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Telematics Industry
Insights by
Michael L. Sena

THE DISPATCHER

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Dispatch Central

OEMs are splitting up their companies in order to increase their attraction for investors. Are they creating or destroying value?
EU cities told by the High Court that they have no case against the European Commission on its NO_X regulation.
The UK is trying to decide whether to take a recommendation by its Law Commissions to enact legislation for User-in-Charge.

Musings of a Dispatcher

Russia invades Ukraine and starts bombing everything in sight. The U.S. and EU finally decide Russia has dropped one bomb too many on innocent civilians and place severe restrictions on the country and its leadership. Most Western countries halt their activities, with one glaring exception: Renault Group. It made a political act by taking majority ownership of Russian automaker, AvtoVAZ, and it was making a further political statement by keeping its operations going. Leveler heads in Paris appear to have realized they were making a very big mistake.

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THE DISPATCHER

Telematics Industry Insights by Michael L. Sena
April 2022 – Volume 09, Issue 05

The Symposium on the Future Networked Car 2022

FNC 2022
Moving Towards Automated Driving

The Future Networked Car Symposium has been arranged every year since 2005. The International Telecommunication Union (ITU) and the United Nations Economic Commission for Europe (UNECE) are the joint organizers.

ITU is the UN specialized agency for information and communication technologies (ICTs). It allocates global radio spectrum and satellite orbits, develops the technical standards that ensure networks and technologies seamlessly interconnect, and strives to improve access to ICTs to underserved communities worldwide. For a full description of its activities, see https://www.youtube.com/watch?v=H0YiYf5NxBg.

UNECE was established in 1947 by UN Economic and Social Council. It is one of five regional commissions of the United Nations. UNECE's major aim is to promote pan-European economic integration. UNECE includes 56 member States in Europe, North America (including the U.S. and Canada) and Asia. However, all interested UN member States may participate in the work of UNECE. The UNECE World Forum for Harmonization of Vehicle Regulations, known as WP.29, is a worldwide regulatory forum within the institutional framework of the UNECE Inland Transport Committee.

Annual Event Arranged by ITU and UNECE

MOVING TOWARDS AUTOMATED DRIVING was the theme of this year's ***Symposium on The Future Networked Car 2022***, held on four consecutive days, the 22nd to the 25th of March. During these four days, participants examined the latest advances in automated driving, vehicle connectivity and artificial intelligence. With the *2022 GENEVA MOTOR SHOW* once again cancelled, ITU and UNECE decided that the ***FNC 2022 Symposium*** would be totally virtual this year as it was last. Each day consisted of one three-hour session dedicated to one of four important topics.

The first session was on Tuesday, the 22nd. It provided an overview of what governments and standards bodies are doing in the area of automated driving. On Wednesday, the 23rd, I moderated a session on artificial general intelligence (AGI), a new topic added to the ***Symposium*** this year. On Thursday, Roger Lanctot of STRATEGY ANALYTICS led a session on automated driving, and on Friday, T. Russell Shields, CEO of ROADDB, led a session on wireless communications. The complete program can be seen at: ***Symposium on the Future Networked Car (FNC-2022)***

Session One – Government Authorities' Coordination for Automated Driving and their Intelligent Transport

FNC's first session has traditionally been divided into two parts. In the first part, representatives of the sponsoring institutions, ITU and UNECE, along with the UN Secretary General's Special Envoy for Road Safety, deliver keynote speeches. This year was no exception. ITU Secretary-General, Houlin Zhao, UNECE Executive Secretary, Olga Algayerova, and Jean Todt, UN Special Envoy, delivered addresses. Overall Masters of Ceremony were Walter Nissler, Chief of Section, Senior Economic Affairs Officer, UNECE, and Bilel Jamoussi, Chief, Study Groups Department, TSB, ITU.

The three opening speakers, more or less, addressed the following three points:

- There should there be a coordinated international approach to the development, testing and rollout of automated driving technology. The three principal vehicle markets, the United States and Canada, the EU, and China, should not continue to pursue their own testing and regulatory strategies because cars are produced globally for global sales.
- If we agree that a coordinated international approach is the best way to achieve the highest levels of safety within the shortest timeframe and at the lowest costs, then WP.29 (see sidebar) has proved to be the best forum for developing specifications and for testing and evaluating new technologies, as proven with the regulations on cybersecurity, over-the-air updating and automated lane keeping.
- A positive step in the right direction would be for those countries that are not currently following the type approval process to agree to adopt type approval so there is a consistent approach in all markets. This will be supported by industry as a way to improve quality, reduce costs, and reduce the risks of substandard products entering the markets.

In the second part of Session One, representatives of government and non-government organizations gave presentations and held a panel discussion led by Ian Yarnold, Head of the International Vehicle Standards Division of the UK DEPARTMENT FOR TRANSPORT. Ian's objective for the first session was to explore the coordination at various levels for a harmonious implementation of automated driving systems.

Participants in Session One Panel

John Paddington, Innovation Integration Lead (Public Sector), *TRANSPORT FOR WEST MIDLANDS*

Llewelyn Morgan, Head of Innovation, *OXFORDSHIRE COUNTY COUNCIL*

Joost Vantomme, CEO, ERTICO-ITS EUROPE

Dino Nardicchio, Head of Automotive and AV Partnerships, CAVNUE

Birgit Rudolph, Ph.D., Chair, UNECE GROUP OF EXPERTS

Maria Cristina Galassi, Ph.D., Scientific Project Officer, *EUROPEAN COMMISSION JOINT RESEARCH CENTER* (*JRC*)

WP.29 – Introduction

Three UN Agreements, adopted in 1958, 1997 and 1998, provide the legal framework allowing Contracting Parties (member countries) attending the WP.29 sessions to establish regulatory instruments concerning motor vehicles and motor vehicle equipment:

- *UN Regulations, annexed to the 1958 Agreement;*
- *United Nations Global Technical Regulations (UN GTRs), associated with the 1998 Agreement; and*
- *UN Rules, annexed to the 1997 Agreement.*

***UN Regulations** contain provisions (for vehicles, their systems, parts and equipment) related to safety and environmental aspects. They include performance-oriented test requirements, as well as administrative procedures. The latter address the type approval (of vehicle systems, parts and equipment), the conformity of production (i.e. the means to prove the ability, for manufacturers, to produce a series of products that exactly match the type approval specifications) and the mutual recognition of the type approvals granted by Contracting Parties.*

***UN GTRs** contain globally harmonized performance-related requirements and test procedures. They provide a predictable regulatory framework for the global automotive industry, consumers and their associations. They do not contain administrative provisions for type approvals and their mutual recognition.*

***UN Rules** concern periodical technical inspections of vehicles in use. Contracting Parties reciprocally recognize (with certain conditions) the international inspection certificates granted according to the UN Rules.*

Objectives

Overall, the regulatory framework developed by the World Forum WP.29 allows the market introduction of innovative vehicle technologies, while continuously improving global vehicle safety. The framework enables decreasing environmental pollution and energy consumption, as well as the improvement of anti-theft capabilities. http://www.unece.org/trans/main/welcwp29.html

Key takeaways from Session One

Panel members who represented public authorities and agencies described the various projects in which they and their organizations are involved. The one commercial company representative slipped in a company promotion, a definite no-no in the FNC Symposium. Listening to the project descriptions was definitely worthwhile, and they will be on the Symposium website for all those who are interested in the details.

Ian Yarnold

There was one point made during the panel discussion following the presentations which may have passed by most of those listening in from the European Commission and other public transport authorities. It was made by Joost Vantomme, recently appointed CEO of ERTICO-ITS Europe. He said that the Commission should definitely learn a lesson from EU eCall and stop defining technology solutions which always end up becoming out-of-date, usually before they are implemented. As my readers know well, I have been saying this since the idea for a European eCall was first placed on the table more than twenty years ago. Joost said that the in-band modem solution demanded by the Commission is limited to 2G and 3G communications systems. By the time Type Approval began in April 2018, most car companies had been putting 4G telecommunications systems in their cars for over five years. Now, mobile operators are closing down their 3G networks, and when they do, the EU eCall system will not operate. Stick to defining objectives, said Joost, and leave the technical solutions to the people who have to implement them and ensure that they work.

Session Two – Artificial General Intelligence Applied to Vehicle Safety, Services and Transport Management

This was my fifth year as the moderator for Session Two. For the past four years, the topic for the second session was cybersecurity and over-the-air updating. In 2020, UN R155 and UN R156 regulations were adopted by the UNECE WORLD FORUM FOR HARMONIZATION OF VEHICLE REGULATIONS (UNECE WP.29) The UNECE regulations officially came into force in January 2021. UNECE regulation UN R155 requires the operation of a certified cybersecurity management system (CSMS), while UN R156 requires that of a software update management system (SUMS) as a future condition of type approval.

The FNC programme committee decided that this year's Symposium would have a new Session Two topic: Artificial Intelligence (AI). Last year, ITU-T, ITU's Telecommunication Standardization

Sector—which is the organizing party for the FNC Symposium—established a *Focus Group on AI for autonomous and assisted driving* (*FG-AI4AD*). Its motivation for the Focus Group was to support standardization activities for services and applications enabled by AI systems being developed for driverless and assisted driving. Initially, the Focus Group will concentrate on the behavioral evaluation of AI responsible for the dynamic driving task in accordance with the 1949 and 1968 Convention on Road Traffic of the UNECE Global Forum for Road Safety. International harmonization on the definition of a minimal performance threshold for driving-related AI systems is the goal of the Focus Group.

Artificial Intelligence (AI) leverages computers and machines to mimic the problem-solving and decision-making capabilities of the human mind. What we have today is 'Weak AI', systems that are trained and focused to perform specific tasks, such as playing chess, recognizing a deer crossing a road or a stop sign. These systems will not drive cars without human drivers. Artificial General Intelligence (AGI) is the hypothetical ability of an intelligent agent to understand and learn any intellectual task that a human can. It possesses the ability to analyze a situation on its own and take a calculative decision without being programmed in advance.

AGI, also called 'Strong AI', has six major branches: machine learning, neural network, robotics, expert systems, fuzzy logic and natural language processing. Attempts are being made to apply it to many application areas, including driverless vehicle operation, vehicle design and manufacturing, road maintenance, traffic flow management, and passenger experience.

It was a challenge to put together a panel of individuals who have unique and expert knowledge on different aspects of vehicle-related artificial intelligence, and are able to share that knowledge publicly. I am pleased to say that we succeeded on both counts.

Participants in Session Two Panel

Bryan Reimer, Ph.D., Keynote Speaker. Research Scientist, MIT AGELAB

Bryn Balcombe, Founder, AUTONOMOUS DRIVERS ALLIANCE (ADA)

Alexandra Mueller, Ph.D., Research Scientist, INSURANCE INSTITUTE FOR HIGHWAY SAFETY

Wen Xu, Principal Engineer, AB VOLVO

Ramesh S., Ph.D., Senior Tech Fellow - General Motors R&D

Key takeaways from Session Two

In his keynote, Bryan said that roadway safety is a global, yet under-treated public health crisis. However, a survey conducted by MIT and the Advanced Vehicle Technology Consortium, indicated that over a six-year period, drivers showed a major and increasing interest in driver assist automation, and a minor and declining interest in partial and full self-driving. AGI is what enables hands-off driving, but there is much more that needs to be done with simple AI. Further, AI is only one component of a broader systems level view that must include human factors and infrastructure. Unless there is a clear technological breakthrough, we are from AGI and at great risk of an AI pull back if our focus is only on AGI.

Bryn said that the ITU AI for Road Safety Focus Group is addressing four additional areas to safer vehicles. These are road safety management, roads, road users, and post-crash response. Any intended improvements to overall road safety must consider the entire context, urged Bryn. He made a very strong point that we have had the 1968 UN Convention on Road Traffic that defined our expected behavior in case of an accident, as well as our safe interaction with other road users. For example, Article 7: *Road-users shall avoid any behaviour likely to endanger or obstruct traffic, to endanger persons, or to cause damage to public or private property.* We should not now start to seek exemptions from the requirements in the Convention just because the controller of the vehicle is software and not human.

Alexandra presented research on the causes of vehicle crashes and the safety potential of driverless vehicles. Her research challenges the common assumption, often heard, that driverless cars will eliminate 94% of all crashes because that is the percentage attributable to driver error. It is not that simple. There is always a critical reason for a crash, but there are also always contributing factors.[1] It turns out that over 65% of crashes would still occur.

1. A person is speeding on a highway during a heavy rainstorm. The treads on his tires are worn. A deer runs across the roadway. He brakes heavily, swerves to avoid the deer, skids off the road, crashes into an embankment and dies. What is the critical reason for the accident, what are the contributing factors, and what could a driverless car have controlled?

Wen has plenty of experience developing advanced driver assistance systems for large trucks, and he presented clear examples of situations where human reasoning is required to avoid crashes. He says that the money and effort spent on trying to build an AGI to perfectly handle these types of problems would be much better spent building driver assistance systems where drivers do the heavy problem solving.

Ramesh is active in active in standards work. He said that one branch of AI, machine learning, is being included in current automotive safety standards work, including ISO 26262 Functional Safety for safety under failures, and ISO 21448 Nominal Safety for safety under limitations. These assume that there is a human still in the loop.

Our intention for this session was to present and discuss views on the current status of artificial intelligence in vehicle-related applications, and the different scenarios and timelines for the implementation of Strong AI for driverless vehicles with no human involvement. The session delivered the following three messages:

- For those who will work on policies and standards related to driverless vehicles, make sure you understand the differences between simple AI and strong artificial general intelligence in order to be clear when defining strategies and work programs for highly automated and driverless vehicles.
- For those who are responsible for preparing regulations, avoid picking winners and choosing technology solutions, as has been done with battery electric vehicles and European eCall. Also, keep in mind that there are very good reasons the rules of the road designed for human drivers have served us well for so many years. Don't throw them out in order to make it easier for robots to drive.
- For those who will develop solutions for highly automated and driverless vehicles, you need to appreciate the need to be clear about the level of intelligence you are trying to attain, especially if you have as a goal for the vehicle to be driven without human involvement.

Session Three – Automated Driving Systems for Consumer and Other Vehicles

Roger C. Lanctot

Roger Lanctot was the moderator for this session. He is the Director, Automotive Connected Mobility in the Global Automotive Practice for STRATEGY ANALYTICS. As always, Roger assembled an interesting group of experts for his panel. His session description read as follows:

The past year saw a reassessment of automated driving with the conclusion that achieving full autonomy would take longer than originally anticipated. Research and progress are nevertheless advancing. Key to understanding the pace and path of AV adoption is better understanding individual use cases. This panel will review emerging AV applications—commercial vehicles, delivery drones and vans, shuttles, robotaxis—to better understand the challenges and opportunities associated with AV technology and the state of development and market adoption.

Participants in Session Three Panel

Mark Rosekind, Ph.D., Keynote Speaker. Chief Safety Information Officer, ZOOX

Annika Larsson, Ph.D., Research Advisor, VEONEER

Joe Moye, CEO, BEEP

Koosha Kaveh, CEO and Co-Founder, IMPERIUM DRIVE

Paul Perrone, CEO and Founder, PERRONE ROBOTICS

Ritukar Vijay, CEO and Founder, OTTONOMY.IO

Key takeaways from Session Three

Mark Rosekind, in his keynote address, made an impassioned plea for better safety on the roads with zero deaths. It was worthy of the position he held as the 15th Administrator of the NATIONAL HIGHWAY TRAFFIC SAFETY ADMINSTRATION during the last two years of President Obama's term. "This is a momentous moment," he said. "We have to seize this opportunity." When I heard this I thought of the maxim, "If not now, when; if not us, who?" from Hillel the Elder. But how does this translate into what Dr. Rosekind's current employer, ZOOX, is doing, or what any of the organizations represented on the panel are doing?

ZOOX is developing a driverless minibus four people. It refers to the "94% of all crashes…" as a reason you should ride in one of their vehicles. BEEP is using other people's vehicles (e.g., NAVYA) to give rides to people in a Florida retirement community. It's safer

than golf carts, said BEEP CEO, Joe Moye. IMPERIUM DRIVE is going to make a business out of driving vehicles remotely. It says it increases vehicle utilization and reduces costs for fleet operators, and provides needed remote operation for driverless vehicles when they finally arrive—because "autonomous vehicles will need human supervision for many years to come". OTTONOMY is developing delivery robots. Why it is safer and quicker was not discussed, but the point is really getting an 'expensive' human out of the loop. Where I live, most of those delivery humans are riding electric bikes and scooters, and are definitely not making the salaries of FEDEX drivers.

Paul Perrone was a participant in the 2005 DARPA Challenge, so he has been working on developing a driverless vehicle solution for quite some time. His main investor, Nolan Bushnell, was the person who bankrolled ETAK, one of the first companies to produce digital maps for navigation systems back in the early 1980s. Bushnell made his fortune as the founder of ATARI and CHUCK E. CHEESE PIZZA TIME THEATER. PERRONE ROBOTICS has developed a drop-in driverless vehicle solution, including hardware and software, which can be retrofitted to standard vehicles.

It was Annika Larsson of VEONEER who focused on safety. VEONEER is working on self-driving systems using the QUALCOMM TECHNOLOGIES' *Snapdragon* family of automotive system-on-a-chip and accelerator products.[2] Her main point was that the human and the driver must be in total synch, and both must be "fit to drive" in order to deliver a safe trip.

Roger summed up his panel discussion as follows: "Panelists focused their insights and comments on the commercial opportunities related to autonomous vehicle technologies and the regulatory hurdles still facing the industry. Among the key topics that received significant attention were the need for more homogeneous regulatory structures across geographies within and between countries, the need to foster collaboration versus competition in the AV marketplace, the need for data sharing strategies, and greater transparency as systems are tested and deployed. All panelists agreed that the demand for autonomous (driverless) vehicle technology is driven by employment challenges that have been exacerbated by the ongoing pandemic—creating huge deficits in available workers for driving and delivery positions. AV technology was also seen as a powerful force for safety, broader mobility, and sustainability."

2. QUALCOMM is completing the acquisition of VEONEER, which should be final on the 1st of April 2022. It outbid MAGNA in October 2021. See The Dispatcher November 2021

Session Four – Wireless Communications Applied to Vehicle Safety, Services, and Transport Management

T. Russell Shields

The wireless communications session has been moderated by Russell Shields for many years. Russ is the President and CEO of RoadDB LLC, and the former CEO of Navigation Technologies (later Navteq and now HERE). Russ always manages to gather together experts in the field who are knowledgeable about the latest developments in wireless communication and are interesting to listen to as well. Wireless communication use is expanding in transport across many applications to improve operations, to provide better information to the general population, and to improve the user's in-vehicle experience. 5G and direct cellular communications between vehicles and information processing platforms, and, and between vehicles and other vehicles, will allow new and improved applications.

Participants in Session Four Panel

Per Beming, Keynote Speaker. Vice President and Head of Standards & Industry Initiatives, Ericsson Group

Johannes Springer, responsible for the 5G Automotive Program at Deutsche Telekom and General Director of 5GAA

Vishnu Sundaram, Senior VP, Cockpit and Connected Services, Stellantis

Frank Han, Chief Expert, Chief Software Architect, Chongquing Changan Automobile Co., Ltd

Nakul Duggal, Ph.D., Senior VP and General Manager of Automotive, Qualcomm Technologies, Inc.

The Session Four panel presented and discussed views on the current status of wireless communications for vehicle-related applications, different scenarios and timelines for their implementation, and opportunities for transport authorities and vehicle manufacturers to extend the use of wireless communications.

Key takeaways from Session Four

Two questions which Russ asked at the outset and continued to ask throughout the session were: Who pays for the services and connectivity, and how do the OEMs recover their investments in building communications into their vehicles and their service infrastructures? I cannot say that there was a good answer to this question that was given by any of the panelists. It didn't seem like any of them were prepared to answer the question. What they

were prepared to do was explain how they were going to implement the technology. The only mentions of vehicle-to-vehicle and vehicle-to-infrastructure solutions were based on Cellular-V2X.

Session Four did a good job of examining how vehicle manufacturers expect to use communications in their future vehicles. Russ summed it up as follows: "Many vehicle manufacturers expect to expand their service offerings to secure revenue streams from services after the initial vehicle sales. The position of the panelists was that these service offerings will be dependent on 5G communications. The conclusion of the panelists was that many communications-based applications will be deployed in the next years, but the actual take up by consumers is not yet know."

Summing up the Symposium

This year's **Symposium on The Future Networked Car** captured a large part of the spirit of the fully on-site Symposium, the last one of which was in 2019 in connection with the *Geneva International Motor Show*. FNC 2020 event was a hybrid event, with about half of the speakers and delegates attending virtually, and last year's event was the first attempt at being full virtual. It was mostly successful. This year, the technical aspects of a fully virtual event were mastered without glitches, there was a consistency to the backgrounds, the chats and Q&As allowed interaction with the delegates, and the all-in panel discussions almost felt like we were on stage. Everyone seemed more comfortable with being online, probably because all of us have had two years of forced practice.

As a moderator, I missed having the possibility of letting someone in the audience stand up and ask a question directly to the panel, and as an attendee, I missed being able to walk up to a speaker during the lunch or post-Symposium reception and discuss a point. Hopefully, next year, the Symposium and the Motor Show will be back.

What distinguishes the Symposium—and this applies to both the live and virtual events—is that it is principally an event to learn about the relationships between technology issues and policy and regulatory issues. It is not a company pitch show, where you get to speak if you are an exhibitor or you pay to be a sponsor. It is not a networking event for people who are looking for money meet people who have money to invest. If someone taking part in the Symposium slips into a company pitch, the moderator will bring him back to the issues during the panel discussion. On top of all of this, it's free!

Three hours a day for four days is a lot of time to devote to a conference. You could pick one or two topics—hopefully, you picked my session—but you would have missed the total effect. The four sessions covered the four quarters of a whole pie, and each of the quarters contained bits that were in the other pieces. It is easier to do it in one day, with four one-and-a-half-hour sessions, but I for one feel that the addition of the keynote speech plus on-topic presentations by the panelists adds a great deal to the overall ability to address a topic in full. My suggestion to the planning committee for when the event goes back to being a live, one day event will be to make a keynote part of each session, and to have the panelists prepare presentations that will be submitted several days prior to the day of the live event. These should be posted on the Symposiums' web site, and those who register for the event should be directed to the sessions' presentations with a recommendation to watch them before the event.

ITU and UNECE deserve our thanks for hosting the **Future Networked Car Symposium** each year. Stefano Polidori (see right), who is responsible for the technical secretariat of ITU-T *Study Group 9 Broadband cable and TV*, has overall responsibility for the Intelligent Transport Systems (ITS) activities, including the Symposium on the Future Networked Car. He and his team have once again done a terrific job.

Click on the links in the sidebar to watch recordings of each of the sessions.

Video and Audio of FNC 2022

Session One:
https://itu.zoom.us/rec/play/5TNJ4XleUap9Z2mzPDaiXo-bKyt0aGXtesfSSxTPansIIhHZAHXH-JMqGY0d_aYRPtx98na2AAMB9XEij.p2ug-uVSdsN4KrQs?startTime=1647950767000&_x_zm_rtaid=_LdlaqppS1GWLUZ1eF2XTg.1648044839671.e398e3d36de9fd7daece103af4879abc&_x_zm_rhtaid=91

Session Two:
https://www.youtube.com/watch?v=O-5PmSoUZG4

Session Three:
https://www.youtube.com/watch?v=8YU2tqV1NhU

Session Four:
https://www.youtube.com/watch?v=8xN-lgaI9P4

Stefano Polidori

Dispatch Central

The ***Detroit Electric*** was an electric car produced by the ANDERSON ELECTRIC CAR COMPANY in Detroit, Michigan. The company built 13,000 electric cars from 1907 to 1939. This is car that Clara Ford, Henry Ford's wife, chose to drive instead of one of her husband's models. Henry was apparently not apoplexed by her action. She seems to have made up her own mind about things.

New OEM strategy: Divide and Conquer

I WONDER WHAT Henry Ford would have thought of the idea of splitting FORD MOTOR COMPANY into two companies, one for everything he had built up and the other for everything he had left in his dust. Ford's CEO, Jim Farley, who took over the job from Jim Hackett in October, 2020, sent up a trial balloon in February this year on an earnings call suggesting that the company was considering spinning off FORD's nascent BEV business. "Running a successful ICE business and a successful BEV business are not the same," said Farley. "The EV business is fundamentally different in the customers it attracts, the way its products are built and the engineering and design talent that must be hired."

Clearly, this thinking is being pushed by financial analysts who are being consulted by FORD to help it boost its stock price from the subterranean ($16.84 on March 4th) to the stratosphere (TESLA was at $838 on the same day). Analysts argue that a pure-play BEV company will have a much easier time attracting private capital and allow investors to assign a value to its EV business, which will they claim will be much higher than if it is combined with the legacy ICE business.

Other companies have already made the move. VOLVO created a brand new car brand in POLESTAR, and it set up a new company with GEELY that would just produce ICE engines. MERCEDES-BENZ is also partnering with GEELY to build small ICE motors in China so it can focus on BEV development in Europe. RENAULT GROUP announced recently that it was splitting off its BEV and ICE drivetrain activities into two dedicated entities.

The *Ford F-150* is FORD's most important model, accounting for 40-50% of its U.S. sales. The BEV version has to be a hit if the company is going continue to be in business in 2030 when it plans to generate 50% of its sales from BEVs. Will the front trunk shown below where the ICE box used to be a selling point for the Lightning?

FORD has already committed to the transition to BEV. It has earmarked $30 billion to its EV strategy through 2025, and claims it will spend another $10-20 billion by the end of the decade. Its F-150 Lightning BEV will go on sale this spring, and the company plans to generate up to 50% of its sales from BEVs by 2030.

It seems that Farley and the Bill Ford-led board understand their business a heck of a lot better than the analysts. Glenn Mercer, in his presentation during the *SmartDrivingCars Summit* last spring in our session, *Who Will Build Driverless Cars*, provided all the proof Ford would have needed to counter the arguments of analysts. The same argument applies to who will build BEVs. Whether you are building an ICE vehicle or a BEV, you need to have the facilities to stamp, weld, paint, and assemble the vehicle. As ICE volumes decline, the capacity your plants have to perform those manufacturing functions can be used to build BEVs.

Farley says now that the company has decided to keep the BEV and ICE businesses under one umbrella, Ford's. He said that Ford gains leverage from areas where the two organizations can draw on each other's strengths. "We are not going to create separate brands," said Farley. "We are not going to compete with each other. The magic in this is to focus both organizations on what they need to focus on, more than asking everyone to do everything like we do today, and to get that leverage between both organizations." Farley also said the analysts were out in left field when they suggested that a spin-off of the BEV business would attract investors and this would be the main reason to do it. Ford has plenty of cash to build a BEV business, says Farley, and the last thing they need to do is give away a large chunk of their know-how and intellectual property to people who are looking for big, quick hits.

There will be a new BEV unit, which will be named *Ford Model e*. It will be treated like a start-up, Farley says, which will not have to draw on existing Ford products. Farley is giving the new unit's top job to Doug Field, the former Ford, Apple, Tesla and back to Ford guy. (Field, who will report to Farley, actually began his professional career at Ford in 1987.) They have a start with the *Mustang Mach e* and the *F-150 Lightning*. Let's see what else they can come up with.

Ford Reorganizes

Ford will now have five new global divisions. That means that after 55 years of existence, Ford of Europe will no longer be a separate entity within the automaker next year when the company switches from reporting regional results to reporting by division.

*Ford is splitting its passenger car business into the electric **Ford Model e** division and the **Ford Blue** combustion engine unit. The other divisions are **Ford Pro** commercial division, **Ford Drive** (renamed from Ford Mobility) and **Ford Credit**. **Ford Next** was established in late 2021. Ford's stake in Argo AI and the Ford Autonomous Vehicles LLC will both be part of Nord Next.*

Ford of Europe was created in 1967 with the merger of Ford of Britain, Ford Germany and Ford's Irish division. Ford's UK-based development center in Dunton near London currently focuses on commercial vehicles including vans and trucks. It will largely fall under Ford Pro, while Ford's development operations in Cologne, Germany, are expected to work on electric vehicles under Model e.

NO_X: Objection sustained and then overruled

How often do the European Commission and Hungary find themselves on the same side of an issue? How often do we see the Commission siding with the automotive industry? Well, for the past four years on a question regarding nitrogen oxide (NO_X) emissions limits on vehicles, the Commission has been in the same corner as Hungary and Germany, the latter representing its car industry and the former just wanting to make life difficult for the

left-wing city governments in Paris and Brussels. What COMMISSION policy established the grounds for the three cities' complaint, why did the cities object to the policy, and why did the *COURT OF JUSTICE OF THE EUROPEAN UNION* (CJEU) find a way to uphold the COMMISSION's policy even after a lower court sided with the cities?

Here's the background

It starts with *Dieselgate*.[3] As a result of the finding that VW and other automotive OEMs were using so-called defeat devices during driving, which allowed their vehicles to emit significantly more NO_X than shown in lab testing, in 2016 the EUROPEAN COMMISSION issued a Regulation to require the OEMs to provide test results from real driving emissions tests (RDE tests) in addition to the formerly required lab tests.[4] As part of this Regulation, the automotive industry had a transitional period up to 2020 to adapt to the new testing procedures and up to September 2022 to fully implement them.

Three EU cities, Brussels, Madrid and Paris, complained to the EUROPEAN COMMISSION about this transition for allowing cars to continue to emit higher levels of NO_X than were allowed in *Euro 6*, which was introduced in 2015. They made an official, legal plea to the European Union's *GENERAL COURT* in May 2018, challenging the COMMISSION's allowance for higher emissions. The COMMISSION had adopted so-called 'Conformity Factors' (CFs) to ensure that the transition from non-conformance to full conformance would be smooth. In a Phase 1 of RDE, beginning in 2017, the CF factor would be 2.1, meaning that a vehicle may initially emit 2.1 times as much NO_X as it does when tested in the laboratory. From 2020, during Phase 2 of RDE, the CF was reduced to 1.5. As of September 2022, there shall be no difference between RDE and lab tests.

The *GENERAL COURT* is the second highest legal authority in the EU. Paris mayor, Anne Hidalgo, said at the time the cities requested that the conformity factors be eliminated: "We need the European Union to support us, not give regulatory protection to air pollution. I am proud to stand beside the mayors of Madrid and Brussels on behalf of millions of people from European cities, to say our voices can no longer be silenced." The mayors claimed further that the higher limits "undermines our abilities to regulate the circulation of vehicles to reduce air pollution".

3. The VOLKSWAGEN emissions scandal, known also as 'Dieselgate' or 'Emissionsgate', began in September 2015 when the *UNITED STATES ENVIRONMENTAL PROTECTION AGENCY* (*EPA*) issued a notice of violation of the *Clean Air Act* to German automaker VOLKSWAGEN GROUP. The agency had found that VOLKSWAGEN had intentionally programmed turbocharged direct injection (TDI) diesel engines to activate their emissions controls only during laboratory emissions testing, which caused the vehicles' NO_X output to meet U.S. standards during regulatory testing, while they emitted up to 40 times more NO_X in real-world driving. VOLKSWAGEN deployed this software in about 11 million cars worldwide, including 500,000 in the United States, in model years 2009 through 2015.

4. Regulation (EU) 2016/427 (first regulatory package of the Real-Driving Emissions regulation, RDE1) introduced on-road testing with Portable Emissions Measurement Systems (PEMS) to complement the laboratory Type I test for the type approval of light-duty vehicles in the European Union (EU). Subsequently, Regulation (EU) 2016/646 (RDE2) introduced Real Driving Emissions (RDE) conformity factors for nitrogen oxides (NOx) emissions in two steps. Both regulations were consolidated in the World Harmonized Light Duty test Procedure (WLTP) Regulation (EU) 2017/1151 and further developed by Regulation (EU) 2017/1154 (RDE3), which also introduced an RDE conformity factor for the on-road test of ultrafine particle emissions. (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0427&from=EN)

In December, 2018, the *General Court* ruled in the cities' favor. In an official statement it stated: "The *General Court* upholds the actions brought by the cities of Paris, Brussels and Madrid and annuls in part the Commission's regulation setting excessively high oxides of nitrogen emission limits for the tests for new light passenger and commercial vehicles." The statement went further: "…raising the limits on NO_X emissions from cars and vans went beyond the powers of the EU executive and broke EU human rights and other laws." Ouch. Hidalgo wanted the *Court* to go further and have the Commission pay a symbolic one Euro in damages to the cities. "The Commission's action has hurt our image," she claimed. The *Court* ignored this claim.

I guess the members of the *General Court* in 2018 were new to their jobs. They had not heard of the ***Leviathan Rule***. That's the one I wrote about in *Musings* in the May 2021 issue of The Dispatcher in which I explain why the Commission never loses. The ruling by the *General Court* was appealed by Germany, Hungary and, of course, the European Commission, and it was this appeal which the CJEU upheld with their January 2022 ruling.

What is the CJEU's rationale for overturning the judgment by the *General Court*? CJEU gave one reason. It ruled that the main argument made by the cities was false. The cities had claimed that the Commission's action prevented them from taking actions inside their own territories to limit pollution in those territories. CJEU stated: "The *General Court* erred in law in ruling that the contested regulation directly concerns the applicant cities. Clearly, this European regulation regulates the conditions of registration and marketing of new cars in the 27 countries of the EU, and must not prevent certain local traffic restrictions which aim, in particular, to protect the environment." The CJEU says that the action of the three cities is inadmissible because, as argued by the European Commission, "they are not directly concerned by this regulatory act".

Kahneman's Thinking, Fast and Slow for Hidalgo and friends

It's excusable—often expected—for politicians to act before thinking, exhibiting Kahneman's System 1 behavior, mistakenly believing that it exhibits their resoluteness.[5] However, one might have thought the cities' lawyers are more System 2 rational thinkers and would have talked with the Commission before allowing their governments to go through the trouble—and expense (financed by taxpayers, that is, us)—of bringing this to the courts, and the *General Court* would have considered the rather obvious

5. Daniel Kahneman is an Israeli-American psychologist and economist notable for his work on the psychology of judgment and decision-making, as well as behavioral economics, for which he was awarded the 2002 *Nobel Memorial Prize in Economic Sciences* (shared with Vernon L. Smith). In his book, Thinking, Fast and Slow, Kahneman explains the dichotomy between two modes of thought: "System 1" is fast, instinctive and emotional; "System 2" is slower, more deliberative, and more logical. The book delineates rational and non-rational motivations or triggers associated with each type of thinking process, and how they complement each other,

and straightforward point made by CJEU in its ruling in discussions with the COMMISSION before deciding whether to adjudicate it. And on top of it all, this is all irrelevant anyway in five, short months when the results of the RDE tests must be identical to the lab tests.

UK investigating laws for driverless cars

THE UK ROAD TRAFFIC ACT, 1930 is well worth reading in its entirety, or at least skimming it. It's 120 pages. I was directed to it by an article written in *BBC NEWS* by business reporter Russell Newlove. The title of his article, *Highway Code: How the update could improve road safety*, made me think that it had to do with changes related to highly automated driving systems or driverless technology. As it turned out, it was about safety for vulnerable road users, but I will use it as a lead-in to the broader topic because it has some very good lessons to take into the wider discussion.

An Act to make provision for the regulation of traffic on roads and of motor vehicles and otherwise with respect to roads and vehicles thereon, to make provision for the protection of third parties against risks arising out of the use of motor vehicles and in connection with such protection to amend the Assurance Companies Act, 1909, to amend the law with respect to the powers of local authorities to provide public service vehicles, and for other purposes connected with the matters aforesaid.

[1st August, 1930.]

As stated in the preface to the ACT (see sidebar), it is intended to "make provision for the regulation of traffic on roads and of motor vehicles," as well as for "the protection of third parties against risks arising out of the use of motor vehicles". Motor vehicles include locomotives, tractors, heavy motor cars (over two-and-a-half tons), motor cars, motor cycles, and invalid carriages (ambulances). Motor cars are defined as "mechanically propelled vehicles which are constructed themselves to car a load or passengers (not more than seven passengers exclusive of the driver)".

Reporter Newlove opened his article with the statement: "Dangerous driving has been illegal for almost a century—since the Road Traffic Act of 1930—nevertheless, many UK drivers still regularly break the rules". I checked the ACT and found the specific reference to "dangerous driving". Section 11, Reckless or dangerous driving, states: *If any person drives a motor vehicle on a road recklessly, or at a speed or in a manner which is dangerous to the public, having regards to all the circumstances of the case, including the nature, condition, and use of the road, and the amount of traffic which is actually at the time, or which might reasonably be expected to be, on the road, he shall be liable…" and then it defines the fines and prison terms for infractions, and the placement of the conviction in the convicted person's license record*.

The UK DEPARTMENT FOR TRANSPORT is responsible for the *Highway Code*. It has not recommended any changes to the ROAD TRAFFIC ACT; it has simply made changes in wording to clarify what the ACT

should mean in practice. What it has changed is specifically related to vulnerable road users, and the changes went into effect on the 29th of January, 2022. In the previous *Highway Code*, drivers were cautioned to be aware of vulnerable road users. The updated language states: *"You should not cut across cyclists, horse riders or horse drawn vehicles going ahead when you are turning into or out of a junction or changing direction or lane, just as you would not turn across the path of another motor vehicle."* Rather than saying as in the previous *Highway Code "pass horses wide and slow",* the new *Code* states *"pass horses at a max of 10 miles per hour and give them 2 meters."*

What is admissible evidence? Why is changing the wording in the *Code* going to make a difference? Newlove talked to the former head of Vision Zero, a London-based road injury reduction project. He said there are two reasons why he is optimistic about a change in driver attitudes, because it is driver attitudes that need to be changed. First, the *Highway Code* now provides a specification for what is illegal. Drive faster than 10 mph, get closer than 2 meters, cut in front of cyclists or horses, and you are guilty. Second, there are now methods available to cyclists and horse riders that were not available before, namely cameras that can be mounted to helmets and handlebars. It does not have to be his word against my word. If you and the camera survive the hit, you can put the perp behind bars.

Will robots be programmed to break the rules?

Newlove claims that 'safety groups' say UK drivers ignore rules (like those in the ROAD TRAFFIC ACT and the *Highway Code*), because "they know they can get away with it". He does not identify a source for this, but I believe it is something we all know well to be true, including with our own behavior when we misbehave while driving. So the first step is to make sure the rules are clear, not fuzzy, and the punishments are spelled out. Second, there needs to be a way to identify misbehavior so that it is clear to a court that will hand out the punishment if it is deserved. That's where the cameras come into play. Third, it must be absolutely clear who bears responsibility and who will be held accountable. This is the segue into the next subject, a set of recommendations by the two *UK Law Commissions*, one for England and Wales and the second for Scotland for driverless cars.

It started in 2018 with the government's *CENTER FOR CONNECTED AND AUTONOMOUS VEHICLES* (*CCAV*) asking the *LAW COMMISSIONS* to review

the legal framework for self-driving vehicles.[6] Britain's *Law Commissions* are statutory independent bodies created by the *Law Commissions Act* 1965 to review laws and make recommendations to government and parliament about suggested reforms. On the 8th of November 2018, the *Law Commissions* opened consultations into new rules for UK's self-driving future. On the 16th of October 2019, they published proposals on the regulation of highly automated vehicles that operate without a driver (or as they called it, a "user-in-charge"). They requested responses to their proposals, and published responses to it on the 20th of May 2020. On the 18th of December 2020, they delivered what they called a "comprehensive regulatory framework for self-driving vehicles. On the 26th of January 2022, the *Commissions* published their joint report with recommendations for "the safe and responsible introduction of self-driving vehicles". All of these reports and can be found on the *Law Commission*'s web site.[7]

What do the *Law Commissions* recommend? First, there should be a new ***Automated Vehicles Act*** to regulate vehicles that can drive themselves. This *Act* should make a clear distinction between features which just assist drivers, such as adaptive cruise control, and those that are self-driving. This distinction would mean, according to the Commissions' recommendations, that when the 'self-driving features' are activated, the person in the driving seat "would no longer be responsible for how the car drives. Instead, the company or body that obtained the authorization (an *Authorised Self-Driving Entity*) would face regulatory sanctions if anything goes wrong".

What would this mean? There would be some authority that would determine whether a car company or an "entity" offering cars to be used on public rights of way should be designated as an *Authorised Self-Driving Entity*. The criteria for such a designation would be spelled out by the agency, and the vehicle would be designated as having 'self-driving features'. When those features are activated, the person who may have been driving the vehicle before the features were activated now becomes a "User-in-Charge", and is no longer accountable for whatever the vehicle does, legal or illegal, safe or endangering. The responsibility lies with the *Authorised Self-Driving Entity*. However, the User-in-Charge

6. The *Center for Connected and Autonomous Vehicles* (CCAV) is part of the UK Department for Transport (DfT) and Department for Business, Energy & Industrial Strategy. It was established in 2015 to serve as an 'expert unit' working with industry and academia to shape the safe and secure emergence of connected and self-driving vehicles in the UK by leading the government's *Future of Transport* strategy. It is responsible for developing regulations, investing in innovation and skills and engaging the public "to realise the benefits of new transport technologies and to create a thriving connected and self-driving vehicle sector in the UK".

7. https://www.lawcom.gov.uk/?s=self-driving

Here is the Automated Vehicles: Joint Report

https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2022/01/Automated-vehicles-joint-report-cvr-03-02-22.pdf

must see to it that everyone is buckled up, that the vehicle has proper insurance and that the vehicle is roadworthy.

Next steps, now that the report has been presented to the Parliament and the Scottish Parliament, it is up to the UK, Scottish and Welsh Governments to decide whether to accept the *Commissions*' recommendations, introduce legislation and bring them into effect. UK Transport Minister, Trudy Harrison, said the government "would fully consider the recommendations".

It is unfortunate that the *Law Commissions*, as well as CCAV, the agency that requested the reports, use various terms to describe the same or different functions: autonomous, automated, self-driving, driver assistance, drive itself, driver, user-in-charge, human driver, vehicles that drive themselves, licensed operator, victim. I read the list of people and organizations in the Acknowledgments appendix, and I would have thought that among the several hundred names (I was not asked for my thoughts) someone would have suggested that they tighten up their language. There is, of course, still time. On the other hand, it is both heartening and encouraging that the *Commission* report extensively references the UN Regulations 155 Cybersecurity, 156 Software Updates, and 157 Automated Lane Keeping Systems.

To answer the question in the sub-heading, "Will robots be programmed to break the rules?" if the Parliaments in the UK follow the recommendations of their Law Commissions, it will depend on how good a job the agency set up to license *Self-Driving Entities* does. Anything may be better than nothing—which is the case today with Teslas, Waymos, Ponys and many other entities claiming they have self-driving/autonomous/automated/and more already on the roads—but that 'anything' needs to have clear and precise regulations with which to work, and enforcement powers to ensure that the regulations are followed. The courts must be ready to hear cases. Companies must be prepared to accept the judgments without endless rounds of appeals. There is a lot of work to be done and the right people need to be involved in doing it.

AUVSI Name Change

In March 2022, the Association of **Unmanned** Vehicle Systems (AUVSI) officially changed its name to the Association of **Uncrewed** Vehicle Systems. It saved a lot of money with this slight of word, and it took itself out of the firing line of the gender police. With a single search-and-replace, it could remove every 'mann' and replace them with another four-letter world, 'crew'. It's certain that the Association polled its membership about the change, and its board saw it as a necessary step before making the move. It is undoubtedly prepared for the close-word substitutes, like 'unscrewed' and 'unclued'.

In a February 2018 article I wrote in *The Dispatcher*, *No Humanless-Drive without AGI* (Artificial General Intelligence), I used the term '**humanless-driven motorized road transport vehicles'**. I have since then simply used the term '**driverless'** because all references to national and international rules of the road refer to the need to have a 'driver', who is assumed to be human, in control. There is no reference to a 'crew' in documents that relate to motorized road transport. There are 'crews' on planes and ships and rockets, but not in cars and trucks. But 'driverless' has ten letters and both 'unmanned' and 'uncrewed' have only eight. Personally, I do not think I will be using the term 'uncrewed'. I don't know why, but it sounds a bit depressing; it has a sense of loneliness about it.

Musings of a Dispatcher: Renault Flips on Staying

My deepest sympathies to all the men, women and children of Ukraine who were murdered by Russian bullets and bombs, including all the brave Ukrainian soldiers who sacrificed their lives defending their independent country against the unprovoked and unjustified aggression of the invading Russian forces.

Who said making cars isn't a political act

WHAT MADE RUSSIA'S leaders decide that the 24th of February 2022 was the day they would finally lay their cards on the table and show the full hand they have been holding for the past twenty-two years is something we will most probably have to wait some time to learn. Twenty-two years is how long the country's current leader, Vladimir Putin, has been the card holder. He took over the country from Boris Yeltsin, a person who represented everything that was wrong with post-Soviet Russia, at least in the opinion of Putin and all those who have aided and abetted him in his many criminal acts that have finally led to the most egregious of all, the brutal invasion of Ukraine and the indiscriminate bombing resulting in the wanton killing of civilians that followed. His bombs delivered by planes and missiles fell everywhere, from residential neighborhoods to schools to hospitals to nuclear power plants—everywhere, with no regard for the rules of war. Putin follows no rules except his own. As a puny kid growing up in Leningrad, he learned to hit first, hit hard and keep hitting.[8] We used to call those kids 'dirty fighters'. That is a very good description of Vladimir Putin: Dirty.

In August 1999, a then-unknown Vladimir Putin was named prime minister when his predecessor refused to condone a full reinvasion of Chechnya. Putin, however, was ready, and in return for their unconditional support he granted the military a free rein, allowing them to avenge their humiliating 1996 defeat in blood and fire. On the night of 31 December, an ageing and broken Boris Yeltsin stepped down, handing the presidency like a gift to the newcomer. In March 2000, after famously promising to "grease the terrorists even in the outhouse", Putin was triumphally elected president. With the exception of his four years as prime minister (2008-2012), he has ruled Russia ever since.

Jonathan Little
The Guardian – 3 March 2022

This time, the West didn't shrug and move on as it did with Chechnya, Georgia, Crimea, and Donbas, which was to apply some minor sanctions that had little effect on the people of Russia and no effects at all on the government and its continued ability to cause trouble. It did not do what it

8. https://www.theguardian.com/commentisfree/2022/mar/03/vladimir-putin-ukraine-war-chechnya

did while Russian jets were shelling innocents and using poison gas in Syria during Putin's support of another brutal despot, Bashar al-Assad, which was to define a line in the sand and then look the other way when the line was crossed. This time, the West pulled out all the economic sanction stops.

Over these twenty-two years, Putin has kept taking cards, upping the ante, while one after the other, those sitting around the table folded. He subdued Chechnya in 2004 after eight years of fighting, reducing to debris its capital city, Grozny (see sidebar), and causing tens of thousands of civilian deaths. In 2008, four months after NATO promised a path to accession for Ukraine and Georgia, his armies invaded Georgia and recognized the independence of two breakaway "republics". The western democracies did practically nothing. In 2014, when the Ukrainian people overthrew their pro-Russian president, Putin invaded and annexed Crimea. When the West responded with wrist-slapping sanctions, he retaliated by sending Russian troops and material across the Ukrainian border into the Donbas region, crushed a weak Ukrainian army with his Russian forces, and carved out two new breakaway "republics". Fighting has continued in this region resulting in thousands of deaths. Ukrainian territory, Crimea and Donbas, along with the de facto Russia state of Belarus, have functioned as staging grounds for the further invasion of Ukraine. The West stood by and allowed this to happen.

This is Grozny, Chechnya in February 2000. Those are two Russian soldiers having a tea break. Their parked tank can be seen on the left of the photo. From their makeshift lounge, they have an excellent view of the destruction they and their colleagues have wrought.

Operatives, collaborators and enablers

Everything is clear on Monday morning, the day after the big game, when the couch quarterbacks can describe the winning team's strategy and how they outsmarted their opponent. Today, we can see how Putin and his gang of kleptocratical oligarchs—and their sons—played all of us like fiddles. He placed operatives everywhere, those with plenty of money to invest in companies and sports clubs, buy influence in governments, universities, cultural institutions (like the Tate, where both Viktor Vekselberg and Pjotr Aven were benefactors with their tainted money) and media, and promote the Russia brand. He had collaborators, like former German Chancellor Gerhard Schröder, who, in 2005, hastily signed the NORD STREAM Russian gas pipeline deal just as he was departing the office from which he had been voted out days earlier. Within weeks he was on the Russian payroll as he started to oversee the project implementation himself, leading the NORD STREAM AG's shareholder committee. He continues to be an apologist for Russia and to hold on to his posts in ROSNEFT and GAZPROM.

Russia's European Gas Pipelines

There have been plenty of enablers. They have been both witting (i.e., conscious; knowing) and unwitting. The witting are all those who have taken Russian money provided by operatives and collaborators to promote their environmental causes which have strengthened Russia's energy and natural resource dominance. Closing nuclear power plants and coal mines and becoming completely dependent on Russian gas, as Germany has done, is the work of political and non-governmental organizations that have worked as Russian enablers.[9] Are we sure that Russian money has not been funding the campaigns against mining minerals that have become essential for everything from batteries to semiconductors to fighter jets?

The unwitting enablers are all of us who believed that Russia was actually moving toward becoming a democratic country where human rights were respected and business could be conducted according to the rules of contracts. I count myself among this group, and I am certain that many of my readers will as well. I made my first visit to Russia in 2007. It was the same year I set foot in China. It felt historic, having grown up during the height of the Cold War when both of these countries were "The Enemy". I travelled to Moscow in August of that year with my VOLVO CARS client to begin the process of introducing *Volvo On Call* into the Russian market. We walked from the hotel down Tverskaya Street to Red Square on a warm afternoon. I can remember it like it was yesterday, seeing the Kremlin and St. Basil's Cathedral, and walking through Gum department store. Everything felt normal. Russia had been a member of the Group of Eight since 1998,[10] and there would be an election for a new President in the spring after Putin's time would have to end because, by law, a President could sit for only two four-year terms. Just like in other democracies. Although it was not yet open, there was an IKEA store right across from the *VOLVO CARS RUSSIA* headquarters, visible to all who made the journey from the new Sheremetyevo International Airport into the capital.

We successfully completed our work on *Volvo On Call* by the end of 2008. Dmitry Medvedev had been elected as the new President. He seemed progressive, friendly, and open to western ideas. As a result of the contacts I made during the *Volvo On Call* year, I continued to return to Moscow during the next four years. In 2010, Medvedev signed into law the creation of the *SKOLKOVO INNOVATION CENTER*, which was to be the start of Russia's attempt to diversify its economy. The goal of the foundation was to create a

What Were They Thinking?

Here are the largest suppliers of oil, gas, and coal to the European Union, with % of total in parentheses:
***Oil**: Russia (27), Norway (8), Kazakstan (8), USA (8)*
***Gas**: Russia (45), Norway (23), Algeria (6), USA (6), Qatar (5)*
***Coal**: Russia (46), USA (15), Australia (13)*
Answer to the question: They weren't thinking.

9. European countries that have their own coal mines and who still burn coal to generate electricity have been the targets of environmental activists and green political parties. Angela Merkel's government, besides moving up the date of the closing down of all nuclear power, also moved up the date of closing down all coal mines. However, what is now well-known is that Russia is Europe's largest supplier of thermal coal. According to Eurostat, last year, Russia supplied EU member states with 36 million tonnes of thermal coal, representing 70% of total thermal coal imports. While volumes have stayed about the same, a decade ago, Russian coal imports were just half that at 35%.

While total power coal demand has been on a declining trend for the last 10 years, coal-fired power generators in Europe have become increasingly dependent on Russian coal and Russia's market share has grown substantially over time.
https://oilprice.com/Energy/Energy-General/Ukraine-Crisis-Could-Send-Coal-Prices-To-500.html

10. The Group of Eight (G8) was an inter-governmental political forum from 1997 until 2014. It had formed from incorporating the country of Russia into the Group of Seven, or G7, and returned to its previous name after Russia was removed in 2014.

sustainable ecosystem of entrepreneurship and innovation, to help encourage a startup culture and encourage venture capitalism. Anyone from the West who had any type of connection at all to technology was encouraged to become part of *SIC*. I signed up for the newsletter, which arrived regularly, all in Russian.

By 2010 it was already becoming clear that it was still Putin behind the curtains pulling the strings. In front of the curtain were ***Putin's Puppets***. I witnessed the devolution of Russia. What we thought was the gradual, and perhaps difficult evolution of Russia toward a democratic, market economy was merely an illusion caused by the acute angle of our perspective and wishful thinking. It was a painful realization. I had wanted to believe it was no longer the Soviet Union, but it was. IKEA's attempts to avoid being affected by corruption since it opened its first store in 2000 peaked in 2009, when demands by local officials for payments of bribes prompted the company to announce a halt to further expansion in Russia, notably putting on hold plans to invest $1 billion in Mega 4, the largest shopping center in Europe, which was to be built in the Moscow Region town of Mytishchi. IKEA somehow resolved the issues and continued to expand its operations—until the 3rd of March, 2022 when it "temporarily closed all stores and factories across Russia in a move affecting 15,000 workers, becoming the latest in a swathe of western firms to halt operations in the country since it invaded Ukraine".[11]

11. https://www.theguardian.com/business/2022/mar/03/ikea-closes-all-stores-and-factories-in-russia-amid-exodus-of-western-firms

A brand new chance for sales and profits

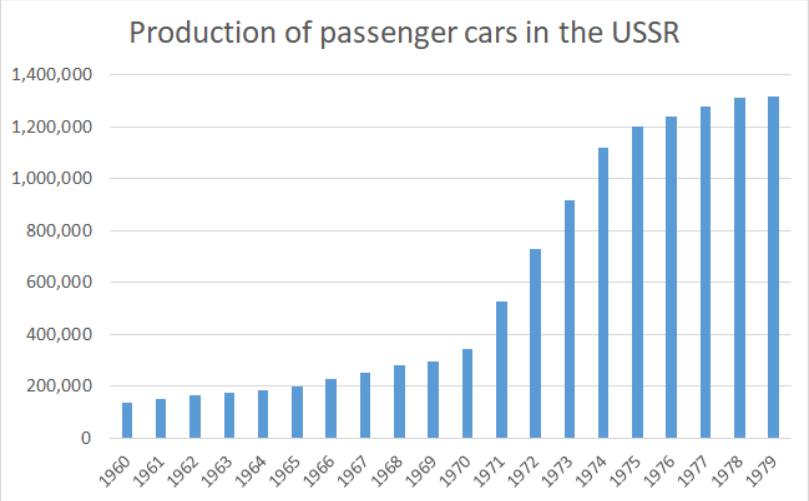
I had made my last trip to Moscow a few years before Russia was kicked out of the G8 in 2014, after its invasion and takeover of Crimea. But, oddly, engagement by Western businesses continued to increase, in spite of the sanctions placed on Russia by the U.S. and EU. While Putin built up Russia's war machine—or at least gave every impression to the outside world that he was doing so—using the cash he was receiving for oil, gas, coal and minerals, and as he turned up the pressure on Ukraine to stay away from both the EU and Nato, Western and Asian businesses, particularly the automobile OEMs, continued to increase manufacturing and marketing investments in the country. Car sales increased after a dip following the 2014 sanctions. The car execs donned the mantle of

the adults in the room, while politicians around them were acting like schoolyard bullies or pampered wimps. Russian consumers, they claimed, wanted exactly what every other consumer on Earth wanted: McDonald's hamburgers, IKEA furniture, cheap flights to an AIRBNB weekend, and the best car their money (or credit) could by. Crimea was a hiccup, Donbas would disappear, but every car company, without exception, did whatever it could to sell their cars in Russia. Car executives believed that somehow Russia would return to its pre-2014 sales of 2.7 million cars sold, and eventually reach at least the level of Japan's 4.5 million. Japan has 20 million fewer inhabitants and is a fraction of the size of Russia.

Did the automotive market in Russia ever have a chance to grow?

Before we look at where the automotive industry in Russia is today, in a post-Ukraine invasion era, when the Russian economy has already started its meltdown due to real and biting sanctions, we need to understand how and where it started. By 1915, about 1,000 motor vehicles had been built in Russia. Imported vehicles represented 90% of total cars sold in Russia by 1914.[12] In February 1916 the Tsarist government allocated funds for the construction of six automotive plants: AMO in Moscow, Russo-Balt in the village of Fili, the State Plant of Military Self-Propelled Vehicles (KZVS) in Mytishchi, Russian Renault in Rybinsk, Aksai in Nakhichevan-on-Don, and Lebedev in Yaroslavl. None of the plants were completed before the October Revolution and the founding in 1917 of the Russian Soviet Republic, predecessor to the Union of Soviet Socialist Republics (USSR), which was established in 1922.

12. Davies, R. W. (1990). From Tsarism to the New Economic Policy: Continuity and Change in the Economy of the U. S. S. R. Springer. pp. 193–195. ISBN 9781349099337.



It was FORD MOTOR COMPANY that put the Soviet Union into the car business, and it was Henry Ford who led the way. ***"No matter where industry prospers, whether in India, China, or Russia, all the world is bound to catch some good from it,"*** he said in a *NEW YORK TIMES* article in May 1929. Ford claimed the best way to undermine communism was to support capitalistic projects in the country. He made his statement on the occasion of the contract signing in Dearborn, Michigan on the 31st of May 1929 stipulating

that FORD would oversee construction of a plant in Nizhny Novgorod where *Ford Model A* cars would be manufactured. This was at a time when the U.S. did not officially recognize the U.S.S.R. In 1932, a new plant was built, called the GORKY AUTOMOBILE PLANT (GORKOVSKY AVTOMOBILNY ZAVOD, GAZ), where cars were built using FORD technology. Between 1932 and 1939 the amount of car production in the Soviet Union increased by up to 844.6%, admittedly from a very low base. Then all industry turned to producing war material. Stalin himself claimed that Henry Ford contributed to his country's ability to beat Nazi Germany in World War II.

Russia's car industry and FORD's contribution to it essentially disappeared following WWII. It wasn't until the 1960s that the Soviet government decided to concentrate on building up its still paltry passenger car industry. Most of its post-War vehicle manufacturing was in trucks and buses. It decided to build a "people's car", and conducted negotiations with FORD, PEOGEOT, RENAULT and FIAT to find a partner. It chose to work with FIAT and base the cooperation on its *Fiat 124*. A plant was built beginning in 1966 in the small town of Stavropol Volzhsky, which later grew to a population of more than half a million and was renamed Togliatti.[13] At the same time that plant construction began, VOLGA AUTOMOTIVE PLANT (VAZ) was formed in cooperatin with FIAT. The *Lada* brand, as it became known, became the best-selling car in the Soviet Union.

In the 1980s, prior to the breakup of the Soviet Union, domestic car production satisfied only 45% of domestic demand. In spite of this, no importing of cars was permitted. The GAZ model, Volga, was the prestigious brand sold to private buyers, but 60% of its production was reserved for state party apparatchiks. Annual production reached around 1.8 million units.[14]

One day USSR, the next the Commonwealth of Independent States

After the dissolution of the Soviet Union in December 1991, Russia suffered a financial crisis as well as a company grab by those who became the country's oligarchs. AVTOVAZ, apparently having burned its FIAT bridge, turned to GENERAL MOTORS for a rescue. The two companies set up a joint venture in 2001, and in 2002 the JV started production of the *Chevrolet Niva*, a car based on the *Lada Niva*. While the two companies had equal ownership (41.61%), GM was the exclusive manager. A third owner, with 16.78%, was the EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT. In 2012, GM and AvtoVAZ purchased EBRD's shares, turning the JV into a

*The Fiat 124 was a small family car manufactured and marketed by FIAT between 1966 and 1974. The Russian-built VAZ-2101 "Zhiguli" and its many derivatives (known universally as the **Lada** outside the Soviet Union) were based on the Fiat 124, and are the best known of the many licensed variants of the 124 manufactured around the world. The Lada the fifth best-selling automotive platform in history.*

The name 'Lada' is derived from lada, a type of small boat in Slavic language, symbolized by the car's logo.

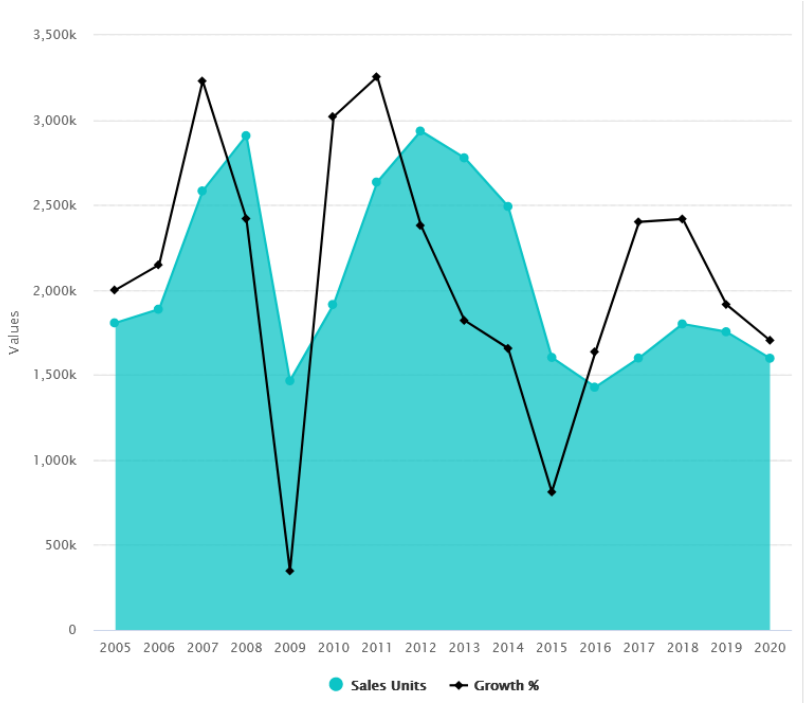
https://en.wikipedia.org/wiki/Fiat_124

13. The town was named after Palmiro Togliatti, the longtime head of the Italian Communist Party (PCI). In 1930 he became a citizen of the Soviet Union, moved there, where he died in 1964.

14. Davies, R. W. (1990). From Tsarism to the New Economic Policy: Continuity and Change in the Economy of the U. S. S. R. Springer. pp. 193–195. ISBN 9781349099337.

50/50 partnership. The JV lasted until 2019 when AVTOVAZ acquired all the shares. FORD returned to Russia in 2001, becoming the first western automobile manufacturer to build its own manufacturing plant. It built the *Ford Focus*, which during a brief period was the best-selling foreign car brand in Russia.

During the first decade of the 21st Century, business interest by Western countries in Russia was at its height, and this showed in both the incomes and confidence of a growing middle class. Car sales figures vary from one source to another, but they show major growth up to 2005. The chart below is from *Car Sales Database*, and it shows 2005 new car sales of 1.8 million units, rising to 2.9 million in 2007, dipping during the recession in 2008 and 2009, and then rising again in 2010 and 2011. Other sources have lower numbers, respectively 1.4 million in 2005 and 2 million 2007.



It was during the first quarter of 2005 that foreign-branded cars outsold domestic models for the first time ever in Russia. Foreign companies began to dramatically increase their investments in production. The number of foreign brand cars produced in Russia increased from 157,179 in 2005 to 456,000 in 2007. It was the fastest growing automotive market in the world by 2008. In 2010, Russia was the world's 15th largest producer of cars.

How could Renault have gotten in so deep?

In March 2008, during the Russian automotive boom, RENAULT purchased a minority 25% stake in AVTOVAZ, paying $1 billion. ROSTEC

(Russian: Ростех, tr. Rostekh), officially the State Corporation for Assistance to Development, Production and Export of Advanced Technology Industrial Technology, had taken over full control of AvtoVAZ in 2005, so when Renault took 25%, Rostec retained the remaining 75%. By April 2009, AvtoVAZ was close to bankruptcy. A $600 million loan from the Russian government saved it. Sales returned, but then dropped drastically again in 2012. In May, 2012, the Renault-Nissan Alliance signed a letter of intent to raise its stake to 51.01%. In December 2012, the Alliance set up a JV with Rostec, called Alliance ROSTEC, which was intended to pave the way for the Alliance to become the controlling shareholder in AvtoVAZ. That occurred in June 2014 when Nissan and Renault took a combined 67.1% of Alliance Rostec, which in turn acquired 74% of AvtoVAZ, giving Renault and Nissan "indirect" control over AvtoVAZ. The Alliance chairman, Carlos Ghosn, became the chairman of AutoVAZ, which he ceded in April 2016 to the Deputy General Director of Rostec, Sergey Skvortsov.

Renault kept getting in deeper and deeper, while AvtoVAZ continued to lose money. In October 2016, Renault invested $1.33 billion without any involvement from Nissan. In September 2017, Nissan sold its AvtoVAZ stake to Renault for $50 million. In December 2018, Renault and Rostec completed the acquisition of all AvtoVAZ shares through their Alliance Rostec JV. The company then delisted from the Moscow Exchange. In 2018, AvtoVAZ posted a net profit of $90.5 million, its first profit in a decade. In June 2019, Rostec announced it would eventually reduce its stake in AvtoVAZ to 25%. In December 2021, Renault and Rostec transferred its shares from the Netherlands-registered Alliance Rostec to the Russia-registered Lada Auto Holding. In December 2019, AvtoVAZ acquired GM's stake in their GM-AvtoVAZ joint venture. In January 2021, Renault said it would integrate *Lada* and *Dacia,* the low-cost Romania-based brand, into a new business unit. AvtoVAZ is now a consolidated subsidiary of Groupe Renault, which owns 67.61% of AvtoVAZ.

When you're in a hole and can't stop digging

Before Russia invaded Ukraine, Renault was reliant on Russia for 10% of its annual revenue. Renault has approximately 30% of the Russian car market and a staff of around 40,000 in the country. The company is much more exposed than any other car company, and if it had decided to follow the lead of other car OEMs, including its Alliance partner Nissan, and halt production at its plant in

Russia or stop exporting cars to Russia, it could be looking at having its holdings in Russia nationalized. This is what the Russian government has threatened to do with all of the foreign firms that have protested Russia's invasion of Ukraine by halting their operations.

- GM, VW, STELLANTIS, TOYOTA, MERCEDES-BENZ, JAGUAR LAND ROVER, ASTON MARTIN, BMW, HONDA, and VOLVO have all stopped exports to Russia.
- MERCEDES-BENZ announced that it is selling its 15% stake in Kamaz.
- FORD has suspended operations in Russia until further notice.
- MITSUBISHI said it may suspend production and sale of its cars in Russia.

RENAULT temporarily halted operations at its assembly plant near Moscow until the 18th of March as a result of supply chain problems. Two other plants operated by AVTOVAZ, one at Togliatti and the other at Izevsk, also had to shut down. By the 20th of March, AVTOVAZ was claiming these plants were back in operation. ROSTEC boss, Sergey Chemezov, who is on the U.S. list of sanctioned Russians, issued a statement during the week of 11 March in which he said Russia had proven that it would withstand sanctions following its annexation of Crimea, and it would again "emerge as a winner". This is the boss of the chairman of the company in which RENAULT owns the majority of shares.

RENAULT is a French company. France is part of NATO and a Member State within the EU. The French government, NATO and the EU are all parties to the heavy sanctions leveled at Russia for its invasion of Ukraine, as well as Georgia, Crimea and Donbas. And here it is, looking at a the possible erasure of 10% of its revenue and the loss of $billions in plant and equipment. Even if it stays, the Russian economy will not revitalize until the sanctions are lifted, and that will only happen (hopefully) when V. Poopin has been relegated to the Hockey League in Hell. Maybe Carlos Ghosn actually believed Henry Ford's dictum, that RENAULT would help Russia move beyond its past and its present by investing in its future. Maybe he thought there was easy money to be made in the old Soviet Union. That investment isn't looking so good these days. Its own stock has lost almost 50% of its value over the past year, and most of that loss came after Russia's invasion of Ukraine. **Then it thought again. See sidebar: Renault Listened to Criticism.**

I believe it is time to leave Russia to its fate, which it seems to have decided for itself. It will become a fiefdom of China, a supplier of raw materials and land for China's expansion. There is no need to make any further investments in that future. Next up is China, folks.

Renault resumed production at its Moscow plant on Monday, the 21st of March, a company spokesperson told Reuters. It had suspended operations at the plant in late February, saying at the time it was due to a "forced change in existing logistic routes." The Moscow plant builds the Renault Duster, Kaptur and Arkana models, and the Nissan Terrano.

Renault Listened to Criticism

A week before I went to press and after I had completed writing the article, Renault bent to from everyone outside of Russia. On the 23rd of March, Renault said it would suspend operations at its plant in Moscow while it assesses options on its majority stake in AvtoVAZ.

In response to the pullback from its second-biggest market, Renault revised downward its financial outlook for this year both for profit margin and free-cash flow. The company has lowered its operating group margin to about 3 percent, down from its previous forecast of 4 percent or above, Renault said in a statement on the 23rd of March. It has adjusted its automotive cash flow outlook to "positive" from a previous estimate of 1 billion euros ($1.10 billion) or above.

But Stellantis has kept its Russia van plant running. Think about that if you are in the market for a van at some point in the future.

About Michael L. Sena

Michael Sena, through his writing, speaking and client work, attempts to bring clarity to an often opaque world of highly automated and connected vehicles. 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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