two years there was some small numbers that were recorded. In that sense, and then also the time to recover is another item I think seeing that I know for all of you with CoG at a demo yesterday with either system clear guide. And it had a really was able to use the here travel time data to look at. If we could go pinpoint an incident time after the fact. And then look at how traffic recovered to be able to report that back so seeing if we can reduce that response time as our return to normal time getting a lot better and that's something I think has potential in the future as well to improve the various things that we're measuring.

**Q | Kirk Fauver** - So can safer provide for scenario analyses for different emergency response practice runs by the city of Frisco and how his TxDOT informed and shared with his information that was going to be my question as well?

**A | Brian Moen** - When we do as we go through the various NIMS training and different things and do tabletop exercises. I could see it. Factor Dan where we've done some practice things here we better railroad that runs through the center of town and in with the FC Dallas's stadium right nearby we've done some things where he had like a hazmat spill and what if the soccer game is going on at the same time and kind of leveraging how you can do that I know the tool. You know one of the things I was really cool that I see the first responders being able to do respond and Susan could have to verify on this, but it seems it could be done in a practice situation I know in real time. What you saw on that DPS officer shooting is just being able to start to mark up on the map that everybody on their mobile data computer can see what the plan is if they're saying okay on the map. This is the staging area where people are going to where we need all the responders to stage here's the evacuation if we get people out. This is where we need them to go. You know I'm beginning to mark all those things up in real time and I think on if they've used that Susan on some of the practice scenarios that you know of, I don't can't recall some of the trainings.

**A | Susan Olson** -They do. They have used it, and one of the in-training opportunities. And when they have new cadets and new firefighters, they do also train the product but part of the beauty and the concept of safer from the very beginning was they wanted to use safer on all calls for service. So, every call everything they do. They use, they have this product app on their mobile devices. And so, they just, they know how to use the product because they're using it all day long.

It's not a specific product used for an emergency it's for all incidence. And so, it gives them that level of understanding and comfort with the product because they use it all the time. And so that was one of the charges from the very beginning when the school district came to us and they said well we want you to put four plans in. So, when there's a school incident. Well, it's not just for school incidents it's for all incidents and so, though there are training exercises for more specific and a lot of testing done for more specific incidents like a hazmat incident are a large incident, like the shooter, the trooper shooting. They, they use it all the time and so it's become second nature.

**A | Brian Moen** - I don't think there hasn't been anything. We don't have any freeway facilities we're surrounded by NTTA in the toll facilities. So we've been working on trying to do some video sharing with NTTA, we're doing this beginning some video sharing with the city of Plano, where things like that can be in, I know through the TISMO interviews and process that's been going on at least as I've been answering questions on first goes back, that's kind of what this and background are in the back of my mind on getting first responders and traffic people working together we have so many resources that can help each other out. And usually, oftentimes, maybe we don't realize it, you know, an IT meeting recently you had the state of Washington the Seattle area they're working on building a product like this. And they had offered to reach out to them to let Susan kind of demonstrate and share all the lessons we've learned in the work they were doing. One of the questions I asked him, I said, Are you going to provide video for your risk first responders and he goes well now that's not something I've requested and I kind of turned it around and said, Well, if you actually showed them how what it maybe you could do because I don't think they realize that if they haven't consumed it or seen it before. I may not realize how they can benefit; it can benefit them and once they knew that they're going to be asking you for every camera you can provide them. They're going to be wanting and looking for. And I don't know if this would somehow if you think of like Lone Star, because we don't. Since we don't have the any of the text freeway facilities that surround us so that hasn't been, you know, I guess an active integration are something searched out yet at this point, open to ideas and I guess kind of where my funding question came earlier was you know if there's more things when Susan talks about just the resources and things that are needed to make it more widely available the effort that that takes here locally. To do that, you know, are there ways that we can bring some funding to the table that maybe can help that continuing to happen or happen more quickly.

**Q | Ugonna Ughanze** - How do you monitor secondary crashes and end of queue verification and clearance?

**A | Brian Moen** - So right now, what's done is if a secondary crash would occur, it would depend on the officers on scene to decide well this one is related to the other, and so will that's then tracked in the CAD system so as they're talking back and forth with the dispatcher. And that's how that would get tagged through the dispatching process. As far as the times and the clearance time, they will report back, you know when they've. When the roadway is clear that time is marked when whoever's on scene says performs a dispatch all right, we have the roadway clear all lanes were reopened. So that's a point in time and then once they actually clear the scene and leave because sometimes it may be okay the roadways open but they're still out there doing something with it or maybe the tow truck the things moved off onto the parking lot side but all those points in time are then tracked through the dispatching process and then there's a routine that runs afterwards to look at all those things on the, on a CAD side to then summarize that and report that we send out the CoG to report the various points in time on the Tim timeline.

**Dismiss Invitees** – All non-council members can be dismissed.

**Council Roundtable** – *Updates and/or suggestions from STIC members.*

**Update | Darran Anderson** - I'm excited about both of them I see value of the HOV occupancy detection system. You know I'm fascinated by the technology solution set of that, you know, I've seen other approaches where they try to use cameras to do it and I think this is a is an interesting way to capitalize on technology and not have to get into all the challenges of using cameras to do it. So I think that's certainly applicable to you know other tolling agencies in the state, but also has the opportunity to be used for other applications I was trying to think of a few but I didn't want to, you know, just depends on what certain public needs are to count people on vehicles. And if there's just an easier non-technical way to do it, obviously. I already fired a note off to the chief engineer and the senior engineers in the department about the Frisco's tool because we're working in TxDOT to build a number of applications on top of ArcGIS as well for our needs and obviously there's some overlap there and emergency operations and the idea you know the earlier discussion about the tracking the deicers that's another application that has relevance to emergency operations as well as just overall. What we put on drive Texas and things like that so I think there's a lot of nice overlaps happening in the in the ArcGIS environment that are really positive and I think that, you know, I think it'd be valuable at least to have Dallas district but certainly I'd love to see our senior engineers look at what Frisco is done and see if we can help them in terms of resources at some point but also, you know, how can we adopt some of that code in that effort and not have to reinvent the wheel that's what I really love about a forum like this is trying to help scale great ideas, it's kind of what we do in the innovation lines in other efforts, but to take research and innovation in scale that as well across the state I think is what the real power is of what we just covered and. And the same is true of the everyday count. I mean, you know, the, the, the weather when wasn't every day, or isn't Every Day Counts a project so you know, same opportunity to take the everyday counts projects that we covered dive deep into those in the coming, you know, a couple of weeks, listen to what said at the National Forum. And maybe we can take some of those in at the local and potentially the district level and text out of the division level and apply them and then, and then from those results share those more broadly across the state which again is what I think is the power of this organization.

**Update | Natalie Bettger** - I just wanted to bring up our we're working on kind of the next generation for our traffic signal program. And really what we're looking at is establishing kind of minimum standards of equipment that needs to be deployed at our intersections within the Dallas, Fort Worth region we have over 7000 intersections. And so different agencies maintain those at different levels as what we have learned over the years and so our goal was working with our partner agencies to come up with a minimum standard inventory and all of our signals within our region, keeping that information in some type of online GIS platform, so that we can continue to monitor any improvements to those minimum equipment standards in the field. But then on the other hand, we're also going to be looking at maybe a third party platform that looks at signal performance, so we'll look at what the minimum standard is for equipment will complement that with the performance of the traffic signals looking at delay its signals looking at arrivals on red other types of performance measures that will work with our regional partners with to really get more of a comprehensive review of our signals, and it will help us target where we spend funding traffic signal funding for in the future and it also helps us identify what the needed improvement is it the equipment that's in the field. Is it retiming that's needed or is just the intersection over capacity and the technology isn't going to solve that problem? So, that's kind of the new approach we're taking with our signature program we're going out for procurement for a new consultant. Tomorrow, or Friday, I thought tomorrow's Friday but Thursday. So, Friday we have a procurement that's going to be released to brings consultant on board to help us work through

this with our partner agencies, is we kind of take a new approach to looking at signal improvements. And then we have been engaging Tom and his group as it relates to minimum standards for connected autonomous vehicles at those intersections as well so I think eventually we'll continue to add different types of technology at the intersections as well as how do we share the data from the intersections with kind of those auto manufacturers or third party folks that might be able to utilize that and get it in the vehicle so folks can better travel along the corridor.

**Update |** Andrea Gold - I don't have anything to add to having Kevin Pete and I had a good discussion last week about some of the things that we're working on that might be some good options for future meetings and Scott Smith joined me today on the call, and he is our project manager for a lot of our road projects on state parks, and he works very closely with TxDOT and he's a former textile employee. So, we're going to be brainstorming to see if there are any transportation issues that are innovations that we're aware of that we could bring to the group. But thank you all, particularly to all your staff that worked so hard to put this together. We are dealing with the same issues you are at TDWD. So, I know how much harder it is to coordinate meetings like this. During this time, so thank you all. We appreciate it.

**Update |** David Palmer - I just want to report on that we recently went out of procurement, or basically our artificial connected artificial intelligence connected vehicle traffic system could be kind of, we call it an advanced system. It's called Way Care, and in fact it was one of the, one of the vendors that presented there and the, the taskforce meeting that peaked our interest, and so that's going to go live here in November, but basically it combines the data of the road side, along with connected vehicle information so you basically use the vehicles as sensors out there, they can detect traffic flow changes or incidents and actually get into predictive analytics. So we've set that up and we're looking forward to, you know, at some point in the future, reporting on the results of that, we also set it up so that TxDOT, or any of the other partners here in the central test could jump on to but the results are very promising Las Vegas uses it very happy with it can produce the infrastructure costs, the roadside infrastructure. The other thing we did was that a partnership with caps is our pole system integrator. But it was kind of an unsolicited proposal came to us to test out a new tolling system with for cash and Ford. And so, they recently they've gone through and did some runs on that it's kind of it's going to be the future of GPS tolling type system or third-party tolling so that's just kicked off that's a year agreement. And so again, we look forward to promoting that the only other thing we have is that we are, we do have a program for a plan to expand the roadside units on our roadways, in cooperation with TxDOT. So, we look to do something with that with some fleet vehicles or whatever the bottom line is to build to provide the real time location-based information to drivers, you know, we think that could be doable within three to five years. We focus on that, and that way care system can be kind of central to that. So that's our report.

**Q |** Darran Anderson – Is the CAPS thing on a specific road or whole system?

**A |** Andrea Gold - The CAPS is with CAPSIM Ford, their partnership together to test the in vehicle tolling so it's on the MOPAC Expressway.

**Update |** Sean Merrill - My name is Sean Merrill I'm the current president for ASC Texas section. One of the big projects we're working on is our infrastructure report card. We produce this report print every four years. We developed this report card depicting the condition and performance of

Texas infrastructure in a familiar form pen like a school report card, assigning letter grades based on the physical condition in needed improvements investments for improvements, and it serves an important role in raising public awareness and providing electric officials the necessary tools to support infrastructure funding. So, we're just about done with that report card we've got 12 different categories, about 55 people been working on it, and it will be released in time for our legislative driving in February or March. So, once it's released, I'll be sure to get everybody a copy of it, that's associated with this group. But that's something that they look for to use when you go to talk to your legislators about approved funding for infrastructure. Three of the categories that would probably pique your interest would be transit highway roads and aviation for this group, those are probably the three categories that you'd be most interested in.

**Update |** Brian Moen - tech side you know we've been able to continue our meetings, obviously kind of as you all, everyone's done here. And then we just are focusing on safety, and then also just all modes you know a lot of us all grown up worrying about cars and getting good at that and realizing we need to be thinking more broadly, so just mobility in general things on innovative intersections. We will be working on we're going to have a joint meeting next year with IPS Texas that they may talk about some as well and as we're planning for our next meeting, probably reach out to Darren but some things may be from the Civ taskforce to kind of begin to push that information out into the various organizations that can help play some support roles of what the taskforce does.

**Q |** Natalie Bettger – I just had a question on that road that infrastructure report from, I believe, I was just wondering how that relates to our federal performance measures on bridge and pavement conditions and asset, their transit assets, I mean there's some of that same information that's going in those performance reports that report to Federal Highway or are they different, I was just wondering. the infrastructure report card. That was just reported on by ASC. They talked about roads transit and airports on Texas infrastructure so I'm just wondering, is there any relationship to that data to FHWA performance data that we have to report annually on bridges and pavement conditions as well as transit assets.

**A |** Kirk Fauver - As far as I understand ASC, he puts out a letter grade score like, I think we got like a D last time on highways. I mean, it's more of a qualitative score not more, it's not related to the performance-based planning and programming that we're accustomed to at Federal Highway and the MPO. He could they strep could probably tell you more but I'm thinking that the closest thing it would be a proxy to is the conditions and performance report that federal highways or DOTs puts out every couple year. and that even that report is more specific using h PMS data and payment management system data, we come up with a payment scores in the, in the breach management system to come up with a bridge scores, based on data actual data that we can quantify but I'm not sure how the ASC comes up with our qualitative letter grade scores, but it's not it's not related to the performance based planning as far as I'm understanding.

**C |** Tiffany with ASC - I don't know if Shawn is still on but if he is, he could speak more to this I can say that it's a very high-level overview of conditions. So, what we're looking to do is kind of grade the overall conditions and text doesn't maintain all the roads and bridges that are included in the report card. So that's kind of important too, is to state that this is a very general it's done by consultants and volunteers from agencies and experts in the field, and we will look at in a very general way what the conditions are of roadways, bridges, transportation, even Metro and rail and all of that and that all kind of goes into a grouping, or a category so maybe we'll look at the number

of deficient dams, or bridges and what are those conditions and it's really more of a very high level overview to help drive talking points for legislators help to use and government affairs and outreach to get funding to the places where it's most needed in the state. And I and I believe even net cog May we may be sending some for like flooding or things like that to have agency review prior to release so we try to get as many eyes on it as possible.

**C** | Tony with ITS Texas - Just a quick update we had our first virtual annual meeting last Tuesday November 10 had about 200 participants several good speakers. And I did want to mention Jamie Ma was our individual award winner for this past year for moving. ITS Ford in Texas and Campo won the project award for their regional open roads policy as Brian mentioned, we're working on a 2021 annual meeting jointly with tech side in the Dallas area. And the two boards are working to firm up a location and a date most likely September, October, more towards November. We had about 600 folks at our last meeting so bending what happens with COVID we're looking forward to a large meeting up in Dallas later next year so as always appreciate the ability to come in and update folks and participate in the council.

**Adjourn | 1:38 PM**