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PERSPECTIVE ON AUTONOMOUS TRUCKING

DISTRIBUTION YARDS — AN EARLY AUTONOMOUS TEST BED

Volvo, Einride and others are already giving us a glimpse of what an autonomous trucking future may look like.

By Jack Roberts

We all have a futuristic vision of lonely robot trucks running alone through a dark desert night in our heads. But, in reality, the first automated commercial vehicle you see "in the wild," will most likely be a truck or van running in a controlled area — possibly under some sort of remote human control or monitoring. For most of us, this probably will be some sort of airport or hotel shuttle bus, running a dedicated route on a dedicated timetable, performing a monotonous, but demanding, task over and over again.

Computers have one massive advantage over human beings: They are capable of performing monotonous, repetitive tasks on an endless loop seemingly without getting tired, hungry, distracted, impatient or bored. Computers also don't decide to take "shortcuts" around established procedures for any of those reasons. It's one reason why autonomous systems have been slowly, but surely, taking over manufacturing jobs for decades now.

On the other hand, human beings — at least currently — are much better at interpreting a reality computers can't grasp: Human intuition can throw even the most powerful computing systems off their game. Artificial intelligence struggles to process and comprehend behavior that humans can process on a subconscious level.

Driving a motorized vehicle on a dynamic road is a wildly chaotic environment that changes from second to second. Humans can deal with these operational conditions because we have been trained since childbirth to read, decipher and understand the intent of other human beings around us in ways that are alien to computers.

Human drivers, for example, often can read the facial expressions of other drivers, or track their movements inside their vehicles to discern clues as to what they're about to do in traffic. Humans also can register small, but inappropriate steering and operational inputs that are telegraphed through a vehicle's movements on the road to deliver a warning that something isn't right: The driver is impaired, ill, or sleepy — and the vehicle should be monitored carefully and treated as a high-priority potential threat until it is no longer in close proximity to you.

Modern computers, aided by new artificial intelligence and self-learning programming, have been given a huge leg up in learning these abstract behavior patterns that humans understand instinctively. And it is likely that in the next 10 to 20 years, they will be able to add that insight into their own autonomous driving algorithms, paving the way for truly independent robot trucks running routes without any human input.

But until that happens, it is most likely that the first autonomous vehicle systems to impact trucking will make their mark on the logistics front, working in ports, airports, railyards and similar cargo distribution centers, staging and positioning trailers for the next leg of their journey to their final destinations.

Locating specific trailers, connecting to them, and then moving them to their proper designated location to either be picked up by a truck, or loaded onto a cargo ship or train, is about as close to a closed-loop, repetitive application demanding precision and consistent accuracy as is possible to find in the world of transportation and logistics today.

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And there are already examples of these new vehicles working in Europe. Volvo's Vera is an all-electric, autonomous yard tractor that operates in a closed environment with a human supervisor monitoring several of the futuristic little trucks at once.

Likewise, another Swedish OEM, Einride, has released its

own electric, autonomous, yard tractor, the T-Pod, which also operates in a similar fashion with remote human controllers monitoring its movements and standing by to take over if the need arises.

Both of these autonomous vehicle systems already are being evaluated at distribution centers in both Europe and the United States. And, in many ways, these evaluation trials are a sign of things to come. Because these automated logistics trials aren't merely looking at how these vehicles perform in a conventional distribution center. Rather, they are exploring new operational parameters for these centers, bringing about changes and introducing technologies that will, in all likelihood, one day find their way into local, regional and long-haul trucking applications.

All the ingredients for an autonomous future are present already in the automated logistics trials being conducted today. You have alternate fuel systems in play, in addition to transparent, continuously monitored cargos being transported in "smart trailers," tracked in real time by blockchain systems from origin to destination and robot trucks locating them, hooking up and transporting them to their proper staging areas with little or no human intervention — all being carried out by a system that can handle these repetitive tasks endlessly and accurately in a nonstop production cycle that runs around the clock every single day of the year.

We are still in the early days of evaluating these vehicles and the environment in which they operate. There is a lot to be learned. There will be failures. There will be unanticipated successes. Distribution centers are quickly becoming the nerve centers for a fast-evolving global logistics supply chain. If automated logistics systems, including battery-electric autonomous trucks, can supercharge their operations while offering an uptick in efficiency and accuracy, it will only be a matter of time before some, if not all, of those systems find a home in fleet operations across North America.

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.*