A Framework to Determine Road Networks’ Platoonability

Truck platooning has many benefits over traditional truck mobility. Platooning improves safety and reduces fuel consumption between 5 and 15 percent, based on platoon configuration. Although the benefits of platooning are quantifiable, not each truck route is platoonable. For efficient platooning, trucks need to travel at a constant high speed for extended distances. The integrity of the platoon should be preserved because interfering vehicles would compromise the platooning benefits and road safety. A high-level approach considers the volume/capacity of a roadway and the expected number of highway exit and entry conflicts. Using these parameters, each roadway section is assigned a level of platoonability, ranging from one to five — with five being the highest. Researchers developed a framework to analyze the Illinois highway network, where they discovered that 89 percent of the network highway is platoonable under average capacity conditions.