With each new year, we seem to be faced with another salvo of changes in the automotive industry, far surpassing trends experienced over the past few decades. 2020 appears poised to be a pivotal year for both the furtherance of development already in place and fresh forces of disruption.

1. Continuing Growth of Electrification

Auto manufacturers continue their push toward the aggressive 2025 Corporate Average Fuel Economy (CAFE) standards by ramping up electrification strategies with the expansion of mild hybrid programs as well as new plug-in hybrid and fully electric vehicle (EV) offerings. Expect to see a full range of new fully EVs enter the market in 2020 including: the Tesla Model Y, a small crossover built on the Model 3 platform; the Mini Electric, which has a great deal of shared technology with the BMW i3; and a full range of electric vehicles from Volkswagen in their ID series, which includes a small hatchback, a standard crossover vehicle and even an electrified reboot of the Microbus. Legacy auto manufacturers continue to make electrification central to their forward-looking strategy. I had the opportunity to visit the Ford exhibit at this year’s SEMA Show in Las Vegas, a large portion of which was dedicated to “Performance through Electrification” and BMW views the future of mobility through the use of the acronym ACES, which stands for Autonomous, Connected, Electrified, and Services.

2. The Growing Presence of Startup Car Companies

Legacy automakers are not the only ones making headway in today’s market. Several companies are attempting to follow in Tesla’s footsteps as the next big automotive startup. Many of these startups, like Tesla, are focusing on electric propulsion. The one to watch is Irvine, California-based Rivian, which secured $700 million worth of funding from Amazon earlier this year. Rivian is hoping to beat Tesla to the punch by releasing the first fully electric pickup truck, the R1T, by the end of 2020. Fisker is also making a comeback as it recently announced the launch of their new fully electric SUV, the Fisker Ocean which will
debut on January 4, 2020.\textsuperscript{5} The Ocean will be about the size of a Chevy Equinox and will include such features as a solar panel equipped roof, and interior components that rely heavily on recycled materials.\textsuperscript{5}

3. New and Improved Digital Platforms

In order to meet the increasing demands of the complex technology embedded in today’s vehicles, automakers invest significantly in upgrades to the digital platforms on which these vehicles operate. BMW just announced the release of the first wave of vehicle updates that can be performed Over the Air (OTA) or remotely.\textsuperscript{6} This technology allows for software upgrades to your vehicle much like we experience regular updates to our computer and smartphone operating systems. GM recently announced the rollout of a new electrical platform that will be capable of meeting the bandwidth requirements of its future lineup of vehicles. “The new platform will be able to manage 4.5 terabytes of data processing per hour, which is five times more than the current electrical architecture” and will also have the capability of performing OTA updates.\textsuperscript{7} These advancements are also in preparation for widespread 5G technology which will rapidly increase the speed of data transmission and reduce the response time for vehicle-to-vehicle communications.\textsuperscript{8}

4. Expanded Level 3 Automation

Level 3 automation is often referred to as conditional automation. This level of autonomy allows the driver to disengage from certain safety functions like braking if certain conditions are present while the vehicle monitors the environment.\textsuperscript{9} Systems like Audi’s Traffic Jam Pilot, Cadillac’s Super Cruise and Mercedes’ Drive Pilot all provide the opportunity for the vehicle to take over all critical driving functions in certain specific scenarios.\textsuperscript{10} Currently, this system is only available on select vehicles, but we can expect to see it offered broadly in the near future. This technology is also not reserved just for luxury vehicles. Hyundai announced in October of this year a $35 billion investment in future mobility technologies which, in addition to funding the launch of 23 new battery electric vehicles over the next few years, aims to introduce a vehicle with Level 3 autonomy by the year 2021.\textsuperscript{11}

5. Increasing Utilization of Carbon Fiber in Vehicle Construction

It’s no secret that OEMs have been shifting the construction of new vehicles to lighter-weight substrates for some time. While much of the focus is on aluminum, a great many automakers are turning to carbon fiber not only for exterior components such as hoods and liftgates but also complete inner-body structures. Volvo’s upcoming Polestar 1 plug-in hybrid and Polestar 2 EV both rely on a primarily carbon fiber inner structure to both reduce weight and enhance rigidity.\textsuperscript{12} Carbon fiber is even finding its way into the full size pickup market with GM utilizing the composite in the construction of new bed assemblies on the
Silverado/Sierra platform. Manufacturers like Ford are also turning to carbon fiber as the material of choice for the performance wheels on the Mustang GT350R and Shelby GT500. Carbon fiber provides additional weight reduction and improves rigidity which is meant to enhance the overall driving experience. Brett Gass, co-founder of Carbon Revolution and supplier of carbon fiber wheels for Ford, says that they currently have nine OEM contracts in place for the manufacture of carbon fiber wheels. Industry analysts predict a compound annual growth rate (CAGR) of the automotive carbon fiber market at between 7.9% and 10.6% over the coming 5 years.

9. https://www.iotforall.com/5-autonomous-driving-levels-explained/