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PERSPECTIVE ON AUTONOMOUS TRUCKING

CROWD-SOURCING AUTONOMOUS INFORMATION

Autonomous trucks need all the help they can get to navigate on public roads. What if every other vehicle was helping them?

My friend and fellow NACFE analyst Dave Schaller called me awhile back to talk about a thought that had just struck him. Dave is an automotive engineer through and through with countless years of experience designing heavy-duty trucks. He can't help but be fascinated by, and focus on, new vehicle technology whenever he encounters it. And in this instance, he wanted to tell me about a recent Subaru rental car he'd had, equipped with active cruise control — which pointedly didn't work whenever the vehicle control system (a Level 3 autonomous system for those of you keeping score at home) couldn't adequately track lane markings on the road.

"What if," Dave asked me, "every vehicle on the road was doing the same thing and sending that data back to the appropriate, local Department of Transportation (DOT)? You'd essentially be crowd-sourcing data on which segments of road needed to be repaired in order to safely support autonomous vehicle operations."

Dave's right, of course. As a basic rule of thumb, autonomous vehicles simply cannot have too much data when it comes to operating safely on public roads. And one of the quickest, easiest and cheapest ways to obtain that information is by crowd-sourcing data from other vehicles using the roads.

The elegance, efficiency and benefits of such a network of connected vehicles are obvious. Local DOTs would essentially be getting constant, real-time information not just on the current state of local roads and infrastructure, but, over time, they'd be getting real-time information on how quickly road markings and other critical support infrastructure degrade over time. Traffic engineers would be able to identify stretches of road more prone to degradation over time for various reasons — poor rainwater runoff, for example, or intense sunlight — and take both short- and long-term steps to make those roads safer for autonomous vehicles over time.

This network could deliver other, more immediate, benefits, as well. Imagine you're a long-haul autonomous truck heading north in January and your vehicle control system starts getting real-time data from vehicles farther up the road that snow and ice are beginning to render the roads impassable for non-human drivers. The system could then use that information to reroute the truck around the poor driving conditions, long before it got too far into the storm and was forced to shut down until it passed, and the roads cleared.

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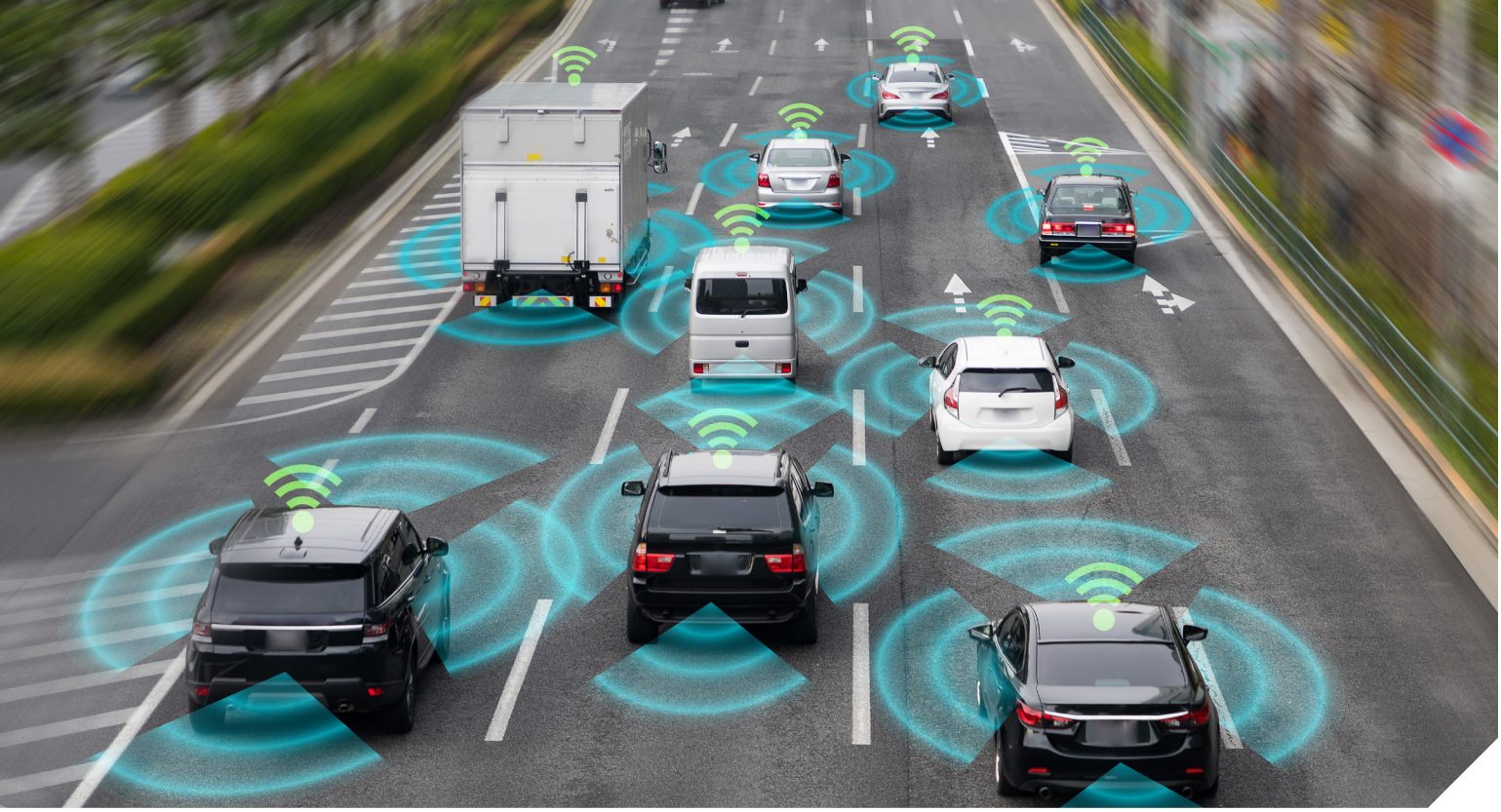
Obviously, we are not set up to support or act on crowd-sourced road data like that today. But the trendlines are clear: Each passing year, vehicles — even conventional, human-controlled designs — are getting more intelligent, gathering more data about their operating conditions, and getting more adept with sharing — and acting on — that information with other smart vehicles and infrastructure. It seems that over time, this will be something that happens organically as more and more vehicles become connected and start communicating.

Eventually, I believe we'll reach a point where we'll



see almost every vehicle on any given stretch of road communicating with every other car and truck in its immediate vicinity.

Let's do a quick thought experiment to illustrate my point: Imagine we're in an autonomous "messy middle" not too far in the future where there are still a strong mix of both human- and autonomous-controlled vehicles operating on our roads. Now imagine that we've got a late, impatient human driver who has decided to run a yellow light in order to make it to an appointment on time. If the car that person is driving were to send out an electronic flash to every other vehicle at that intersection that it is about to run through the light, the other vehicles would know to stay put until it has safely passed. In fact, even other cars with a human technically in control might actively keep the vehicles stopped, regardless of what the human was trying to get it to do, until the danger had passed.

Taken as a whole, I think that the evolution of autonomous vehicles will begin with the kinds of "go it alone" technology that developers are working on today — precisely because they understand that these additional support systems aren't available yet.

Over time, I think we'll see more organic technology growth as vehicles become more adept at gathering and acting on data. This will happen first on the vehicle-to vehicle (V2V) front, as I just illustrated, with vehicles increasingly communicating their intentions to one another on the road. And, as that technology matures and its advantages become more widely understood and accepted, we'll see the long-awaiting vehicle-to-infrastructure (V2I) technology play an increasing role in the development of fully driverless, Level 5 autonomous cars and trucks.

About the Author: *Jack Roberts is a transportation journalist who has been covering North American commercial vehicles for 25 years and has developed a reputation as a leading authority/futurist concentrating on new trucking technology, including autonomous vehicles, battery-electric trucks and emerging blockchain technology.*

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