Volume - Issue
08-03
January 2021

Telematics Industry
Insights by
Michael L. Sena

THE DISPATCHER

IN THIS ISSUE

4TH ANNUAL PRINCETON SMARTDRIVINGCAR SUMMIT DECEMBER 8TH, 2020

This year's summit was originally scheduled to be held in May. It will now be a virtual event spread over a number of weeks. See the program and register at: https://orfe.princeton.edu/conferences/sdc/

*The focus of the **4th Annual Princeton SmartDrivingCar Summit** will address the challenges of commercialization and the delivery of tangible value to communities. Conference organizer Professor Alain L. Kornhauser says: "We've made enormous progress with the technology. We're doing the investment, however this investment delivers value only if is commercialized, made available and used by consumers in large numbers to deliver value that is commensurate with the magnitude of the investment made to-date."*

THE SYMPOSIUM ON THE FUTURE NETWORKED CAR 2021 A VIRTUAL EVENT - 22–25 MARCH 2021.

The 2020 Future Networked Car Symposium was a hybrid event, held just before COVID-19 caused most of the world to enter a period of restricted travel and remote working. Previous events had always been held in conjunction and co-located with the Geneva International Motor Show. Due to the cancellation of the Motor Show, the event was moved to FNC headquarters where some of the Symposium's participants and attendees gathered, and the remainder took part online.

*With the 2021 Motor Show cancelled, FNC and UNECE have decided that the **FNC 2021 Symposium** will be totally virtual. It will be held on four successive days in March, each day consisting of three-hour sessions dedicated to one of four important topics. The complete program is now ready. See 20 program at: https://www.itu.int/en/fnc/2021/Pages/default.aspx*

THE DISPATCHER

Telematics Industry Insights by Michael L. Sena
January 2021 – Volume 8, Issue 3

Automotive Service Providers Press for Data Share

Massachusetts
Now if you could only see
I know you would agree
There ain't nowhere else to be
Like Massachusetts

These are part of the lyrics from the official state folk song of Massachusetts written by Arlo Guthrie. Arlo is one day older than I. He was born in Brooklyn. His father, Woodie Guthrie, was also a folk singer. Arlo went to high school at a prep school in Stockbridge, Massachusetts and wrote his most famous work there, *Alice's Restaurant,* in 1965 the year he graduated. Guthrie has lived in the town of Washington, Massachusetts for over fifty years, so you can say that Massachusetts is Arlo Guthrie's adopted home, just as it was my adopted home between 1973 and 1990. While Massachusetts ain't the only place I would like to be, it certainly is among the top three. The other two are Sweden, where I am now and have been for the past 28 years, and my hometown, Scranton, PA.

I would expect egalitarian and liberal (in the classical sense of the word) Massachusetts to be a state leading the charge for a law proposing to give motor vehicle owners and vehicle service providers unrestricted access to data collected by the vehicle and delivered via the vehicle's telematics system. (*See page 13*) It was the first state to provide healthcare to nearly all residents, known as *Romneycare* after the Governor of Massachusetts at the time who proposed it, Mitt Romney. The program served as the model for the *U.S. Affordable Care Act*, aka Obamacare.

Claim it's the customers' choice not OEMs'

THERE ARE TWO views on the issue of sharing data that have been collected by a vehicle's various sensors and other systems. The view that is held by the automotive original equipment manufacturers (OEMs), the companies producing the vehicles and installing the sensors and various systems in those vehicles, is that the data shall be transmitted over the wireless network to their proprietary back-end systems and then distributed in pre-agreed formats to those companies and organizations (service providers) willing to sign agreements for the data's use. The other view, held by the service providers, is that a standardized on-board application platform will assemble data from the vehicle's data collection devices and send these data in standardized formats directly to the service providers who are chosen by the driver/owner of the vehicle to receive the data.

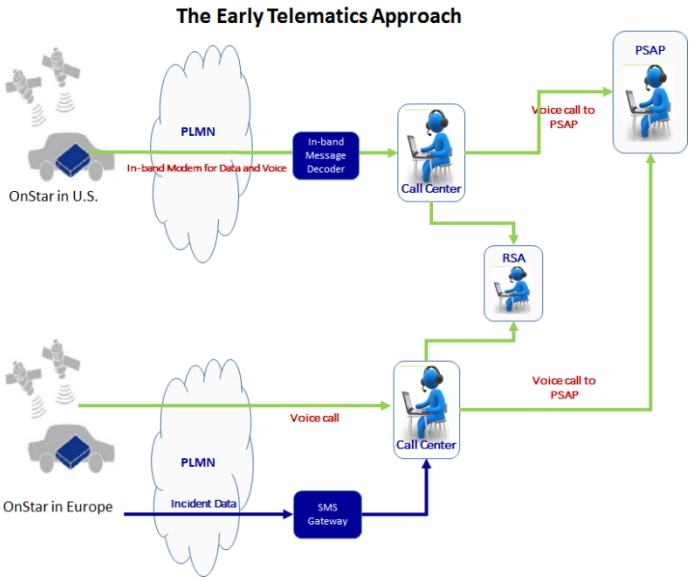
In the November issue of *THE DISPATCHER*, the lead article titled *Will the Vehicle OEMs Acquiesce on Data Sharing?* described the position of the OEMs as persented by Joost Vantomme, Smart Mobility Director for ACEA (EUROPEAN AUTOMOBILE MANUFACTURERS ASSOCIATION). In this issue I will present the other view. Representing this view is Jacques Amselem, Head of Internet of Things for ALLIANZ. I met Jacques in 2002 when he was Group Development Manager of Telematics for MONDIAL ASSISTANCE GROUP, a subsidiary of ALLIANZ. I was managing the implementation of *Volvo On Call*, and MONDIAL was selected to be the call center provider for the services. We have worked together in various ways on a continuous basis since that time. Jacques is a regular contributor and member of the ITS regulatory and standardization initiatives of the European Commission, CEN and ERTICO/ITS Europe. He represents ALLIANZ GROUP in European Working Groups on Connected and Autonomous Vehicles.

Before I discuss where we are and where we are hopefully going, I will give my view on where we have been.

There are reasons why we are where we are: they are collectively called past decisions

Calls for OEMs to share data directly with service providers is not a new phenomenen. They began as soon as there were data in vehicles to share in the mid-to-late 1980s. That's when cars got their first electronic control units (ECUs) that were connected by a computer network, the Controller Area Network, or CAN. Independent repair workshops fought for and won the legal right to access diagnostic trouble codes (DTC) from vehicles and to license the workshop systems from vehicle OEMs which allowed them to read the codes and fix problems.

Calls for sharing data continued when the first telematics systems were introduced in the mid-1990s, and initially, the OEMs delivered data directly to service providers. GM's *OnStar* was built as an on-board and off-board platform for the U.S. with a single call center and data management center covering the area of the lower forty-eight states. The wireless network in the U.S. at the time was analog, called AMPS. GM was its own service provider receiving data via a type of in-band modem embedded in voice calls.[1] In 1997, GM decided to expand *OnStar* into Europe with its VAUXHALL (UK) and OPEL (rest of Europe) brands. It learned quickly that European countries are not the equivalent of U.S. states. They had their own regulations and telecoms solutions. They also had a digital mobile network called GSM with short messaging service (SMS). Building a copy of its data and phone call management center in every country was not affordable, even for the company that was then the largest manufacturer of vehicles in the world. GM asked its roadside assistance providers, ADAC in Germany and THE AA in the UK, if they could double as *OnStar* centers, and GM decided to test the concept in Germany, OPEL's home market. *OnStar* delivered data directly to ADAC via SMS, and ADAC did the rest. GM never extended this service beyond Germany and closed *OnStar* Europe around the time of the financial crisis.[2]



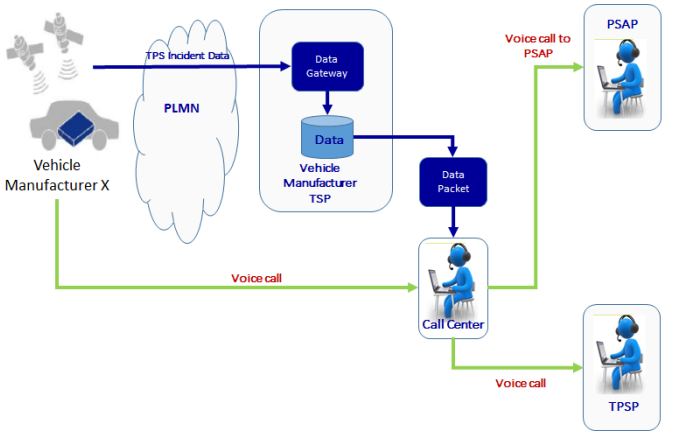
When VOLVO CARS first went to the service providers with its *Volvo On Call* telematics system in 1997, it had a similar solultion as GM's *OnStar*, a country-based SIM-card and country-specific data and call centers. After almost four years of discussions and

1. If this sounds like EU eCall that's because it is. It was an in-band modem with a small amount of data included in a voice call.

2. OnStar returned to Europe in 2013 with a central call center located in the U.K., but it did not include the system as part of its sale of OPEL and VAUXHALL to PSA. In 2018, OnStar announced that services in GM cars in Europe would end on 31 December 2020. Its site stated the following: *All OnStar services and Wi-Fi services will cease to be available on 31st December 2020. No trial or paid subscriptions or services, including emergency response services, will be available after that date.*

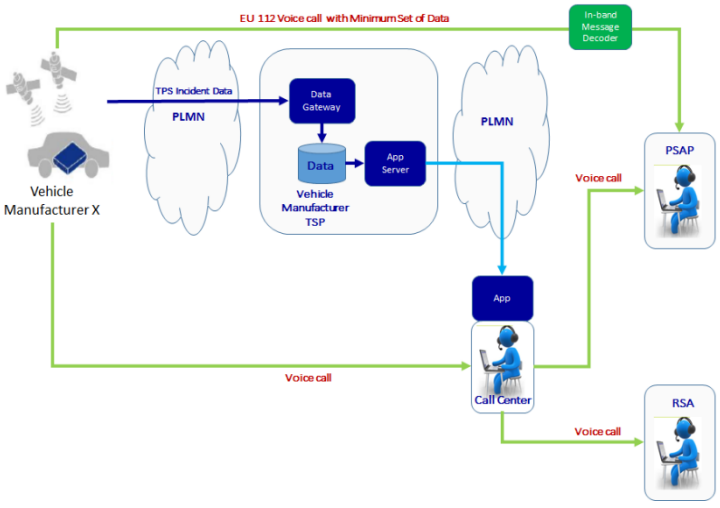
negotiations with call center companies, VOLVO decided that it had to find a better way to handle data or forget about delivering a telematics solution. Each call center wanted to have a data message (SMS at the time) which they would process in their own systems (just like ADAC for GM), and each integration was unique. Even with a cost sharing model, the price tag to VOLVO was simply too high to make the effort worthwhile. The solution was WIRELESSCAR, a central message handling center that could be used worldwide.

Volvo On Call and the Start of the Central Telematics Service Provider



The earliest variant of the WIRELESSCAR central data server solution also included delivering data to the service providers. VOLVO's first *Volvo On Call* implementation was in Sweden. WIRELESSCAR received SMSs from *Volvo On Call*-equipped cars driven anywhere over Europe, and data packets were sent to the call center. This saved some costs, but since the call center did not distinguish between receiving a data packet or an SMS, there was still a significant cost for integrating the data and developing return data packets to execute commands in the vehicle.

Central Telematics Service Provider with Workstation Application and Public eCall



VOLVO's next step was to create a web application running from a central server that could be used by third party service providers to deliver various services, such as roadside assistance, theft notification, stolen vehicle tracking. There was no data transfer and no integration with service provider systems. The web application contained all the tools necessary for communicating with the vehicle. This central data management solution, with or without the workstation application, was eventually adopted by all OEMs. It is what the OEMs call their back-end in the Extended Vehicle Solution. This solution can also be combined with the EU or Russian eCall solutions with data and voice being sent directly to the PSAPs.

OEMs added more functionality to their on-board telematics systems and continued to build their off-board infrastructures to process the data these systems were delivering for more and more applications, including those that were used internally to

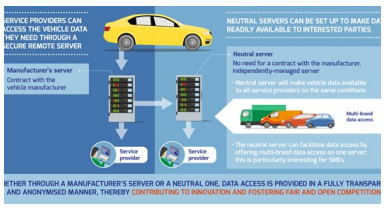
improve performance and increase profitability. At the same time, service providers, including both established players and newcomers, were pulling data from vehicles without integrating with the OEMs' on-board systems because there was no way to do so. Some applications, like theft notification, vehicle tracking and fleet management could be provided with an aftermarket-fit device mounted on, but not connected to the vehicle's systems. Other applications, like usage-based insurance, need data (at a minimum, distance travelled). The solution was to retrofit a dedicated device, a dongle, similar to a USB stick, to the OBD II port.[3] Dongle solutions started appearing about the same time that smart phone applications began to proliferate, and the two were mated to deliver user interfaces and broadband connectivity.

Much has changed in the world of connected vehicle services during the past twenty years. APPLE's *iPhone* erased the difference between a telephone and a computer and added the Internet into the bargain. iOS and Android running automotive infotainment systems have significantly altered the landscape for vehicle-related service delivery. Data is the main driver of services on all platforms. Service providers were never going to be satisfied with being forced to come in through the back door with dongle solutions or accepting the leftovers after OEMs had eaten the main meal. At least in Europe, at every chance they had, the service providers made their point to the European Commission that the cost and complexity of retrofitting devices put them at a disadvantage. They needed to be on an equal footing with the OEMs for the data that vehicles generate. The Commission has been listening, and as we have seen in the case of Massachusetts (see sidebar on first page and description at the end of this article), the movement is spreading beyond the EU.

3. OBD-II Port – On-board diagnostics-II. Every car or truck on the road manufactured after 1996 is legally mandated to have one installed. The OBD-II on-board computer features a 16-pin port located under the driver's side dash. It allows a mechanic or anyone else to read the error code using a special scan tool.

The data sharing view from the service providers

As a lead-in to the viewpoint of the service providers, I asked Jacques for his thoughts on the position of the OEMs, particularly those that relate to cybersecurity, but also on claims that the solution proposed by the OEMs fosters fair and open competion among all actors.[4] My first question was how do the service providers respond to the four major risks identified by the OEMs of allowing direct access to in-vehicle car data to third parties. One risk the OEMs claim is that every new external data interface increases the number of potential targets and entry points for hackers. In response, Jacques says: "There are plenty of examples



4. This diagram describes the proposal put forward by the automotive OEMs for delivering data from vehicles to third-party service providers. For the more detailed description, refer to November 2020 issue of *THE DISPATCHER*.

of systems providing access to multiple users in a secured way. Take banks, for example. Secure access should be part of the design. If third parties use a secured and well-ringed fenced area of the vehicle's architecture, the risk is significantly lower and can be mitigated."

OEMs have made a major point about the risk of using vehicle resources and computing capacity for unapproved third-party apps. This, they say, will endanger safety-critical functions. Jacques responds: "Unapproved apps must not be running in a car, just like they must not be running on smartphones. This chaotic and catostrophic scenario in which anyone can do anything with the car's electronics and software is not what the service providers are asking for and is not realistic."

A third risk stated by the OEMs is that the introduction of additional apps—approved or otherwise—or additional control units will draw the driver's attention away from the road. Jacques says that it is not the service providers' idea to have applications running in the vehicle that have not been properly integrated and approved by the OEMs. "The user interfaces must be carefully designed to conform to specific guidelines developed by the OEMs for their vehicles following accepted industry principles and mandated regulations, and those guidelines must be respected by third party providers."

The fourth risk claimed by the OEMs is that the installation of 'external' software will cause the malfunction or crashing of the entire vehicle software system. Jacques' response: "Access to resources within the car shall be limited to what can be made available without endangering safe operation and the integrity of the car. Just like it is for any IT platform, there shall be testing and validation before any release."

I asked Jacques if the service providers have had any engagemenet with the *European Data Task Force – Data for Road Safety*. This is the group that Joost Vantomme, representing ACEA, is now chairing. Jacques replied that so far this is a vehicle OEM task force and that third party providers have not yet been involved. He noted that in the position paper that is referred to as one of the two building blocks for the work of the Task Force, Access to Vehicle Data for Third-party Services prepared by ACEA, it states under the title of Customer choice the following: *Vehicle users can obtain services from the vehicle manufacturer, his network of authorised repairers, independent aftermarket*

operators or any other service provider that has concluded a B2B agreement with the vehicle manufacturer. "How open is this 'fair competition' if the provider has to have a B2B agreement with every OEM?" Jacques asked rhetorically. "The service providers are still competing with the OEMs but it is the OEMs who control the data. It would be different if the B2B agreements were similar to the ones APPLE and Google have for their apps, that is, a simple and standard set of rules which are open to anyone, not just those who have the capacity to negotiate with an OEM ."

The OEMs claim that the system is not broken and therefore there is no need for a fix involving a change in the business structure. "Customers are not asking for OEMs to do anything different from what they are doing now," said Joost in my interview. He said further, "Why should the automobile industry be singled out (by government) to deliver data directly to third parties when it does not do it for other industries?" Jacques says that "other companies and products do not have the same legacy and the same ecosystem depending on access to data as do companies in the vehicle services industry." This is clearly the strongest argument in favor of data sharing. It is the main argument used to justify access by independent repair workshops to on-board data and the right to license workshop repair systems. The automotive industry and service provider industry grew together in a symbiotic relationship. If OEMs move to digital techniques it must be possible for the service providers to move in this direction as well. Common data access is essential for it to work.

Jacques sums up the service providers' view of the proposed solutions offered by the OEMs, either delivering data via each manufacturer's server or via a neutral server: "The type, amount, frequency and granularity of the data OEMs propose to deliver to service providers at this point in time is not even close to what the service providers need in order to deliver their services."

Is there common ground or will it be a shootout?

Even though the two sides seem to be shouting at each other across a wide and deep canyon,it feels like the moment has come when a resolution of the data sharing issue will have to be reached. Why? First, because we have arrived at the point when car companies are now turning over their vehicles' operating systems to the data giants like Google and Baidu. When this happens, in addition to having to deal with the OEMs, service providers will have to negotiate with the another set of companies that want to intermediate them. Regulators in the U.S.

OEMs and service providers shouting across the great data divide. The OEMs are on the observation deck in the upper left. The service providers are just out of the frame to the right.

and the EU have their sights set on reining in the growing reach of data-hungry companies, and these regulators should be more sympathetic to arguments that favor greater consumer control over data in which they are involved in producing. Second, government regulators are finally understanding that even data privacy safeguards like GDPR[5] do not mean that customers have the ability to choose among alternative service providers. That's because there are no alternatives. Instead of the OEMs doing the choosing, the data giants will do it. Third, an entirely new set of car OEMs from China are set to enter the U.S. and European markets. Their approach to data processing is not necessarily aligned with the automotive service infrastructure that has been built up over the past century nor with the data privacy regimen that is being built up now. Service providers in the West may find it fruitless to try to negotiate with companies based in China. There is too much at stake for CHINA, INC. to simply allow their opportunities for AI-enabling data collection stop at their own borders.

5. EU General Data Protection Regulation.

My main question to Jacques is why haven't the service providers been able to convince the OEMs that direct data access is a good idea, one they should not only accept but embrace. "I believe the development of a lot of apps and a flourishing digital ecosystem for cars would be a major benefit for customers and for the car companies," he said, so they should embrace the idea. But there seems to be no movement by the OEMs in the direction of data sharing, at least that was the message delivered by Joost Vantomme of ACEA. Is it the technical proposal itself, the standardized application platform? Is there something missing in the way the proposal is being presented? Is it possible that the OEMs feel that they will be forced to re-do all the work they have already done to develop their connectivity networks, or that they will have to give up the value they have created after making huge investments in these infrastructures over the past twenty years? Or is the problem that the OEMs are not receiving a clear message about what the service providers want and a speaking partner for developing a solution that works for both parties?

I asked Jacques who is the counterpart to ACEA serving as the spokesperson for the service providers. There seems to be no single speaking partner, he said. There are multiple organizations that are making their separate cases and, at times, adding their signatures to position papers written by one or more parties among the service providers.[6] For example, ALLIANZ is a member

6. An example is the ***Manifesto for fair digitalization opportunities***, apparently written by the Automotive Data Publisher Association (ADPA) and signed by ten other organizations.

of INSURANCE EUROPE. The motor clubs are members of FIA (FÉDÉRATION INTERNATIONALE DE L'AUTOMOBILE). Automotive suppliers, such as DENSO, AUTOLIV and ROBERT BOSCH, are members of CLEPA (EUROPEAN ASSOCIATION OF AUTOMOTIVE SUPPLIERS). Each group represents its members' set of specific issues impacted by regulatory processes and business practices. Fair and equitable data access from vehicles is a common issue although there is no single point of contact that coordinates all of the service providers' views and represents these to the vehicle OEMs.

More important than having a single spokesperson for the group of service providers is having a common vision of what the group's members want to achieve, individually and collectively. This they have.[7] Strip away the inflamatory prose from the ***Manifesto*** text in the sidebar to the right and what you are left with is a simple requirement: Real-time access to time-critical vehicle-generated data for the purpose of delivering real-time services to the driver and the vehicle. The key requirement is in real time. Unfortunately, I believe the aggressive tone (e.g., 'not monitored by the vehicle manufacturer as a competitor') and the apparent non-negotiable demand ('run independent software directly in the vehicle') raise barriers to discussion and compromise.

Jacques believes the main reason OEMs are resisting the service providers' proposals is that the OEMs have been convinced by marketing reports that their futures are dependent on collecting data and selling services, not just on manufacturing and selling cars, car parts, accessories and repair services. These reports make huge revenue and profit predictions for mobility-related services based on data collection and processing. The fact that the car OEMs are not experienced in delivering the services that will supposedly generate the revenue and profits seems of little consequence to the OEMs. Jacques feels that as a result of these market reports, OEMs are doing everything in their power to protect what they feel is theirs to use and dispense at a fee, namely, the data generated when someone drives a car that they have produced and sold.

That being said, in Jacques' experience, there is not a single, unified view held by all of the OEMs on whether to cooperate with the service providers and open up for working on solutions for sharing data. Over the years and at different venues, Jacques has met with most of the OEMs and disucssed data sharing. He says some OEMs will not even discuss a cooperative approach, but there is a group that have expressed a willingness to do so.

7. They have been clear on the four key abilities they want (as stated in the above-referenced Manifesto:

- Independent, direct real-time access to time-critical in-vehicle generated data, not monitored by the vehicle manufacturer as competitor.
- Bi-directional communication with the vehicle and its functions, independent from the vehicle manufacturer.
- The ability to safely, securely and independently interact with the driver remotely using the in-vehicle Human-Machine-Interface (HMI) functions (e.g. via the dashboard or voice commands).
- The ability to run independent software directly in the connected vehicle using onboard computational capabilities to process any dynamically generated data as closely as possible to its source.

Excerpted from the ***Manifesto for fair digitalization opportunities***

Jacques thinks there could be an opportunity to find common ground with OEMs that understand that cybersecurity issues can be resolved and that there are workable solutions to in-vehicle interfaces. What is needed is a way for those OEMs that are willing to explore common solutions to work with those service providers who are also interested in identifying ways to cooperate.

In the end, whether it is through regulation or willing cooperation, it will come down to agreeing on a technical solution that solves the real-time data delivery side of the equation—this is the chief aim of the service providers—and ensures that security of the vehicle's operation is maintained—the principal issue of the OEMs. In my opinion, after following this debate since it started, regulation should be the last resort. Politicians and bureaucrats should not be in the business of deciding how things should work. They should stick to deciding why things should work and ensuring that they do. So the way forward should be through cooperation. What are the main sticking points?

While the perceived value of data is certainly an incentive for the OEMs to try to hold on tight to the data, I believe a major reason progress has been blocked is that the OEMs are convinced the service providers want to put a box in all their cars that will take over control of the data flow in and out of the vehicle as well as the human-machine interface. This would, in essence, remove the OEMs' connectivity control unit, which consists of the telematics platform and interfaces to the integrated head unit for Internet-based infotainment applications. All of the back-end systems used by the OEMs for internal, vehicle-related applications and for customer relation management are reliant on these on-board components. These are the components that must comply with the new regulations for cybersecurity and software updating (see page 22).

Jacques made a clear statement in our interview: "We don't want to put a box in all cars. It is a software application platform. The model is the mobile phone with mobile apps that are designed to be used in the vehicle."

Here is what *THE DISPATCHER* thinks we should do

I have listened to the arguments on both sides of this issue, and I feel that both the OEMs and the service providers have extremely valid and strong arguments for their positions. I also believe there is a solution that would satisfy each side and serve consumers

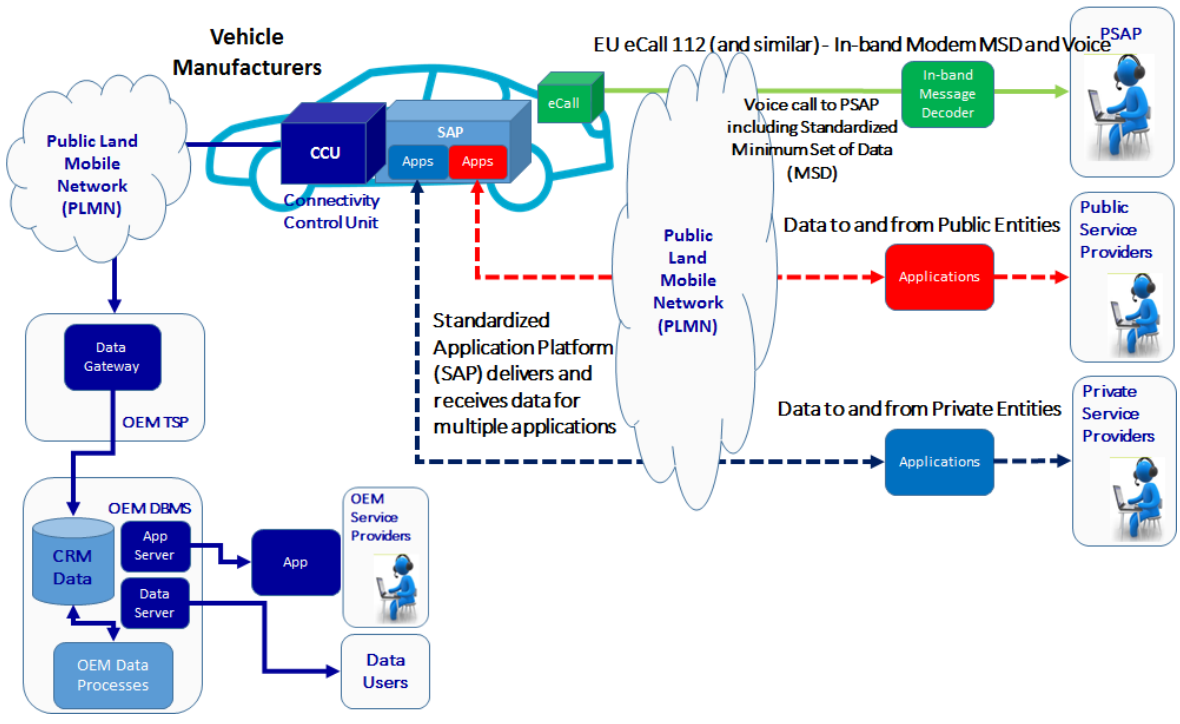
better than they are being served today. Regulators[8] can give the process a nudge—or a shove—by simply stating that over-the-air data delivery from connected vehicles to service providers will be an extension of the right to repair regulations. Regulators do not need to get involved in how this will be done, and the service providers on their own should not be developing solutions and presenting them as the basis for legislation.

Next, a crystal clear message to the OEMs by the service providers that they do not want to touch their systems, that they don't want to take over control of the vehicle's on-board systems or driver interfaces, would go a very long way to opening up a productive dialog. Further, suggestions in the service provider position papers I have read that there should be an 'independent council' that decides whether the OEMs are doing their duty to abide by fair competition is also a sharp stick in the eye of the OEMs. Should there be a similar council set up to oversee the service providers, to ensure that they are not taking business away from the car manufacturers? This is an unnecessary irritant. If the business reasons are not convincing enough, no committee passing judgments will make it work.

I have made my own diagram of what might be a starting point for productive discussions between the OEMs and the service providers. It shows the current OEM solution with a connectivity control unit representing both the secure telematics system for

8. In a recent European Commission paper, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Sustainable and Smart Mobility Strategy-putting European transport on track for the future* (12 December 2020), it states: "As access to vehicle data will be instrumental for transport data sharing and smart mobility, the Commission will propose, in 2021, a new initiative on access to car data, through which it will proposed a balanced framework guaranteeing fair and effective access to vehicle data by mobility service providers."

Proposed On-board Standardized Application Platform (SAP)
Communicating Directly with Public and Private Service Providers



safety and security services and over-the-air software and firmware updating and the Internet-enabled head unit for infotainment services. The OEM systems support OEM business and customer-related services that customers sign up for. The European Union eCall system is obligatory within the EU and several other countries. Russia has a similar system. These eCall systems are separate from the OEM systems.

I have pared down the standardized application platform proposed by the service providers to the basic functions. There should be applications running on this platform that are provided by both public and private service providers. The vehicle should deliver data to the applications that are installed on the platform by service providers, and process data that is sent from the service providers via these applications. The model for how this can be done exists: it is the smartphone. Whether it is using application platforms that are already extant from Google, APPLE or BLACKBERRY, or developing ones from scratch, that should be decided together by the OEMs and service providers. Whether one is chosen or multiple platforms are accommodated should also be up to the OEMs and service providers. It is not a box. It is a platform that manages APIs.[9]

Sit around the same table and talk to one another. Do not allow the process to be hijacked by either the bureaucrats serving as referees or by cliques of companies that try to establish themselves as gate keepers who will set up a dues-paying association in which only those who pay can play. The solution must be open and available to every participant in the automotive business eco-system. Cooperate. The solution is there for the taking. It's hiding in plain sight.

9. API – Application Programming Interface, a computing interface that defines interactions between multiple software intermediaries. It defines the kinds of calls or requests that can be made, how to make them, the data formats that should be used, and the conventions to follow, among other actions

Massachusetts Motor Vehicle Mechanical Data

QUESTION 1: Law Proposed by Initiative Petition

This proposed law would require that motor vehicle owners and independent repair facilities be provided with expanded access to mechanical data related to vehicle maintenance and repair. Starting with model year 2022, the proposed law would require manufacturers of motor vehicles sold in Massachusetts to equip any such vehicles that use telematics systems –- systems that collect and wirelessly transmit mechanical data to a remote server –- with a standardized open access data platform. Owners of motor vehicles with telematics systems would get access to mechanical data through a mobile device application. With vehicle owner authorization, independent repair facilities (those not affiliated with a manufacturer) and independent dealerships would be able to retrieve mechanical data from, and send commands to, the vehicle for repair, maintenance, and diagnostic testing. Under the proposed law, manufacturers would not be allowed to require authorization before owners or repair facilities could access mechanical data stored in a motor vehicle's on-board diagnostic system, except through an authorization process standardized across all makes and models and administered by an entity unaffiliated with the manufacturer. The proposed law would require the Attorney General (of Massaschusetts, ed.) to prepare a notice for prospective motor vehicle owners and lessees explaining telematics systems and the proposed law's requirements concerning access to the vehicle's mechanical data. Under the proposed law, dealers would have to provide prospective owners with, and prospective owners would have to acknowledge receipt of, the notice before buying or leasing a vehicle. Failure to comply with these notice requirements would subject motor vehicle dealers to sanctions by the applicable licensing authority. Motor vehicle owners and independent repair facilities could enforce this law through state consumer protection laws and recover civil penalties of the greater of treble damages or $10,000 per violation.

A YES VOTE would provide motor vehicle owners and independent repair facilities with expanded access to wirelessly transmitted mechanical data related to their vehicles' maintenance and repair.

A NO VOTE would make no change in the law governing access to vehicles' wirelessly transmitted mechanical data.

In Favor	Against
A YES vote for Right to Repair will guarantee that as technology advances, drivers can continue to get their cars repaired where they want. We passed the first Right to Repair law in 2012, but as new cars become more computerized auto manufacturers are using a loophole to restrict access to data needed to diagnose problems, make repairs, and perform maintenance. This means car owners are steered toward more expensive dealer repair options. Vote YES to protect independent repair shops and preserve your ability to shop around.Voting YES provides access ONLY to mechanical and repair information, not personal information.A YES vote ensures that YOU will have the choice to	Vote NO on Question 1 to protect your privacy, your safety, and your family. Question 1 has nothing to do with fixing cars. Question 1 is a data grab by third parties who want to gather your personal vehicle information and access it remotely, including location data in real time. Domestic violence advocates warn how dangerous this information could be. Jane Doe, the Massachusetts Coalition Against Sexual Assault and Domestic Violence, wrote, "Access to vehicle data, particularly call logs and GPS location, enables persons who perpetrate abuse to possess the tools necessary to track and monitor their victim." A similar proposal failed in California after the California Coalition Against

provide access to the repair information necessary to fix your car to your local independent repair shop even as cars become more computerized. It's your car, you paid for it, you should get it fixed where you want. *Tommy Hickey* *Massachusetts Right to Repair* *9 Park Street* *#5Boston, MA 02108* *617-248 – 9772* *massrighttorepair.org*	Sexual Assault warned, "from this information, a third party, such as a sexual predator, could stalk and/or harm victims." Privacy advocates, cybersecurity experts, and domestic violence advocacy groups urge you to vote NO on Question 1. *Steve McElhinney* *Coalition for Safe and Secure Data* *177 Milk Street* *Suite 610* *Boston, MA 02109* *617-398-0281* *Safeandsecuredata.org*

Full Text of Proposed Law

Be it enacted by the People, and by their authority:

SECTION 1. Section 1 of Chapter 93K of the General Laws is hereby amended by inserting after the definition of "Manufacturer" the following definition: —

"Mechanical data", any vehicle-specific data, including telematics system data, generated, stored in or transmitted by a motor vehicle used for or otherwise related to the diagnosis, repair or maintenance of the vehicle.

Section 1 of said Chapter 93K is hereby further amended by inserting after the definition of "Owner" the following new definition: —

"Telematics system," any system in a motor vehicle that collects information generated by the operation of the vehicle and transmits such information, in this chapter referred to as "telematics system data," utilizing wireless communications to a remote receiving point where it is stored.

SECTION 2. Section 2 (d) (1) of Chapter 93K is hereby amended by inserting at the end thereof the following new paragraph: Notwithstanding anything in the preceding paragraph, motor vehicle owners' and independent repair facilities' access to vehicle on-board diagnostic systems shall be standardized and not require any authorization by the manufacturer, directly or indirectly, unless the authorization system for access to vehicle networks and their on-board diagnostic systems is standardized across all makes and models sold in the Commonwealth and is administered by an entity unaffiliated with a manufacturer.

SECTION 3. Said Chapter 93K is hereby further amended by striking subsection (f) of Section 2 and inserting in place thereof the following: —

(f) Commencing in model year 2022 and thereafter a manufacturer of motor vehicles sold in the Commonwealth, including heavy duty vehicles having a gross vehicle weight rating of more than 14,000 pounds, that utilizes a telematics system shall be required to equip such vehicles with an inter-operable, standardized and open access platform across all of the manufacturer's makes and models. Such platform shall be capable of securely communicating all mechanical data emanating directly from the motor vehicle via direct data connection to the platform. Such platform shall be directly accessible by the owner of the vehicle through a mobile-based application and, upon the authorization of the

vehicle owner, all mechanical data shall be directly accessible by an independent repair facility or a class 1 dealer licensed pursuant to section 58 of chapter 140 limited to the time to complete the repair or for a period of time agreed to by the vehicle owner for the purposes of maintaining, diagnosing and repairing the motor vehicle. Access shall include the ability to send commands to in-vehicle components if needed for purposes of maintenance, diagnostics and repair.

SECTION 4. Said Chapter 93K is hereby further amended by adding after subsection (f) of section 2 the following:

(g) The Attorney General is hereby directed to establish for prospective vehicle owners a motor vehicle telematics system notice that includes, but is not limited to, the following features: (i) an explanation of motor vehicle telematics and its purposes, (ii) a description summarizing the mechanical data collected, stored and transmitted by a telematics system, (iii) the prospective owner's ability to access the vehicle's mechanical data through a mobile device, and (iv) an owner's right to authorize an independent repair facility to access the vehicle's mechanical data for vehicle diagnostics, repair and maintenance purposes. The notice form shall provide for the prospective owner's signature certifying that the prospective owner has read the telematics system notice.

(h) When selling or leasing motor vehicles containing a telematics system, a dealer holding a class 1 or class 2 license as defined in section 58 of chapter 140 shall provide the motor vehicle telematics system notice to the prospective owner, obtain the prospective owner's signed certification that he or she has read the notice, and provide a copy of the signed notice to the prospective owner. A dealer's failure to comply with the provisions of this subsection shall be grounds for any action by the licensing authority relative to the dealer's license, up to and including revocation, pursuant to section 59 of chapter 140.

SECTION 5. Section 6 of Chapter 93K is hereby amended by adding at the end the following:

(e) Notwithstanding subsections (b) and (c), any owner or independent repair facility authorized by an owner who has been denied access to mechanical data in violation of subsections (d) (1) or (f) of section 2 may initiate a civil action seeking any remedies under law, including any remedy authorized by chapter 93A. Each denial of access in violation of said subsections shall be compensable by an award of treble damages or $10,000, whichever amount is greater.

https://www.sec.state.ma.us/ele/elepdf/IFV_2020.pdf

Dispatch Central

Electric Vehicle News

Geely wants a Volvo and Daimler HEV engine hook up

ZHEJIANG GEELY HOLDING GROUP owns 100% of VOLVO CARS and 9.7% of DAIMLER AG. You might expect that GEELY can tell VOLVO to do pretty much anything it wants, but a puny 9.7% share in DAIMLER would not seem to be sufficient to make it do its bidding. Either that isn't the case, or DAIMLER has got an ulterior motive for its latest accord with GEELY.

A press release appeared in mid-November stating that DAIMLER would cooperate with GEELY to build next-generation combustion engines for use in hybrid electric vehicles (HEVs) produced by both MERCEDES-BENZ and VOLVO CARS. The press release states that DAIMLER will develop these new engines. DAIMLER's works council at its factory in Untertürkheim said: "We're speechless. There was not even a discussion about potential alternative manufacturing locations. This factory specializes in electric and gasoline powertrain assembly." The press release stated that most of these next-generation engines will be manufactured in China and DAIMLER would save €100 million. The timeframe for these savings was not mentioned.

DAIMLER has an existing partnership with RENAULT. A joint RENAULT-DAIMLER 1.3-liter gasoline engine is used in models such as in the *Renault Scenic* crossover and *Megane* hatchbacks and in front-wheel-drive *Mercedes* models such as the A Class. *Mercedes* uses RENAULT's 1.6-liter, four-cylinder diesel engines coupled with RENAULT transmissions in the *Vito* light commercial van. A 1.5-liter diesel engine produced by RENAULT is used in *Mercedes A*- and *B-class* models, as well as the *CL*A and *GLA* crossovers. Renault claims that cooperation with Daimler will not be affected by its planned cooperation with Geely. If that is the case, where are the savings coming from?

An Conghui, President of GEELY HOLDING GROUP and President and CEO of GEELY AUTO GROUP (the group that plans to merge with VOLVO CARS)[10] said: "This project reflects the need for economies of scale and targeted research and development investment in clean and highly efficient powertrains and hybrid drive systems and their applications."

10. Geely Automotive and Volvo Cars are planning to merge. The plan has been put on hold until Geely Auto does its own IPO on the China exchange. No date has been given for merger plans to proceed.

The key to this agreement is that it is for the combustion engines in hybrid electric vehicles, not the electric engines. This agreement is not principally about saving money or economies of scale. It is the result of European countries, one after the other, establishing policies that have been forced on them by the EU (read that European Commission) which are causing the abandonment of ICE vehicles, and these extend to hybrids with an ICE component. The message to the automobile industry delivered with the U.K.'s declaration that no ICE vehicles will be sold on its soil after 2030 cannot be ignored. Why develop ICE vehicle technology for HEVs if they will not be allowed to be sold?

Does anyone believe China will stop selling ICE vehicles or HEVs in the coming decades? Think again.[11] CHINA AUTO, INC. has a lot of geography that are still relatively untouched by automobile ownership, and getting charging stations into those areas while building the electricity production capacity to meet the additional requirements of running all cars on electric is not something that will be done quickly. MERCEDES-BENZ, VOLVO and all the other European-based auto companies see China and other countries in the neighborhood as the place where they will continue to sell their cars with the technology they spent a century perfecting, while they put their car bodies on top of skateboards also produced in China, or at least produced with the principal value coming from China.

11. The passenger plug-in electric car sales in China are gradually improving month after month. August was the best August ever with close to 100,000 sales. The result is 30% better than a year ago, Plug-ins captured a 5.7% market share. Most of the sales (81%) were BEVs (4.6% market share), which grew by 31% year-over-year. Plug-in hybrids grew by 27% year-over-year. After eight months, some 559,000 passenger plug-in cars were sold in China. That means that 94.3% were not BEVs or PHEVs.

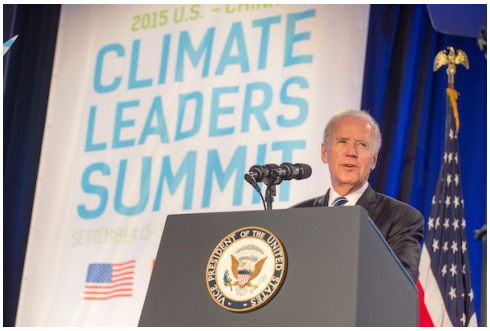
Works councils across Europe, and eventually the U.S. if it follows the EU's lead with forcing ICE out of their market, should turn to their governments and ask them what their long-term strategy is for the auto industry. At present, they have none except sticking picks in ICE vehicles and giving away BEVs.

Will new U.S. administration push BEVs again

MEDIUM WAGE EARNERS in Missouri shouldn't have to pay for fat cat venture capitalists in California and rich retirees in Florida to buy *Teslas* and to line the pockets of the second richest person in the world who owns a lot of shares in the company that builds Teslas. California accounts for almost 50% of TESLA sales and Florida is number two. Federal data show that 42% of BEV buyers make more than €150,000 per year and 67% make more than €100,000 per year. And then there's the ICE vehicle ready to get the kid who falls out of a tree to the hospital. The current outgoing administration in Washington was more interested in protecting the oil industry than keeping money in the pockets of middle-class

Americans when it cut the $7,500 federal subsidy BEV buyers when the selling company sold more than 200,000 in total.

Now, in spite of all the temper tantrums and Twitter whinings, a new President and a brand new administration will take office on the 20th of January 2021. The new President has said that he will restore tax credits and provide more incentives, including building out the charging infrastructure, to encourage people to buy electric. In ***The Biden Plan for a Clean Energy Revolution and Environmental Justice***, it states that on day one, Biden will use the full authority of the executive branch to make progress and significantly reduce emissions by, among other steps, "preserving and implementing the existing Clean Air Act, and developing rigorous new fuel economy standards aimed at ensuring 100% of new sales for light- and medium-duty vehicles will be electrified." It states further that the deployment of electric vehicles must be accelerated, and that Biden will work with the nation's governors and mayors "to support the deployment of more than 500,000 new public charging outlets by the end of 2030," and that he will restore the full electric vehicle tax credit to incentivize the purchase of these vehicles. He says he will "ensure the tax credit is designed to target middle class consumers and, to the greatest extent possible, to prioritize the purchase of vehicles made in America.



There is only so much he can do through Executive Orders. Remember, what one President giveth, can the next President taketh away. President Biden will need the Congress, both the House and the Senate and both Democrats and Republicans to follow through on these promises. Opponents of the electric vehicle tax credit say it's a more costly way to curb emissions than other economy-wide climate policies. Proponents counter with the statement: Why choose? Do it all. Someone will have to pay the bill. Why not an income test? You get a subsidy if you make less than $50,000 per year (pre-tax, since we know there are certain billionaires who say they have no taxable income) and you don't if you make more.

I have been on the record as stating that I do not believe there should be any incentives whatsoever for electric vehicles or any

Nuclear Power in China

China claimed on Friday, the 27th of November, that it had started the nuclear reactors on its first domestically-developed nuclear power plant, Hualong One. That claim is definitely a stretch of the term 'domestically-developed'.

China positions its Hualong One (HPR-1000) reactor design to be the key for its rising global stardom and has been actively pursuing deals to build it in Argentina, Romania, and the United Kingdom (?). The country's only concrete overseas accomplishment has, however, been in Pakistan. Meanwhile, six of the ten recent nuclear projects that have come online were built by Russia, including in Bangladesh, India, and Turkey. In fact, it could take a decade before Chinese exports start rivaling that of Russia and the West. Yet, a decade is not a long time as nearly anything to do with nuclear typically requires a long lead time, especially in the West. (*Jane Nakano is a senior fellow with the Energy and National Security Program at the Center for Strategic and International Studies in Washington, D.C. https://www.csis.org/analysis/chinas-nuclear-power-sector-what-it-and-what-it-not-yet*)

other type of vehicles. No free parking, no toll-free driving. If BEVs are what is needed, they will win the day competing fairly.

GM has a rethink on Nikola

GM's NIKOLA CHAPTER started out as a fairy tale, but ended up having to be rewritten as a tragic farce. Clearly, GM should have sent in experienced engineers with both eyes wide open when they did their due diligence. On the 8th of September 2020, GM said that it was going to make a $2 billion investment in NIKOLA and receive an 11% equity stake of the company. NIKOLA was going to sell 47,698,545 shares of its common stock to GM HOLDINGS. The stocks were valued at $2 billion based on the average price per share of $41.93. NIKOLA was going to build its *Badger* truck for GM, and the truck was going to be badged NIKOLA. GM would get 80% emission credits, offsetting GM's emissions for its ICE-powered vehicles. Two days after the GM-NIKOLA announcement, the bottom fell out of NIKOLA and the deal. See the whole story in the November 2020 issue of *THE DISPATCHER*.

At the end of November, GM pulled back almost entirely. It will not pay $2 billion for an 11% stake. It will not build the *Badger*, which means that NIKOLA will have to refund all of the deposits that were made by prospective customers. NIKOLA will use GM's Hydrotec hydrogen fuel cells in its Class 7 and Class 8 semi-trucks, and there will be discussions about NIKOLA using GM's Ultium battery in its vehicles. The companies signed a non-binding Memorandum of Understanding which is still subject to negotiation and execution of a definitive agreement acceptable to both parties.

On the good news side, NIKOLA is still in business. Its stock is trading at under $20/share instead of $75 after its June 2020 IPO. That's still twice as high as FORD and about one-half that of GM. It's still an electric car company, in spite of what it has or has not done. We have not heard the last of it.

The FCC Takes Big Bandwidth Bite

USE IT OR LOSE IT, the saying goes. In 1999, the U.S. Federal Communications Commission (FCC) set aside 75 megahertz of spectrum in the 5.9 GHz band for Dedicated Short-range Communications (DSRC) based on the IEEE 802.11p standards and meant for Intelligent Transportation Systems collectively referred to as vehicle-to-everything (V2X). On the 18th of November, the five FCC members voted unanimously to free up more spectrum for Wi-Fi, despite strong protests from all 50 state transportation departments, leading university research institutions and other national

leaders. The vote allows for Wi-Fi usage in what is/was known as the 5.9 GHz DSRC band of spectrum, which is 5.850 GHz to 5.925 GHz. Based on this vote, the FCC has pulled back and split up the Wi-Fi spectrum. One part of the deallocated spectrum, the second part of 45 MHz, from 5,850 to 5.895, will be allocated for home Wi-Fi use. The upper 30 MHz of the band will be transitioned from DSRC to Cellular Vehicle-to-Everything (C-V2X).

For reasons that have been very well documented and discussed ad infinitum (including in these pages), DSRC for V2X never caught on. In the February 3, 2014 issue of *Automotive News*, it was announced that U.S. regulators paved the way for vehicle-to-vehicle communications: "After years of research into V2V communications technology, federal regulators declared that the time has come for cars to talk to each other to improve safety." NHTSA said it was confident that DSRC technology was the right choice. It was ready to initiate the regulatory process when a change of administration in 2016 stopped the initiative. In May 2018, Toyota said it would start introducing DSRC-based systems in the U.S. in 2021. Eleven months later it abandoned its plan. The FCC claims that of the 274 million registered vehicles in the U.S., roughly 15,000 have DSRC technology for V2X.

The FCC move has the blessing of an ad-hoc group of companies including Google, Comcast and Microsoft (called WiFiForward) which released a statement calling the FCC proposal a "win-win, providing airwaves for wireless broadband and innovative automotive safety applications in a way that has garnered broad bipartisan and cross-industry support."

Oddly, the same Secretary of Transportation who stopped the plan to officially sanction 802.11p when she took over from her predecessor, Anthony Foxx, criticized the FCC decision. She wrote to FCC Chairman Ajit Pai in November arguing that "the FCC plan jeopardizes the significant transportation safety benefits that the allocation of this band was meant to foster." All fifty state transportation departments were against the FCC move. ITS America was also against it. ITS America president and CEO Shailen Bhatt said: "ITS America is but one of dozens of transportation safety organizations that have been sounding the alarm about the implications of this action. In a time in which we are rightly focused on following science and data (sic), it is inexplicable that the FCC is willfully disregarding the advice of experts." I believe that another group of experts, those in favor of C-V2X, have spoken and their argument has carried the day. We'll have to wait to see if the vote

A Human Touch

"There was a sliver of hope for the human race this week, with the reported news that Walmart has scrapped plans to use robots to check stock levels, prices and misplaced items. The retailer will instead retain flesh-and-blood workers, who have been found to be just as adept at those tasks during the pandemic."

The Economist October 24th 2020

will stand once a new administration is in place and a new Secretary of Transportation is installed.[12]

What is the Alliance for Automotive Innovation

ESTABLISHED IN 2020, the ALLIANCE FOR AUTOMOTIVE INNOVATION is the representative voice for the U.S. automotive industry, including both U.S. OEMs (e.g., GM, Ford, FCA) and the U.S. operations of foreign car manufacturers (e.g., BMW, Toyota, VW). In addition to vehicle manufacturers, members include equipment suppliers, technology and other auto-related companies and trade associations. It is headquartered in Washington, DC with offices in Detroit, Michigan and Sacramento, California. It was created through the merger of GLOBAL AUTOMAKERS and THE ALLIANCE OF AUTOMOBILE MANUFACTURERS. It first CEO is John Bozzella, formerly president and CEO of GLOBAL AUTOMAKERS.

"With deep industry roots and expertise, we will be the voice that advocates for policies supporting our industry's efforts to develop cleaner, safer and smarter mobility options for the American public. It is critical our organization work to ensure elected officials and regulatory bodies under-stand how key technological improvements can help improve the health, safety and well-being of our customers, their constituents, and the ten million workers involved in the auto sector. This combined organization will help guide the industry, bringing new innovations and policies to market.""

John Bozzella, CEO

What issues has the ALLIANCE tackled so far? One of them is the *Massachusetts Motor Vehicle Mechanical Data Proposition* extending the Right to Repair to telematics systems that voters in the state approved in the recent election (see page 13). 74.97% voted in favor of the proposed law. The law was supposed to take effect starting with 2022 models year vehicles. The ALLIANCE brought a federal lawsuit against the state. In the suit, the ALLIANCE alleges access to wireless vehicle telematics data is unconstitutional and the proposed law conflicts with federal laws. On the 11th of December, the state's Attorney General decided not to enforce the new legislation until there is a federal court ruling on its constitutionality. AUTO INNOVATORS, as it refers to itself in short, appears to be determined to make its voice heard. It criticized the FCC's decision to reduce the 5.9GHz safety spectrum while not supporting one or the other technology. It applauded California's Clear Fuel Reward price reduction for buying a BEV or PHEV. It has released an automated vehicle policy roadmap, intended to influence federal government policies. There will be more.

12. FCC chairman Ajit Pai has announced that he's leaving the commission as of the 20th of January 2021, the same day that President-elect Joe Biden will be sworn in. Political appointees usually resign before they are asked to leave. Pai's predecessor, Tom Wheeler, left when the soon-to-be ex-President assumed office in 2017.
President-elect Joe Biden has nominated former South Bend, Indiana mayor, Pete Buttiegieg to be the new Secretary of Transportation. His nomination must be approved by Senate.

Cybersecurity and OTA Updating Regs are Ready

UNECE WP.29

In existence for more than 50 years, and with participants coming from all over the world, especially the main motor vehicle producing countries, the **World Forum for Harmonization of Vehicle Regulations (WP 29)** offers a unique framework for globally harmonized regulations on vehicles. The benefits of such harmonized regulations are tangible in road safety, environmental protection and trade.

WP.29 is a permanent Working Party in the institutional framework of the Sustainable Transport Division of the **United Nations Economic Commission for Europe (UNECE)** with a specific mandate and rules of procedure. It works as a global forum allowing open discussions on motor vehicle regulations. Any member country of the United Nations and any regional economic integration organization, set up by country members of the United Nations, may participate fully in the activities of the World Forum and may become a contracting party to the Agreements on vehicles administered by the World Forum. Governmental and non-governmental organizations (NGOs) may also participate in a consultative capacity in WP.29 or in its subsidiary working groups.

The World Forum convenes officially three times per year and entrusts informal groups with specific problems that need to be solved urgently or that require special expertise. More than 120 representatives participate at the sessions of the World Forum.

The work of the World Forum is transparent: All agendas, working documents and reports are openly accessible on the Internet website of the World Forum.

Time to get the show on the road

IMAGINE A NIGHTMARE scenario in which a group of suicidal terrorists drive a dozen heavy vans into a community, spread themselves around and at a signal begin to drive at high speed through the streets. They cross medians and crash head on into cars, run through red lights and stop signs, smashing or being smashed by any cars in the intersection, and steer their vehicles up onto curbs and into crowds of innocent and unsuspecting people waiting for a bus. Before the police can react, dozens or hundreds of people are killed, and while the police try to stop those terrorists who have not died in a crash they caused, more havoc is created until the final vehicle has been incapacitated and the driver subdued.

Now imagine that a group of terrorists can accomplish the same objective without leaving the comfort of their den of destruction thousands of miles away by hacking into a fleet of driverless vehicles. The danger is higher with driverless vehicles rather than ones with a driver behind the wheel because a driver could possibly apply the emergency break or slam the transmission into reverse. If hackers have hijacked a vehicle's communications systems they will most likely have neutralized a remote control group's possibility to re-take control of the vehicles and apply a kill switch to stop them in their tracks.

Cyber terrorism with the commandeering of vehicles has not yet occurred, but the danger grows as more cars are delivered with unshielded Internet gateways and more companies turn over driving functions to automated on-board systems. This is a global problem that requires a global solution. It just so happens there is an organization that can and has coordinated the effort to develop a clear set of regulations for both vehicular cybersecurity and software updating. See sidebar.

UNECE WP.29 leads the effort

WP.29 has the responsibility to manage the multilateral Agreements signed in 1958, 1997 and 1998 concerning

the technical prescriptions for the construction and approval of wheeled vehicles as well as their periodic technical inspection. It was established in June 1952 as the **Working Party of experts on technical requirement of vehicles**. Its current name, **World Forum for Harmonization of Vehicle Regulations (WP 29)**, was adopted in 2000. In 2016, WP.29 established the *UN Task Force on Cyber Security and Over-the-Air (OTA) Issues*. It sits under ***UN WP.29 GRVA Working Party on Automated/Autonomous and Connected Vehicles***.

Just to make things a little more complicated, the *Task Force* coordinates its work with the automotive industry through a link to the *International Organization of Motor Vehicle Manufacturers* (*OICA*) and its Expert Group on Automated/Autonomous and Connected Vehicles chaired by Technical Committee Chairman, Kai Frederik Zastrow, Group PSA. The OICA Technical Committee was formed in 1956 and coordinates technical activities of its members and serves as s technical adviser to WP.29.

The *Task Force* held its first meeting on the 21st of December 2016 at the Department for Transport in London. It was chaired by Dr. Darren Handley, who has continued in that role throughout the life of the *Task Force*. The *Task Force* developed two documents, one for cybersecurity (ECE/TRANS/WP.29/2020/79 REVISED) and one for software updates (ECE/TRANS/WP.29/2020/80). The software update document is not limited only to over-the-air updates. The official names respectively of the documents are:

- *UN Regulation (UN R155) on uniform provisions concerning the approval of vehicles with regard to cyber security and of their cybersecurity management systems*
- *UN Regulation (UN R156) on uniform provisions concerning the approval of vehicles with regards to software update and software updates management system*

A few definitions from the documents would be helpful. Here are the main definitions from the cybersecurity regulation:

> ***Cyber security*** means the condition in which road vehicles and their functions are protected from cyber threats to electrical or electronic components.
>
> ***Cyber Security Management System (CSMS)*** means a systematic risk-based approach defining organisational processes, responsibilities and governance to treat risk associated with cyber threats to vehicles and protect them from cyber-attacks.
>
> ***Mitigation*** means a measure that is reducing risk.

To TA or Not to TA

The core of WP.29's work is based around the "1958 Agreement", formally titled "Agreement concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of E/ECE/TRANS/505/Rev.2, amended on 16 October 1995). This forms a legal framework for participating countries (contracting parties) to agree on a common set of technical prescriptions and protocols for **Type Approval** of vehicles and components. These were formerly called "UNECE Regulations" or, less formally, "ECE Regulations" in reference to the Economic Commission for Europe. However, since many non-European countries are now contracting parties to the 1958 Agreement, the regulations are officially entitled "UN Regulations". According to the mutual recognition principle set in the Agreement, each Contracting Party's Type Approvals are recognized by all other Contracting Parties.

Most countries, even if not formally participating in the 1958 agreement, recognize the UN Regulations and either mirror the UN Regulations' content in their own national requirements, or permit the import, registration, and use of UN type-approved vehicles, or both. The United States and Canada (apart from Lighting Regulations) are the two significant exceptions; they don't type approve. The UN Regulations are generally not recognized and UN-compliant vehicles and equipment are not authorized for import, sale, or use in the two regions, unless they are tested to be compliant with the region's car safety laws, or for limited non-driving use (e.g. car show displays).

Risk means the potential that a given threat will exploit vulnerabilities of a vehicle and thereby cause harm to the organization or to an individual.

Risk Assessment means the overall process of finding, recognizing and describing risks (risk identification), to comprehend the nature of risk and to determine the level of risk (risk analysis), and of comparing the results of risk analysis with risk criteria to determine whether the risk and/or its magnitude is acceptable or tolerable (risk evaluation).

Risk Management means coordinated activities to direct and control an organization with regard to risk.

Threat means a potential cause of an unwanted incident, which may result in harm to a system, organization or individual.

Vulnerability means a weakness

… and here are definitions from the software updates regulation:

Software update means a package used to upgrade software to a new version including a change of the configuration parameters.

Execution means the process of installing and activating an update that has been downloaded.

Software Update Management System (SUMS) means a systematic approach defining organizational processes and procedures to comply with the requirements for delivery of software updates according to this Regulation.

Vehicle user means a person operating or driving the vehicle, a vehicle owner, an authorised representative or employee of a fleet manager, an authorised representative or employee of the vehicle manufacturer, or an authorized technician.

Safe state means an operating mode in case of a failure of an item without an unreasonable level of risk.

Software means the part of an Electronic Control System that consists of digital data and instruction.

Over-the-Air (OTA) update means any method of making data transfers wirelessly instead of using a cable or other local connection.

Integrity validation data means a representation of digital data, against which comparisons can be made to detect errors or changes in the data. This may include checksums and hash values.

What the Task Force did

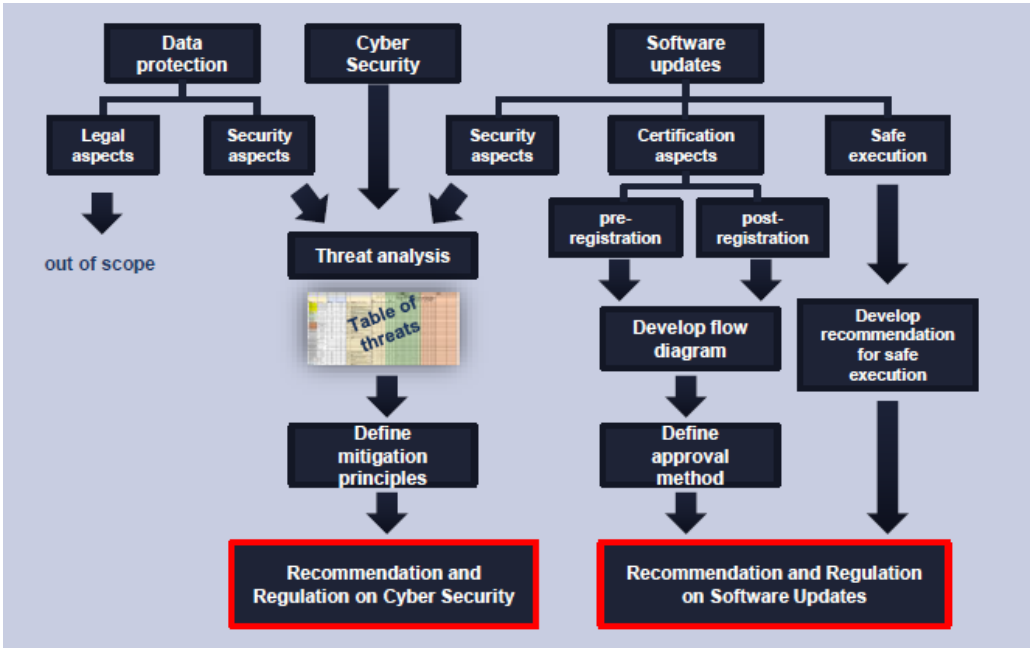
Type Approval normally involves testing a physical component, or software that controls a measurable action. If you press the SOS button, does it result in a 112 phone call with an embedded data message, for example? The job the *Task Force* took on was defining processes that will need to be applied throughout the life of a

vehicle, from the time it is put on the road for the first time until all of its physical components are recycled at the end of its useful life. Updating software in a vehicle is not the same as updating software on your laptop or smartphone. Updating the firmware on an electronic control unit might affect performance of other ECUs, or it might affect a component's type approval. A method had to be developed for taking all factors into consideration, which is what the group that has prepared the regulation has done. The Type Approval Authority becomes an active participant in software update processes that are constantly applied by the vehicle OEM.

For cybersecurity, the *Task Force* has prioritized continuous risk assessment, identification of threats and their corresponding effective risk mitigation methods.[13] The key cybersecurity requirement is the following: *The Approval Authority or its Technical Service shall verify that the vehicle manufacturer has a Cyber Security Management System (CSMS) in place and shall verify its compliance with this Regulation*. The vehicle manufacturer must demonstrate to the Approval Authority or Technical Service that the CSMS applies to the development phase, production phase and post-production phase, for the life of the vehicle.

The diagram below, provided by OICA Chairman, Kai Frederik Zastrow, shows how cybersecurity and software update processes fit together. The diagram also shows how cybersecurity, software updates and data security are interrelated. Regulations resulting from the work of the *Task Force* address each of the processes included in the diagram.

13. Threat Analysis (R155 Appendix 5). The threat analysis shall also consider possible attack impacts. These may help ascertain the severity of a risk and identify additional risks. Possible attack impacts may include:
(a) Safe operation of vehicle affected;
(b) Vehicle functions stop working;
(c) Software modified, performance altered;
(d) Software altered but no operational effects;
(e) Data integrity breach;
(f) Data confidentiality breach;
(g) Loss of data availability;
(h) Other, including criminality.



The Framework's there; what's next?

The two new UN Regulations will be implemented in those countries where the Type Approval requirements are in effect. The regulations will apply to passenger cars, vans, trucks and buses, and will enter into force in January 2021. According to the UNECE website, Japan has indicated that it plans to apply these regulations upon entry into force. The Republic of Korea has adopted a stepwise approach, introducing the provisions of the regulation on Cybersecurity in a national guideline in the second half of 2020, and proceeding with the implementation of the regulation in a second step. In the European Union, the new regulation on cyber security will be mandatory for all new vehicle types from July 2022 and will become mandatory for all new vehicles produced from July 2024.[14] There are 54 Contracting Parties to UNECE's 1958 Agreement, and it is expected that most or all of these countries will implement both Regulations.

What about the United States, Canada and China and the other countries which are not signatories to the 1958 agreement that are not part of the Type Approval regimen? These countries are part of the 1998 UN Agreement on Global Technical Regulations (UN GTRs). WP.29 develops GTRs that establish test procedures and performance requirements that are used worldwide, particularly in those countries where there is no Type Approval. This is next on the *Task Force*'s agenda.

UN Regulations 155 and 156 do not refer to ISO standards ISO/SAE 21434 (cybersecurity engineering)[15] and ISO/AWI 24089 (software update engineering), but there is a clear relationship between them and the Regulations. An OEM and its suppliers can demonstrate that their systems and processes are in compliance with the ISO standards and thereby use them to demonstrate compliance with WP.29. There is a timing problem, however, since the UN Regulations will come into force in the Type Approval countries before the ISO standards are completed and finalized.

The Regulation 155 Cyber Security text is available at:
http://www.unece.org/DAM/trans/doc/2020/wp29grva/ECE-TRANS-WP29-2020-079-Revised.pdf
The Regulation 156 Software Updates text is available at:
https://undocs.org/ECE/TRANS/WP.29/2020/80

14. https://unece.org/press/un-regulations-cybersecurity-and-software-updates-pave-way-mass-roll-out-connected-vehicles

15. ***ISO 21434 Road vehicles — cybersecurity engineering*** is an automotive standard currently under development. It focuses on the cybersecurity risk in road vehicle electronic systems. ISO 21434 will cover all stages of a vehicle's lifecycle — from design through to decom-missioning by the application of cybersecurity engineering. This will apply to all electronic systems, components, and software in the vehicle, plus any external connectivity. The standard will also provide developers with a comprehensive approach to implementing security safeguards that spans the entire supplier chain.

Musings of a Dispatcher: Living with Change

Force Majeure Change

When I was twelve, the street on which we lived subsided when the mines below collapsed. Scranton, Pennsylvania was settled at the time of the Revolutionary War, it grew in size when the Scranton brothers began to manufacture steel in the mid-1800s, but it became Pennsylvania's third largest city after Philadelphia and Pittsburgh on the shoulders of athracite coal. Under its streets in the valley along the banks of the Lackawanna River were a dozen or more flat-lying coal beds stacked over each other like the icing in between the layers of a multi-layered cake. From these beds came hard coal with the highest carbon content, fewest impurities and highest energy density. The coal was removed using the room and pillar method, with the pillars supporting the roof and the layers above.

Anthracite's heydays were in the 1920s. During the 1930s, before World War II, oil and gas took its place as the primary clean burning energy source, and by the time our street caved in at the end of the 1950s, the bottom half of the beds were flooded and the top half had been left to the pillar robbers. They had replaced the coal pillars with wooden supports which had rotted. A heavy snow was enough for our little neighborhood along South Seventh Avenue to give way. Police and fireman banged on the doors of all the houses at four in the morning, telling us that we needed to get dressed and come outside as quickly as we could. The gas mains had broken and the imminent danger of fire was appreciable. We stood with our neighbors on the sidewalk across the street from our house in a place that had been designated as safe by the police.

COVID-19 HAS FORCED everyone, in one way or another, to change the way they live, work, recreate, pray and bury their dead. We are told that even if we are willing to put ourselves at risk to contracting the virus, believing that we are either immune or will not develop life-threatening effects, our actions could spread the virus to people who are likely to die if they are infected. If we can, we work at home, or if we must travel to our place of work, we drive if we have the choice instead of taking buses or trains. All types of entertainment and sports events are either cancelled or take place without audiences. Vacations to far off locations and ocean cruises are now a dream.

Before CORONA-19 struck, environmental activists had been saying for years that in order to stop global warming, we had to give up all the things that added greenhouse gases to the atmosphere, an atmosphere already heavily affected by all the pollutants we have been putting up there since the start of the Industrial Revolution. They don't disappear or dissipate, as it turns out. They just hang there doing their dirty work as we send more up. Unless we did give up all those things, they said, Planet Earth would become uninhabitable for humans. We didn't do it. Now, because of the fear of dying from COVID-19—or perhaps the fear of infecting others who will die from the virus—many of us have changed our behavior. No one expects these changes to last beyond the All Clear sign once vaccines are delivered to the masses.

Not everyone likes the changes. There are demonstrations in most countries against the forced closing of all types of facilities. Anti-closing activists in Michigan went so far as to plot to kidnap the Governor of the State because of her lock-down policies, and to burn down the capital building in protest against the lock-downs. One or more co-conspirators must have gotten cold feet because the police were tipped off to the plot and the perpetrators rounded up and jailed. Nevertheless, there was significant grass roots support for their cause. In Denmark, the COVID-19 virus was contracted by minks (the cute, little animals that are farmed for their fur) from their handlers. It was discovered that the virus had mutated and if it spread back to

humans it would be a variant that might not respond to the vaccines currently being developed, vaccines that all of us hope will stop the suffering and death. The government—actually, the Prime Minister and her cabinet—decided that all the minks on all the mink farms in Denmark had to be slaughtered and their bodies disposed of in a way that would minimize the risk of the virus they carried spreading. Of course, not all minks had contracted the virus, but they couldn't test all 17 million, the government reasoned. "We have a great responsibility towards our own population, but with the mutation that has now been found, we have an even greater responsibility for the rest of the world as well," Danish Prime Minister Mette Frederiksen said in a news conference. One of two problems is that she didn't ask the mink farmers what they thought. The other problem is that what her government did was illegal. There are actually laws in Denmark that need to be followed. Ms. Frederiksen was labelled a dictator. The mink farmers brought their message to the capital in their tractors. The sign in the photo below says: "The one who gives the order takes the garbage." I'm not sure what that means exactly, but we can take it for granted that those delivering the message were not happy.

Debates rage on about whether to make face masks mandatory, and fights are breaking out over individuals' refusals to don the face covering. U.S. Senators Sherrod Brown (Dem-Ohio) and Dan Sullivan (Rep-Alaska) brought their disagreement over masks to the Senate floor. A third Senator, Republican Ted Cruz of Texas, accused Brown of 'fake virtue' for requesting that Sullivan put on a mask when addressing the Senate physically on the Senate floor. It seems that in addition to having police watching over

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Our house was as straight as it had always been, but houses to the right and left of ours were leaning noticeably. The street, which had been flat, was now rolling along its entire length. What happens next, I thought.

What followed was a two-year painful process that eventually led to all of the families and businesses along the street having to move and all the buildings being demolished. My father was born in the neighborhood, and, except for the three years he was in the Army during WWII, he had lived there all his life. When he returned from the War, he and my mother moved into a house my grandfather had bought for them across the street from his home and shoemaker shop. One of my father's sisters and her husband lived in a multi-family house my grandfather also had bought which was right next door to his. My parents, with the help of other family members on both sides, had remodeled the entire inside of the house, in the fertile soil around the house, flowers and lawn flourished.

The neighborhood also had the grade school where my father, his brother and sisters, and my sister and I had gone: Washington Irving Number 12. Our church, St. Lucy's, was founded by my grandfather and grandmother along with hundreds of other Italian immigrants in West Scranton and Bellevue. It sat at the top of the hill, visible from any point along the street. Downtown Scranton was a ten-minute walk, over the bridge, past the gas house and through the fruit and vegetable wholesale block. There had been a trolley up until 1952, and one of our neighbors, Mr. Malone, was a trolley driver who let my sister and me sit in the driver's seat at the back end when we were lucky to have him as a

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roadways to catch speeders and over city parks to catch dog owners who don't scoop up their pooches' poop, we now need to have face mask patrols extending into the halls of government.

Then there are the conspiracy theories about the real motive behind why we are experiencing this virus in the first place. Circulating under the title *The New World Order*, which refers inaccurately to the United Nations Agenda 21/2030, "COVID-19 has been faked to soften the world up for it and allow a vaccination programme that will render humanity infertile". According to a recent study, one-quarter of Britons think COVID-19 was manufactured in a Wuhan laboratory and an eighth think it is a plot to vaccinate humanity. (*THE ECONOMIST*. *November 14th 2020*). Those who believe this gibberish are protesting against everything related to controlling the virus, including the eventual vaccines that will stop its spread.

Maybe the reason governments did not pass laws before the pandemic spread from Wuhan, China to all corners of the world eight-to-ten months ago, laws that would force people to stop flying or to stop commuting or doing many other things to stop global warming, is that law makers had a pretty good idea we would react like we are now reacting to those pandemic restrictions. Some citizens are accepting them, but many are not. Those who do accept them are holding out until there is a vaccine so that they and the rest of us can all get back to living a 'normal' life. The pandemic will end, sooner or later, they think, and soon after it ends we will begin to forget all the sacrifices we had to make. Those who do not accept them, who gathered at U.S. Republican Party political rallies to support their candidate, or who have marched in the streets of Germany to protest their government's latest lockdown, follow another belief system. The German protester who was interviewed on our Swedish TV news program says: "Germany is no longer democratic."

It seems that we are not prepared to make permanent changes in our lives, neither to the spread of the deadly COVID-19 virus nor stop global warming. It appears that unless one is stricken by the virus or feels an imminent threat from climate change (e.g., your house is now under water and will remain there for the duration), both the virus and climate change are 'fake news'. Yes, we want Earth to be habitable for generations to come, but we are not sure

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driver. There were two barbers, Patsy Mack and Louie Daverne, a butcher shop run by Mr. Meyer, a grocery store run by Abbie Newman, my grandfather's shoemaker shop, Sena's Shoe Repair, a lumber yard and four beer gardens. On the slope up to the church was another grocery store, Travatos, and an Italian bakery, Liberty Bakers. There was a silk mill and a hide and tallow factory at one end of the street.

Everything on the street below below our church, Scranton Street, and up to the grade school was demolished. The grade school came down several years later since there were no longer any students in the surrounding area to attend it. Families moved to wherever they could find places to live. Those who owned their homes were compensated by the Scranton Redevelopment Authority based on an appraisal of the value of the property, not on the basis of what it would cost to buy a replacement for what had been lost. Still, it was better than nothing.

My parents found a house a few blocks away from the high school my sister and I attended. Some of our new neighbors belonged to our church. The neighborhood grocery store was owned by a good friend of my father and his son and I were friends and classmates, but many of my friends from the old neighborhood went to another one of the three high schools in the city.

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that we want to give up our own lives in order to make that happen, especially since we are not all convinced that the way we need to do it is the way that we have been told by doomsayers.

Ch-ch-ch-ch-Changes; turn and face the strange

Under the cover of COVID-19—or perhaps emboldened by the autocratic power that the virus has enabled—some politicians are taking it upon themselves to make life-changing decisions for their constituents outside of the health arena. The current government of the UK, the one that promoted the country's resignation from the European Union partly on the grounds that the EU is run by unelected fat cat bureaucrats, recently announced that it would ban ICE (internal combustion engine) vehicle sales in the UK in 2030. The government had already said it would ban such sales in 2040, but the Prime Minister decided that it wasn't good enough after being criticized by Greenpeace and Green Alliance lobbyists. In addition to the ICE ban, other measures have been proposed, including "greater offshore wind use, cleaner and safer nuclear power, zero-emission public transportation, greener homes and public buildings, carbon capture, hydrogen use, research funds for zero-emission planes and ships, planting 30,000 hectares of trees every year, and stimulating innovation to make London the global center or green finance".

That's quite a laundry list. Money will have to be found to pay for all of this. New taxes? Not on a Conservative's watch. Perhaps the government can decree that funding for all those cultural activities we have been getting along without during the lock-downs should be diverted to pay for some of them. That may be easier said than done. People who thought they were living in a democracy where they get to vote for change will surely have something to say about it. Extinction Rebellion, Greenpeace and anti-mink farming activists are now getting competition from groups like StandUpX who feel their democratic rights are being trampled by climate storm troopers. One StandUpX organizer said "We're waking up to all the darkness going on. I feel like I'm living under a mix of communism and the Taliban."

David Bowie's line, "Changes; turn and face the strange", was prescient. Democratic leaders, like the now former President of the U.S. and prime ministers of what have been democratic countries, seem to like the power wielded by the leaders of the not-so-democratic countries like China and Russia, where their leaders can simply make a decision to do something and it is done. Lock everyone up; kill all the pangolins; ban all internal combustion engines. I decree; make it so. Not so fast. We vote.

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They all disappeared from our lives, except for my aunt and uncle who moved to an apartment not far from our new home. I lived in that house for the next four years, while I was in high school. I lived there during the summers and vacation periods when I was in college. I visited there several times a year up until five years ago when my mother passed away. We sold her house to a couple from Brazil with a high school-age son. My sister, a teacher in the Scranton school district, and her husband, a fireman, built a new house on the back half of my parent's property when they married. She is now a widow and still lives in that house.

At least once during my return visits to Scranton I drive along South Seventh Avenue. The street was straightened during the two years that we waited to receive the SRA settlement while one house after another around us was demolished. Ours was the last one to go. A few years after we moved, a car wash was built. Another couple of years passed and a self-storage company set up rows of storage sheds. There is one tree left among these buildings and it is the one my father and I planted before the cave-in.

I don't recall that any of the families had a choice about remaining. A number of other buildings on the street were unaffected by the subsidence, and there was no more settling while we still lived there. The city just decided that it would be easier to use Federal money to pay everyone to leave than to spend city funds to stabilize the mines by flushing them and rebuilding the infrastructure. Decisions like that affect peoples' lives forever. It did mine. That house, that neighborhood and the people who lived there are still what I remember most about my life in the place where I was born and raised.

About Michael L. Sena

Michael Sena, through his writing, speaking and client work, attempts to bring clarity to an often opaque world of vehicle telematics. He has not just studied the technologies and analyzed the services, he has developed and implemented them. He has shaped visions and followed through to delivering them. What drives him—why he does what he does—is his desire to move the industry forward: to see accident statistics fall because of safety improvements related to advanced driver assistance systems; to see congestion on all roads reduced because of better traffic information and improved route selection; to see global emissions from transport eliminated because of designing the most fuel efficient vehicles.

This newsletter touches on the principal themes of the industry, highlighting what, how and why developments are occurring so that you can develop your own strategies for the future.

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