

ON THE ROAD TO CONNECTED VEHICLES

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According to the National Highway Traffic Safety Administration, more than 35,000 persons die from traffic-related collisions each year. Globally, more than 1.35 million people die annually from traffic collisions, (per World Health Organization). Where is the media coverage on these always-present traffic fatalities? It is not as dramatic as the wall-to-wall news coverage of a Novel Coronavirus (COVID-19), but to the relatives, friends and neighbors of those who needlessly perish, it is very significant. If these traffic related deaths received the daily attention of the public and the media, it would be equivalent to a 777-airliner crashing each day.

Enter the prospect of Connected and Autonomous Vehicles (CAV), and the possibility of zero traffic related fatalities, by taking the human element out of driving and ground transportation in general. CAV is not a new concept, and it was pictured in an advertisement by Central Power and Light Company in Life Magazine in 1957. The concept of an electrically powered and self-driven auto was in 1957 a dream of the future, and such technology was elusive. However, CAV is here today, and it is immediately deployable in terms of technology, however the funding of widespread CAV deployment is lacking.



What new business models can be developed, that will pay for the surface transportation infrastructure, (traffic signal cabinets and CAV radio transceivers), to be upgraded, enabling connectivity to vehicles that are being produced today that are CAV-enabled? With the increasing use of electrically powered vehicles, the Federal and State gasoline tax revenue is declining. There are not enough recharging stations for the coming demand for electrically powered vehicles. How can we fund CAV and electrical vehicle deployment quickly and efficiently?

Presently, there are approximately 400,000 signalized intersections in the United States. Less than 250 of those initial test deployments are equipped to receive dual-mode simultaneous signals generated by CAV-enabled vehicles, with either Connected- Vehicle to Infrastructure, (C-V2I), or Dedicated Short Range Communications (DSRC), permitting interoperability. Two months ago, US FCC Chairman, Ajit Pai, mandated that 5G/C-V2I communications would be used in the United States for Connected Vehicle communications.

How do we pay to upgrade every signalized U.S. intersection to connect to CAV-enabled vehicles that generate a Basic Safety Message (BSM) and Vulnerable Road User (VRU) message set? While Public/Private Partnerships have proven to be successful outside of the USA, using a concessionaire Design/Build/Finance and Operate (DBFO) model, the US has yet to develop an acceptable business model for signalized intersections using a Public/Private Partnership (3P).

Buried in mountains of legalese, largely focused on CAV driver and manufacturer liability, CAV vehicle interoperability from country-to-country and even state-to-state; the issue of long-term roadway infrastructure development continues to be bogged down in the traditional political and lobby-rich conference rooms of Capitol Hill. Yet every day more than 95 Americans lose their lives in traffic-related accidents. The sense of urgency is lacking from our elected and appointed officials in the rapid deployment of proven CAV technologies, and the allocation of several Billion Dollars to upgrade new intersections to be CAV-ready. The COVID-19 virus scored an \$8 Billion investment within one week, with major bipartisan support. Yet little is invested in CAV and only testbed deployments receive very limited funding. If we want to save lives now, contact your elected officials and ask them to support the rapid deployment of CAV technology. The life saved- may be your own.

The NEMA 3TS Traffic Signal section has been hard at work generating a NEMA TS-10 Connected Vehicle standard, which facilitates the requirements for the vehicle and signalized intersection to optimally communicate, enhancing motorist and pedestrian safety. We will continue to see CAV testbeds, however at the present rate of deployment, it will be 2035-2040 until we see widespread CAV deployments in the largest U.S. cities. The entry of Mobility as a Service (MaaS) and Signals as a Service (SaaS) could prove to be promising new business models that we may soon see as more CAV-ready intersections are deployed.

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