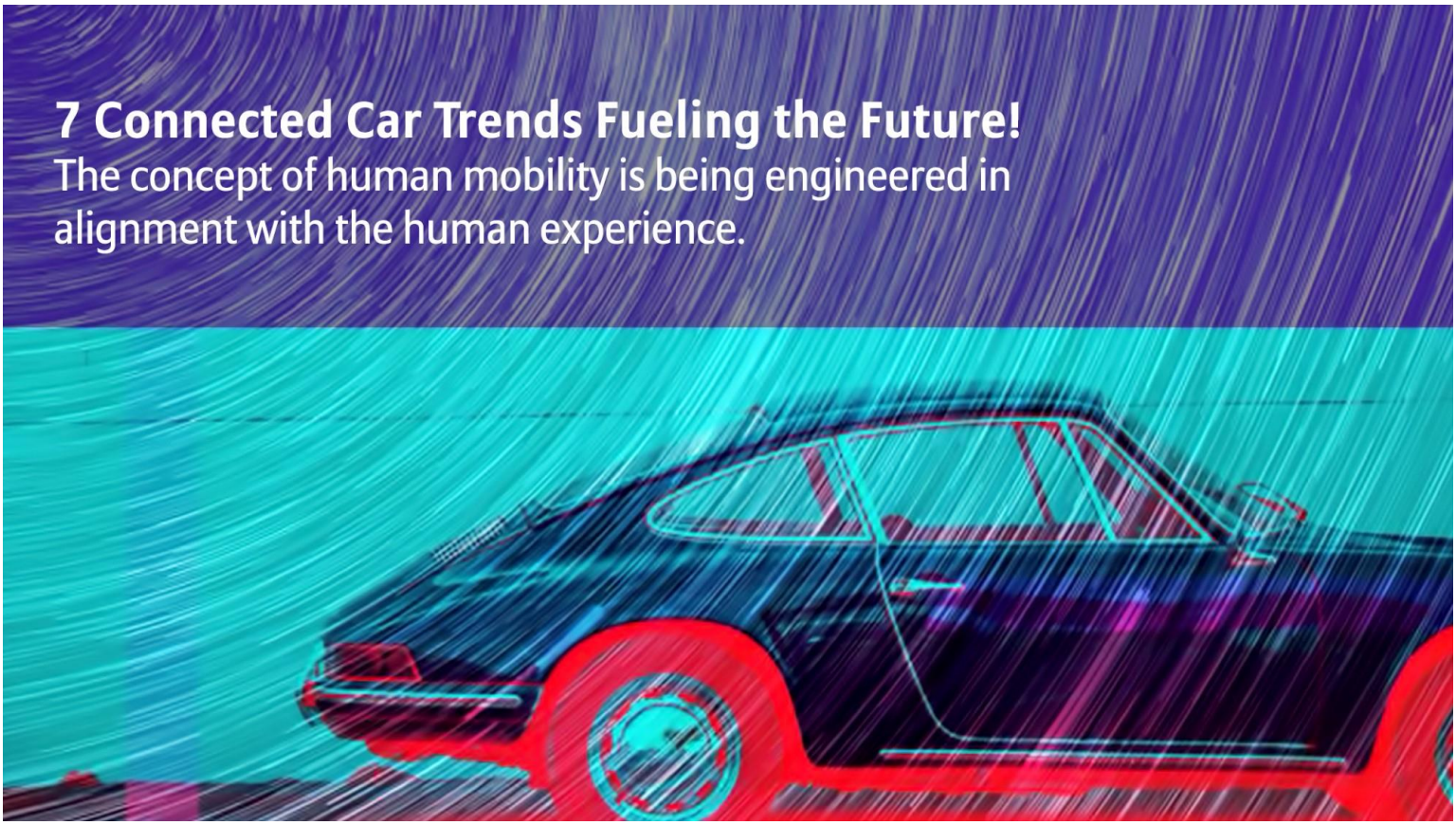

7 Connected Car Trends Fueling the Future

The concept of human mobility is being engineered in alignment with the human experience.

The race is on. Innovative automakers, software developers and technology companies are leading a radical transformation in the automotive industry. They are refining and redefining existing technologies and introducing new, exciting concepts like artificial intelligence and the connected car to give us a driving experience that will be like nothing we've ever known.

An entirely autonomous car transports a person to their destination without any need for driver oversight—attention to the road is not required. Inside the vehicle is all the entertainment, information, and connection with the outside world that someone would have in their home, office, or even favorite coffee shop. Every aspect of personal comfort is taken into consideration, from the temperature of the interior to the tinting of the windows to prevent glare or even the personalized adjustment of ambient lighting to create the perfect mood to go with the music playing through the satellite radio station.

Even if the car is not driverless, the driver is still connected with the world around them through a digital cockpit platform while sensors positioned around the car provide a cocoon of safety in the thickest of traffic.

Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) technology allows the car to communicate with other cars and the infrastructure like traffic lights. Vehicle speed and the distance to other vehicles can be adjusted immediately in response to conditions on the road. Voice recognition allows drivers to communicate with a virtual personal assistant to schedule meetings and send text messages without taking their hands off the wheel while the vehicle's navigation system guides the car through traffic. Everything a person needs is at their command.
Nice vision. But how close is it?

Trends Driving Automotive Connectivity

The road vehicle powered by an internal combustion engine has gone through a more extensive transformation in the past 25 years than it had in the previous century. The last 25 years have been witness to increasing standardization, platform sharing, and computer-aided design in the automotive industry.

We have also seen rapidly rising fuel efficiency and engine output. In addition, technologies that improve the driving experience, such as GPS navigation systems, rear-view cameras, and keyless ignitions are just a few of the features common in today's car. These features are not merely accepted, but expected, by car buyers.

More importantly, connectivity is essential to both autonomous vehicles and smart cities. In fact, in a recent Automotive Product Development and Launch Cycles survey sponsored by Jabil, 53 percent of respondents shared that better connectivity was the primary driver of technology innovation in the industry.

Most of the technological advances in automobiles have been focused until now, and rightly so, on making cars safer while also providing simple user conveniences, like GPS navigation. Much of the technological magic that happens in today's vehicles occurs under the hood, out of sight behind the dashboard, or through sensors mounted in car panels. It's made a difference.

In fact, the emergence of these safety-centric technologies and the inevitability of autonomous vehicles, which remove the human element from the operation of the vehicle, have encouraged the National Highway Traffic Safety Administration, in conjunction with the National Transportation Safety Board and several nongovernmental organizations, including the National Safety Council, to undertake the Road to Zero initiative. This partnership between major influencers on public policy regarding matters of roadway behavior and vehicle has set the lofty goal of eliminating traffic fatalities within 30 years. New technologies will lead the way to this goal.

Even more exciting, today's automakers, software developers and leading technology companies are bringing innovative technology out from behind the curtain. They're striving to create a unified, fully-integrated, and highly personalized vehicle experience—the connected car—that will completely change the way we think of driving (if that term will even have relevance 20 years from now). Electric and driverless cars, the advanced state of artificial intelligence technology, increased applications of environmental sensors with onboard computer systems, and connectivity of Wi-Fi through telematics and digital platforms are revolutionizing the future of mobility.

Which Technologies Will Have the Greatest Impact?

This exciting future is before us. However, many of the technologies that will completely transform the driving experience are only in the preliminary stages and there are still challenging issues in terms of traffic infrastructure and product affordability. Let's look at the seven most talked and written about trends that are shaping the way we will soon take to the road and handicap the future of each.

1. Driverless Cars

"Driverless," "autonomous" and "self-driving" are all terms that have come to mean pretty much the same thing: a vehicle that can drive itself with no human intervention required, at least under some circumstances. The companies racing to develop the first driverless car include major automakers and technology companies.

The first truly driverless car will be a game changer. But don't expect to see widespread acceptance and production of driverless cars for at least another decade due to the need for a connected infrastructure and advancement of other technologies, such as V2V.

2. AI Interfaces

Building upon technology that, for now, is confined to smartphones or smart speakers, automakers will provide artificial intelligence software in a vehicle's infotainment system that will serve as a virtual personal assistant with the ability to respond to voice commands and proactively guide drivers in collaboration with its navigation system. Automakers are expected to introduce models with AI interfaces as early as 2019 or 2020.

But that's not all. With the increasing use of sensors and other technologies that collect data, AI will be key to making sense of everything. Some automobiles already use AI for Level 3 autonomous driving, but for the industry to reach Level 5, major enhancements need to be made to the car as well as the infrastructure.

3. Telematics

Automotive telematics play a vital role in assessing driver behavior for a wide range of purposes, from determining a more accurate insurance premium to learning more about when and where people drive. Dealerships value telematics as a way to monitor vehicle diagnostic and smart maintenance service.

Currently it is estimated that between 60 and 80 percent of cars sold in 2017 contained installed telematics, however the market for connected car packages continue to focus on premium vehicles. By 2022, 75 percent of connected car packages will be sold as part of smaller, less expensive cars.

4. Vehicle-to-Vehicle Connectivity

V2V technology, as the name implies, allows vehicles on a road to "talk to each other" by sharing data on speed, road conditions and other factors through an ad-hoc network created among vehicles. V2V shows great promise in helping to avoid crashes, ease traffic congestion, and improve the environment.

Taking the concept one step further, "vehicle-to-everything" (V2X) technology will make it possible for vehicles to communicate with smart traffic signals and even conduct a transaction at a gas pump. It is expected that all new cars on the road will have V2V technology installed by 2023 and that V2X technology will follow along shortly thereafter.

5. Sensor Application

Innovative sensors monitor and regulate a car's operation and provide the foundation for autonomous driving by sharing important data in demanding applications, such as engines and brake and transmission systems. Sensors such as LiDAR, radar, cameras and ultrasonic are significantly impacting auto safety, security and vehicle maintenance costs. The future for sensors is now, and it is only a matter of how they are integrated into AI and connected car technologies that will determine their possibilities.

6. The Totally Connected Car

There's a good chance your next car will be every bit connected as your smart phone, with access to the Internet and the Cloud. Don't be surprised if at some point in the not-too-distant future, Internet access will be as important as fuel efficiency and engine power when you purchase your next car. Widespread access to a connected car is not here yet, but I agree with the experts who predict that 90 percent of new cars will be connected to the Internet by 2020.

7. Brain-to-Vehicle Technology

Brain-to-Vehicle technology uses a device to imperceptibly measure brain wave activity, which is analyzed by the vehicle's autonomous systems and used to predict and eventually anticipate driver behaviors. B2V technology may not be for everyone. It requires the use of a headset dotted with electrodes that either press directly against a person's scalp or come as close as possible.

However, predictions are that B2V application can help drivers avoid accidents caused by abrupt lane changes and other unsafe driving practices. We're still a ways from seeing the wide adoption of B2V technology, based upon the advancement of supporting technologies.

For the first time, with the integration of AI and connected car Internet access into the way we travel from Point A to Point B, the concept of human mobility is being engineered in alignment with the human experience—the communities in which we live and the way we interact with the world around us. Not all the trends that excite us today will survive the challenge of taking a bold vision into the future. However, the ideas that move from trend to reality will have a major impact on how we live our lives. The automobile as we know it today will soon become a relic and freedom of the road will take on an entirely new meaning.

Written b*y Chad Morley, Vice President, Automotive and Transportation, Jabil*