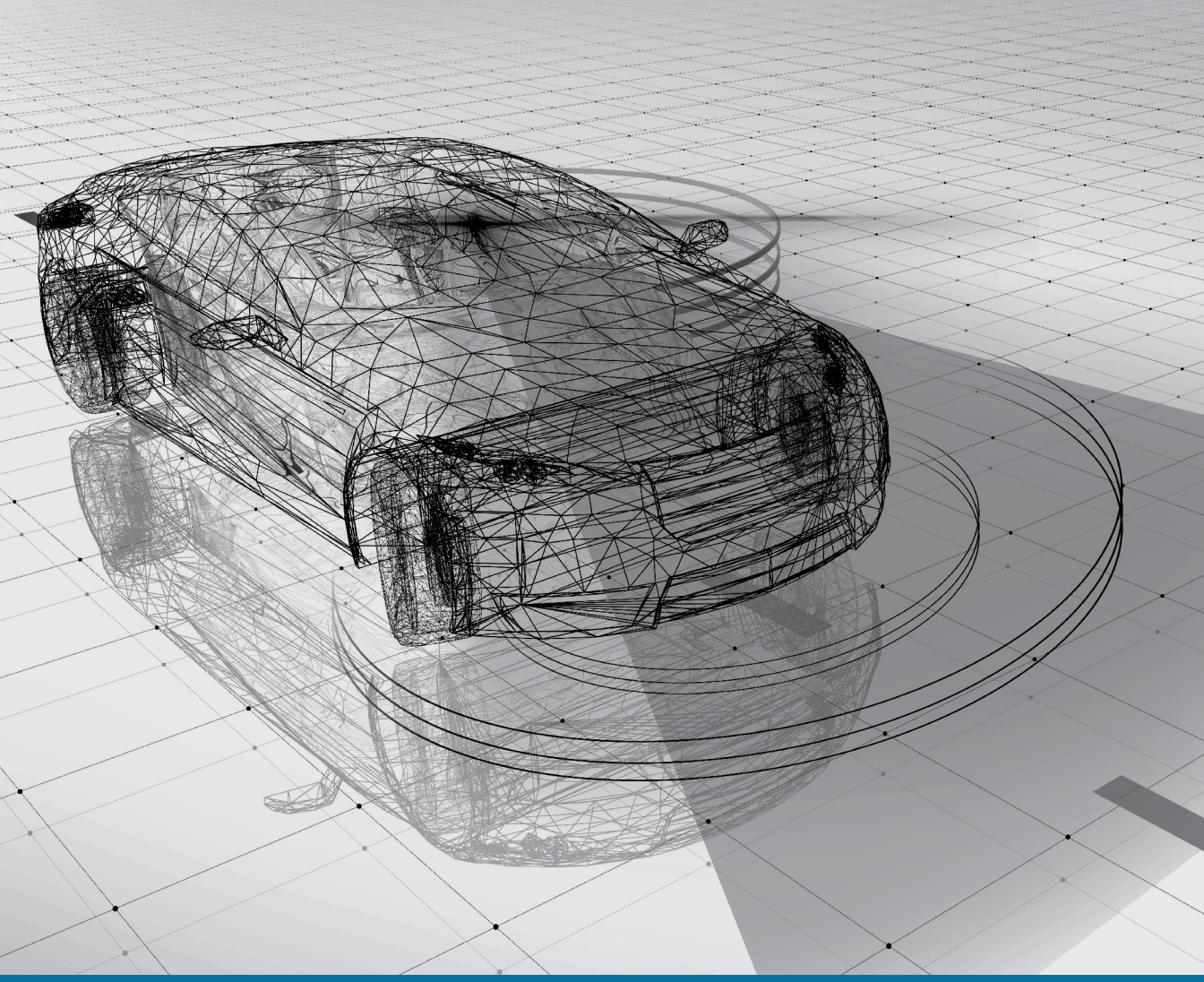


How Florida Hit the Gas on Self-Driving Car Development

Marc Scribner

Orlando, Florida was not widely known to the public as a hub of automotive innovation. But in July, more than 1,000 researchers and developers joined throngs of tourists at a large conference hotel for the 2019 Automated Vehicles Symposium, just two miles from The Most Magical Place on Earth.

The annual conference is the largest global meeting for those working on issues related to road vehicle automation, commonly lumped together by the media under the banner of self-driving cars. The meeting is usually held in San Francisco near the many startups launched over the last several years to develop these

technologies. Some understandably asked, "Why Florida?" Conference organizers and attendees knew the answers to that question and a lot of them start with a specific Florida state legislator.

On the morning of July 16, Senator Jeff Brandes (R-St. Petersburg) welcomed attendees and described how he came to be one of the most recognizable policy advocates for automated vehicle technology in the country.

"I was first elected in 2010 and was captivated by this idea that there was one big idea in every area of public policy, and I wanted to figure out what that is," Sen. Brandes told the crowd. "And so, I went to what I thought was the single best source of knowledge for new ideas for legislators: TED Talks."

Sen. Brandes explained how the now-famous 2010 video of former Stanford computer scientist and Google self-driving car project leader Sebastian Thrun speaking before an audience in Brussels first sparked his interest in discovering how automated vehicles would transform mobility and society. Since then, he has sponsored legislation to support testing and commercial operations. In the 2019 legislative session, a bill authored by Sen. Brandes establishing a first-in-the-nation automated vehicle validation process to be led by insurers became law.

Today, the United States observes approximately 37,000 annual traffic fatalities each year and the National Highway Traffic Safety Administration estimates that approximately 94 percent of crashes are the result of human error. The prospect of removing human beings from the driving task holds great promise both for enhancing safety and increasing mobility.

Labor costs generally account for around 75 percent of transportation operating costs, so providing taxi-style, door-to-door transportation could become attainable to the poor and disabled who presently must often rely on slow and inflexible public transportation. And that's only on the passenger side.

There are numerous opportunities to transform the American trucking industry, which moves $10 trillion worth of goods each year.

Yet, outside a small group of futurists and wonks, it was difficult to find others who would take these prospects seriously.

"I was captivated," Sen. Brandes continued at the Automated Vehicles Symposium. "I watched it over and over and over again just trying to understand the implications of what that meant. I went to my legislative aide and I said, 'Look, I really want to run a bill on self-driving cars.' And he said, 'Jeff, you're crazy. It's 2010. Nobody is going to talk to you about self-driving cars. Nobody in the country is talking about this. They will just laugh you out of the room.' So, I did what any good legislator would do: I got a new legislative aide who was not nearly as good at talking me out of ideas."

Sen. Brandes proved to be correct. Major technology companies, venture capitalists, and traditional automotive firms have invested tens of billions of dollars into this suite of technologies since then, with the promise of far safer, more affordable, and more accessible automobility on the horizon.

Governments are now getting into the game, with more than a dozen active policy projects currently active at the federal level and more than three dozen states with automated vehicle policies on the books. And thanks to Sen. Brandes's foresight, Florida's legislature and Department of Transportation have become policy influencers across the country and the world.

I sat down with Sen. Brandes at the 2019 Automated Vehicles Symposium in Orlando to understand more about his outlook on automated vehicles and why Florida presents unique opportunities for these emerging technologies. What follows is a condensed form of our interview, lightly edited for clarity.

Marc Scribner: You were a new member of the legislature when you introduced your first automated vehicle bill in 2011. Were some of your colleagues a little surprised that this was what you wanted to sink your teeth into?

Sen. Jeff Brandes: I actually had to call in a favor to get a Senate sponsor because I couldn't find a senator who would sponsor it. It was so early on, was just so new, and we were talking about just testing back then. But it gave us the opportunity to introduce the topic. And then with the commitment of Google at the time to bring the vehicles—they brought them twice—and allow legislators to take a ride in the vehicle, that experience helped a lot. It's hard to imagine that back in 2011, I was driving on I-10 at 70 miles per hour in a highly-automated car.

We've now seen how far the industry has come from that point—when it was the clandestinely put-together Toyota Prius—to today, where we're seeing purpose-built vehicles designed to drive in a natural way. It's pretty incredible to see that develop. And then we see the number of deployments that are occurring here in Florida.

Marc Scribner: Florida presents some unique opportunities for these purpose-built vehicles. There seems to be great potential for low-speed, low-mass, geographically-restricted golf carts being able to serve Florida's major retirement communities and other kinds of settings where you may not be talking about highway vehicles.

Sen. Jeff Brandes: Florida has the entire range of options. If you compare it to ski slopes, we have everything from the green circle to the double black diamond and everything in between. The opportunity for you to do that in a common regulatory environment with a Department of Transportation and Department of Highway Safety that understand the promising nature of automated vehicles, as well as a legislature that's supportive of this technology, is exciting.

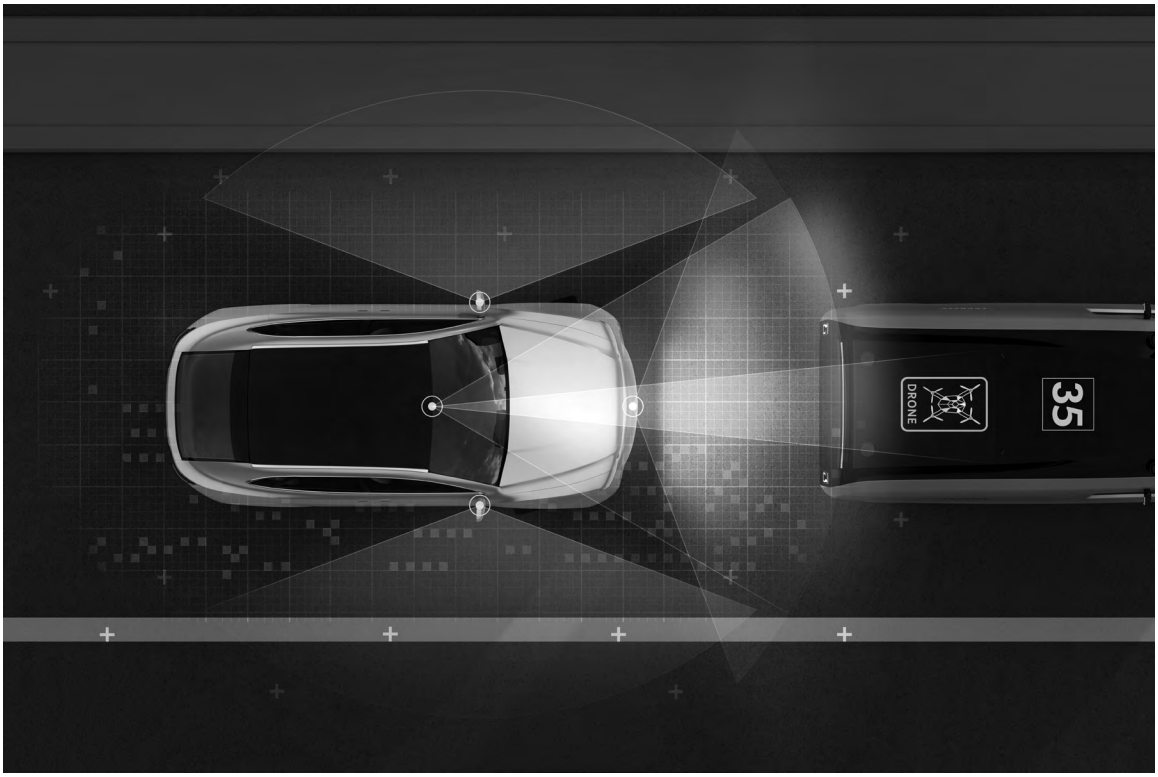
There's a business case that we think works in a state with 21 million people—the third largest state—that's going to grow to 25 million people in the next 10 to 15 years. We had 126 million tourists last year. Now add the opportunity to introduce them to this new market as well and get them to experience the technology firsthand, and we think all of those things play to Florida's strengths.

Marc Scribner: Detroit isn't in Florida. Silicon Valley isn't in Florida. But Florida has been out front on these policy issues and has become certainly the hub in the region and one of the major hubs in the United States. You've introduced a considerable amount of legislation through the years and have been continuously updating Florida's legal framework to keep up with the latest iterations of the technology. What do you think other states can learn from Florida?

Sen. Jeff Brandes: Other states can learn to simplify their process. You can protect consumers with insurance. That's what it's there for. But ultimately the insurer needs to be the Good Housekeeping seal of approval that the technology is safe enough to deploy. That's the key takeaway from the new Florida law.

We also have to be focused on R&D. Many of the problems that states are facing around distracted driving, tired driving, around just human error in general are largely technology problems that are going to require technology solutions in order to make progress. So, how do we help facilitate technology solutions to the problems that we're facing?

Florida roads are fairly challenging. We have some of the highest pedestrian and bicyclist fatalities in the country in any given year. That's largely related to weather, and to the population of tourists that come here.



But that combination is deadly on Florida's roads. We need technology solutions to help alleviate that. Part of it is street design. Part of it is technology in the vehicle. That has to play a role.

Marc Scribner: Relatedly, with your new law, insurers are taking the lead on validation within the framework that's established, which makes sense as insurers have skin in the game. But on the federal level, the National Highway Traffic Safety Administration has yet to actually promulgate the kind of safety and performance rules that NHTSA generally deals with and legislation failed in the last Congress to speed up this lengthy process. What do you think the federal government can learn from Florida's experience?

Sen. Jeff Brandes: The federal government has a very different role than the states do as it relates to this technology. Frankly, the states are just not prepared to deal with multiple players operating in their states. You can see how long it takes the feds to investigate one accident when it occurs and to produce reports. States are generally not designed to do in-depth code reviews for these types of occurrences.

But the federal government is charged with overall vehicle safety and performance measures for those vehicles, so I think they need to continue to work through these issues but not to rush. Don't rush to put something out. Instead, focus on things that maximize our options for the future. We don't know where this technology is going. We need to make sure we allow for

the growth of this technology. Florida does that through setting a reasonable insurance standard, but I think the feds need to take a slow and cautious approach to regulation.

Marc Scribner: You were one of the early state legislators to get involved in automated vehicle policy and you've got a lot under your belt now. What are some lessons that you personally have learned moving into this uncharted policy area and having to figure things out for the first time?

Sen. Jeff Brandes: I think the key is definitions matter. How you lay out the foundational framework in the definitions ultimately is kind of the blood that flows through the entire set of legislation. So, focus on your definitions, whether that's SAE International [formerly the Society of Automotive Engineers] definitions or something outside the SAE definitions that may be more generic than the standard SAE definitions. That helps.

The other thing is you have to get legislators in vehicles. You have to get people to experience it. I always tell people that the first minute of riding in a self-driving car tends to be scary. The next five you're interested. And then you're bored the rest of the time.

Marc Scribner: And that's where you want them to be: boredom.

Sen. Jeff Brandes: Well, boredom, but that also means we've got to be focused on things inside the vehicle too—the technologies inside the vehicle. But I think what we want is people to feel safe and comfortable in the vehicles and allow you to explore and do other things. I think that's a better use of your time.

Marc Scribner: I think another Florida invention, or at least something that's been copied elsewhere, is the Tampa approach to automated vehicle surveys. They actually did before and after surveys rather than just cold-calling random people to ask them about how they feel about self-driving cars. So, they asked what their perception of automated vehicles is before and after they experienced riding in one. And unlike a lot of online and telephone polling of random people who have never experienced one, the results show that people are far more comfortable with the concept after they've actually experienced a ride in an automated vehicle. This goes to your point about getting people in vehicles, yes? Being grounded in reality?

Sen. Jeff Brandes: I think that's a piece. The other thing is we have to rethink our cities. We have to begin to have conversations about pickup and drop-off zones. We need to rethink parking, whether that's rethinking how we're building parking garages so they can be convertible in the future, or changing rules to offer less parking as we add these modes.

You should also think about Uber and Lyft really as the canary in the coalmine for how we will operate in the future. So, how do we begin to build our cities around that? If we see how Uber and Lyft are beginning to affect restaurants, hotels, and airports in our communities where they're fully saturated, we need to be thinking of that and focusing

on those investments of a long-term nature that maximize our options. So, the question is, do you invest in a light rail system today if you believe that ultimately in 10 years from now you can have a self-driving vehicle take you from point to point? It may not make sense to make that $40 million per mile rail investment.

Marc Scribner: When you're investing under uncertainty, I think people would say exactly that on the need to keeping our options open.

Sen. Jeff Brandes: We're in this time between the lightning and the thunder. We need to recognize that we know something big is going to happen. And I think we're going to see more transportation changes in the next 10 years than we've seen in the last 50, with the world getting more shared, electric, and self-driving options. Florida needs to be at the forefront, at least on policy, in all three of those areas.

Marc Scribner: So, what's next for Florida?

Sen. Jeff Brandes: I will tell you I think we've got the best law in the country as it relates to the sharing economy and Uber and Lyft and ridesharing. I think we've got the best law in the country as it relates to self-driving vehicles. I think you're going to see us pivot and have the focus on making sure we get it right for electrification. That and continuing to educate our cities as to how they can be redesigned and redeveloped. We're starting to see this, as major developers are developing more drop-off zones, more pickup zones, more convertible parking garages where it allows them to grow their buildings down over time. Those are all incredibly important conversations to have.

But ultimately, the two challenges we have in the state of Florida are affordable housing and transportation. How does this technology change the paradigm for those two questions? If ultimately we're moving toward a more self-driving world, we need to recognize there will be decades of a hybrid scenario with both human-driven and self-driving vehicles. We only turn over about 6 percent of the U.S. auto fleet in any given year. It's going to take decades for us to make this transition.

But we need to be thinking about how we're planning for the future today because your buildings are going to have a 75-year lifespan. So, the buildings you're building today, most of their lives will be in an autonomous world. How do we begin to rethink our cities for that paradigm shift?

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