Automotive Trends and Innovations in 2021

The COVID-19 pandemic and the following chip shortage, environmental rules, and new regulations for autonomous cars are triggering changes in the automotive industry. Let's consider what automotive trends we can expect in 2021.

Top 5 Automotive Trends and Innovations in 2021

Last year saw game-changing events for carmakers. Shutdowns in chip supplies caused by the COVID-19 pandemic, revisions to environmental policy, and new regulations for autonomous vehicles are prompting them to adapt their businesses to a changing reality. In addition to these changes, carmakers also have to deal with the heightened expectations of consumers, who are used to enjoying innovations in their daily life. Let's see how these challenges will impact car manufacturers and what automotive industry trends we can expect in 2021.

Trend 1: Enhancing ADAS

Autonomous vehicles won’t be a reality for a while. But automakers continue to develop this technology, keeping full autonomy capabilities in mind. This movement is encouraged by legislative prerequisites. For example, a new UN regulation on automated lane-keeping systems is finally being rolled out in at least 60 countries. This is the first binding international regulation on Level 3 vehicle automation. Automakers now have the regulatory clarity they need to finally move forward with increased automation. It’s likely that in 2021 we will already see the market deployment of L3 autonomy cars by manufacturers like Ford, Daimler, General Motors, Honda, and Toyota.

As the degree of autonomy increases, next-gen Advanced Driver Assistance Systems (ADAS) are appearing in the market. For example, Aptiv, an American-Irish-British supplier of innovative automotive solutions, announced its next-generation Level 1-3 capable ADAS platform that supports over-the-air updates. The solution’s sensing capabilities enable twice the detection range of those available on the market today. The forward-facing radars can detect objects that are 300 m (984 ft) away and determine their height. Its corner/side radars double the detection range from the previous generation to 200 m (656 ft).

Moreover, the autonomous driving technology market is becoming so attractive that non-automotive players are also interested in it. At CES 2020, Sony demonstrated VISION-S, an autonomous driving car prototype. This year, Sony tested it on the road in Austria. For now, the solution supports an L2+ driver-assistance level, but Sony plans to upgrade VISION-S to an L4 autonomy system.

Trend 2: Next-Gen Infotainment

Advanced technology has changed the way car manufacturers approach the design of infotainment systems. Firstly, consumers become accustomed to unlimited access services and enhanced user experiences on a daily basis. They expect to use the latest versions of hardware and software, high-speed mobile data connectivity, and various user-friendly apps throughout a range of everyday scenarios, including their cars.

Secondly, modern connected vehicles come with safety features and autonomous driving capabilities which are seamlessly integrated with infotainment systems, delivering an enhanced user experience to the driver. This turns a traditional vehicle's infotainment system into a real digital cockpit. In the near future, this system will combine multiple high-resolution displays, voice control, AI-based virtual assistants, digital dashboards, gaming streaming, over-the-air (OTA) updates, and Augmented Reality (AR)-based Heads-Up displays, similar to Samsung's digital cockpit.

Most vehicles still have limited functionality because of infrequent control hardware upgrades, insufficient HMI computing capabilities, and a limited number of automotive applications and services. But that's beginning to change. Established carmakers are now working on new in-vehicle electronics architectures with centralized designs and powerful computing capabilities that are able to support innovative features.

This, though, involves considerable up-front investments. Infotainment production processes are now being remodeled, and achieving economies of scale and experience takes time. Similar systems are currently available in a few luxury vehicles, such as Mercedes A-Class. According to ABI Research, digital cockpits will be more accessible and will be integrated into lower-tiered vehicles starting in 2025.

Trend 3: OTA Updates

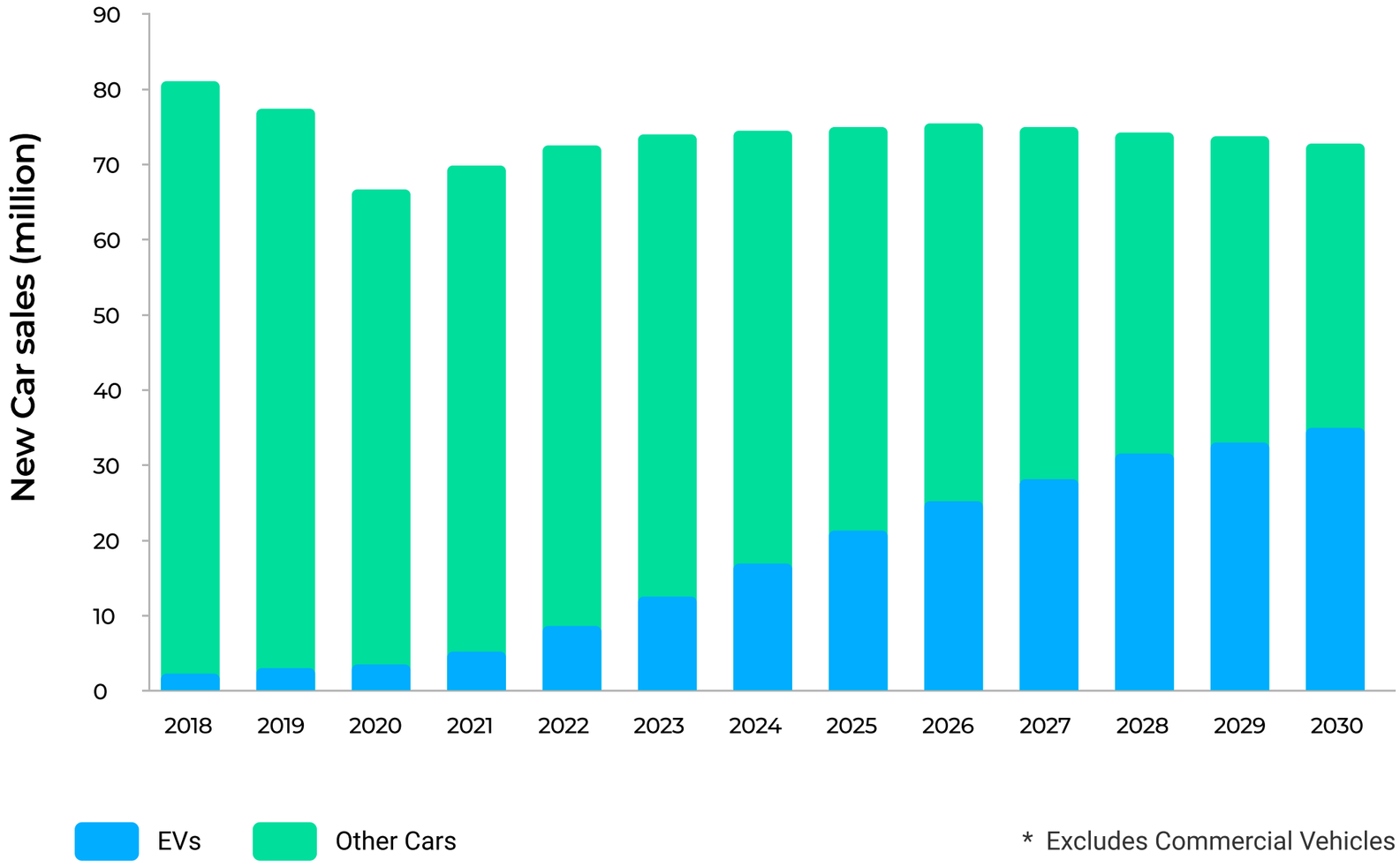
As cars get more connected, software is becoming more pervasive. To keep automotive systems up-to-date and secure, over-the-air (OTA) software updates are becoming crucial. Many auto manufacturers have already been sending OTA software updates to separated infotainment features, such as navigation maps or new satellite radio channels. But as cars become more software-defined, OTA updates creep from the dashboard deeper into the car.

The absolute leader in providing OTA updates is Tesla. The company’s cars can get OTA updates for all systems—from the braking system to self-driving functionality. Established car manufacturers are slower. Their main hurdle is the legacy electrical architecture in most cars, as well as the complexity associated with rebuilding existing platforms to implement OTA upgrades.

But this is already changing as companies are starting to deploy a new centralized electronics architecture. Last year, Ford began equipping its two e-models with OTA capabilities. In February, Volvo launched its first-ever over-the-air (OTA) software update on the company's first fully electric car. In March, Volkswagen announced offering over-the-air software updates for its line of ID EVs.

Trend 4: Electrification

Electric vehicles represented almost 5% of all new car sales in 2020. And in 2021, EVs are expected to reach over 7% of new car sales worldwide. Forecasts say that EV sales will continue to grow, and by 2030, half of all cars sold will be EVs.



Source: Canalys

This rapid growth is largely due to CO2 regulations stimulating EV production. For example, EU countries are aiming to achieve EU-wide carbon neutrality by 2050, according to their Green Deal strategy. The year, emissions from new passenger cars are limited to 95 g of CO2/km, compared to the 130 g of CO2/km limit permitted in 2015-2019. U.S. car makers expect similar measures as the country has recently rejoined the Paris Climate Agreement earlier this year.

Tesla is likely to be the leader in electrical technology for the next several years. However, other automakers are following fast. BMW will launch 25 new electrified models by 2023, 12 of them will be full EVs. Volkswagen Group plans to produce 1,5 million EVs by 2025, investing almost $33 billion into its electric car program. Daimler will bring more than ten different all-electric vehicles to market by 2022 and electrify the entire Mercedes-Benz portfolio.

Trend 5: Production Shutdowns

At the beginning of the Covid-19 pandemic, car manufacturers assumed that the demand for vehicles would decrease, and so they reduced the purchase of chips. But they were wrong: the demand for cars continued to grow. When they decided to start placing chip orders again, the chip production lines were already busy with orders from consumer electronics companies. And switching back to automotive components takes time—months. This resulted in production shutdowns at many automotive companies. According to Fitch Ratings, the ongoing disruptions will continue for several months and start to dissipate in the 2nd half of the year.

Startups and design houses may address the challenge faster and easier. Even if some chips are temporarily not available in production volumes, 3-5 samples are sufficient for the design stage of new solutions. But for carmakers, the chip shortage comes as a true challenge. They are expected to lose $61 billion in revenue this year. Audi, Ford, Honda, Toyota, and Volkswagen have already reported that they are struggling with production stoppages due to chip shortage.

Some smart car models require over 3,000 chips for a single vehicle. Digital transformation in the automotive industry means that cars get smarter and more connected. They need more chips, and their availability becomes even more critical. To stay resilient to such global influences, startups and carmakers must rebuild their supply chains to make them more flexible and agile.

New Automotive Landscape

High consumer expectations, new regulations, tech advancements, electrification, and chip shortages are challenging car makers this year. But there's more behind these automotive trends than meets the eye. To stay in business, automotive companies are restructuring their internal processes and business models. This results in automotive supply chain disruption. In this article, you can find out what this change could mean for suppliers and startups and how they can benefit from the changing business environment.

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