Google’s Self-Driving Car: Impact of the Coming Transportation Revolution

Google’s vision is not to replace the traditional relationship between car, driver, and road, but rather to create a new traveling experience free of ownership, obligation, and maintenance.

By David Maloney

Each year, it is estimated that at least 23 percent of all car accidents are caused by or related to driver distraction. In 2012, 3,328 people were killed and 421,000 were injured in distraction-related crashes.

Increased efforts to decrease driver distraction by stopping texting-while-driving has spurred increased spending and innovation in the automotive sector. Google has taken a novel approach and created a fully-autonomous self-driving car. The self-driving car addresses many concerns regarding driver distraction and would give drivers relief from navigation chores. Passengers could ultimately read, play a video game, or just look out the window and enjoy a ride around town.

The current prototype combines street mapping images, sensors, software, and laser imaging to navigate streets and avoid random obstacles such as bicyclists. It lacks many of the typical features found in a normal automobile. There is no brake or acceleration pedal and no steering wheel. Even the mirrors and glove compartment have been removed, supporting the aura of a truly self-driving car — operated without any physical human intervention.

The car uses a 64-beam laser mounted on its top to scan the landscape and generate a detailed 3D map of the environment. The map is then compared to previously generated street images. The subsequent data models created use software to then deliver instructions to the car and navigate the roadway. The car is also remotely monitored and controlled if necessary by operators located on an offsite computer farm.

Google foresees self-driving cars more as offering a driving service and experience for the user. People could call or text for cars whenever and wherever they needed them: Pay a service fee, and the car will drop you at the local grocery store, and then proceed on its way to the next customer, similar to a taxi service, but without the human interface.

The transportation model moves away from car ownership, and toward a consumer service. Rather than replacing car ownership, Google would offer a new service and form of transportation, thereby giving consumers more choice, freedom, and mobility. The approach also appears a gentler way for Google to enter the automotive market.

Google is continuing to test its cars. As of June 2014, its drivers have logged about 700,000 miles on the roads of Mountain View, California. If successful, Google’s innovation would revolutionize a 100-year-old mature industry, turn cars into robots, and perhaps end driving as we know it today.

Changing Laws, Changing Minds
Before you can change the mind of the many drivers in the world, you must change the mind of the few in power who hold the keys to unlock the door for self-driving cars to proliferate.

Today, self-driving-car technology is well ahead of personal liability, traffic, and auto insurance laws, all of which presume a car is driven by a human. In order to get self-driving cars to the market, outdated 100-year-old laws would need to be changed. To do this, Google has lobbied state and federal government in an effort to influence pending legislation. In 2013 alone, Google spent more than $14 million dollars on various company campaigns, the most of any high-tech company in the U.S.

Their efforts have proven to be effective. In June 2011, Nevada passed the first law that allowed the operation of self-driving cars in its state, although not on public roads. Florida and California followed suit in 2012. Most recently, Michigan joined the list in December 2013, permitting the testing of vehicles, although the law requires a human to be present in the driver’s seat at all times.
Google’s lobbying tactics have been more progressive, focusing on small wins rather than sweeping change. For example, pending legislation calls for an exemption to allow occupants to text while sitting in the driver’s seat. Other laws to follow will allow for manufacturers to apply for permits to operate self-driving cars.

It is expected that competition for state governments to attract high-tech jobs will only increase. As more laws are enacted, there will be added pressure for other states to pass their own self-driving laws in order to stay relevant in the future economy.

**Choice: The X Factor in Transportation**

Self-driving cars offer the convenience that can change people’s habits, routines, and decision-making. The current safety improvements by automakers have merits, but are not fully appreciated by consumers in their everyday driving experience. The driverless car offers a riding experience that is fun, tangible, and memorable. The fun factor is something that can change routine habits into durable behavior that consumers will repeat over and over again.

With a well-thought-out marketing plan highlighting choice, consumers may be more likely to lower their resistance and forfeit control of their cars. If Google begins to educate the public on the purpose and potential of its self-driving cars, an impactful tipping point may be reached more quickly than expected.

The novelty of a self-driving car is to offer a fresh means of transportation, especially to people not well served by the current product. An ideal demographic may be college students or senior citizens. For a senior citizen in a community center, their choice may be either a shuttle to the local grocery store, or calling for a self-driving car. On a small college campus, a student could send a text from their tablet to request a car, and then take a ride to a local party. After a night of spirits, a car would pick them up and safely return them to their dormitory.

Such a service would have benefits likely to increase demand, including ease of travel: a trip downtown without parking worries, wasting time to find a spot, and no need to find your keys or get directions. The unseen dynamic of pride at being a first user and then telling friends about the experience would be contagious, similar to the annual rush to buy hard-to-find toys during the holiday season. As word of mouth spreads, the self-driving car becomes a status symbol, with even more prestige than a Chevy Volt or Nissan Leaf. As consumers realize that ownership is not required for a self-driving car, attitudes may change and embrace the technology in a matter of a few years. The idea of borrowing a car is much more economical than owning or leasing a $20,000 or $30,000 vehicle, and lowering debt and freeing up consumer spending would have enormous implications.

Some years from now, the next generation may even look back and see the era of the typical family owning two private automobiles, compared with the expected minimalism of a future consumer riding service — without ownership — as somewhat indulgent.

**Conclusion**

The impact of Google’s self-driving car is only in the beginning stages. Research and development in this space has been mostly independent, without much progress in collaboration between Google and automakers. It is possible that the auto industry and self-driving car technology may converge in the future, but the current dichotomy in strategic planning makes mutual collaboration difficult.

It is important to remember that Google’s vision is not to replace the traditional relationship between car, driver, and road, but rather to create a new traveling experience free of ownership, obligation, and maintenance.

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