

The Politics and Technology Behind Self-Driving Cars

March 7, 2016

USC SAE-550

Jennifer So

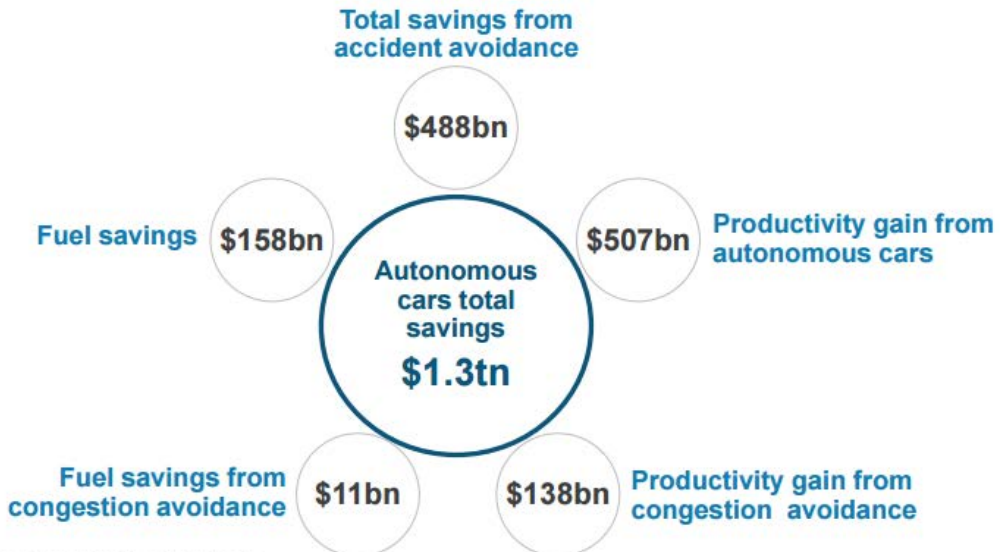


Why Driverless Cars?

- Commute
 - Leisure and productivity
- Fatal vehicle accidents
 - Reduced by 90 percent
- Increase Mobility
 - Elderly, disabled
- Parking
 - 15% tighter spaces



Potential US Cost Savings

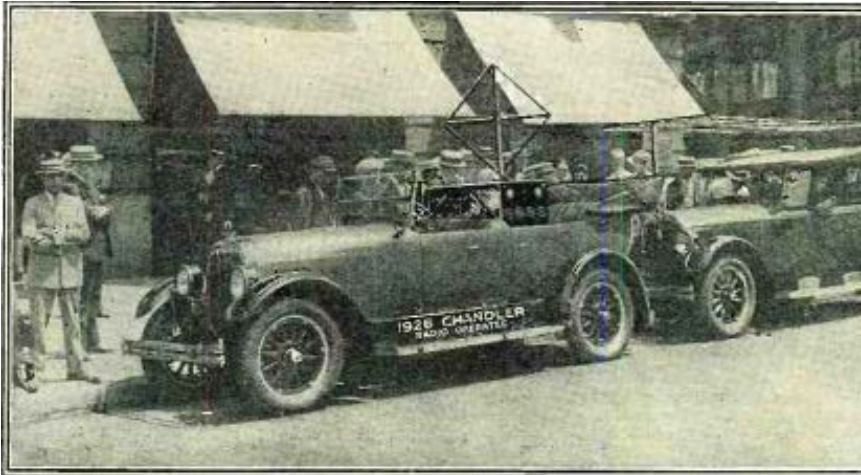


Source: Company Data, Morgan Stanley Research



Long History of Driverless Cars

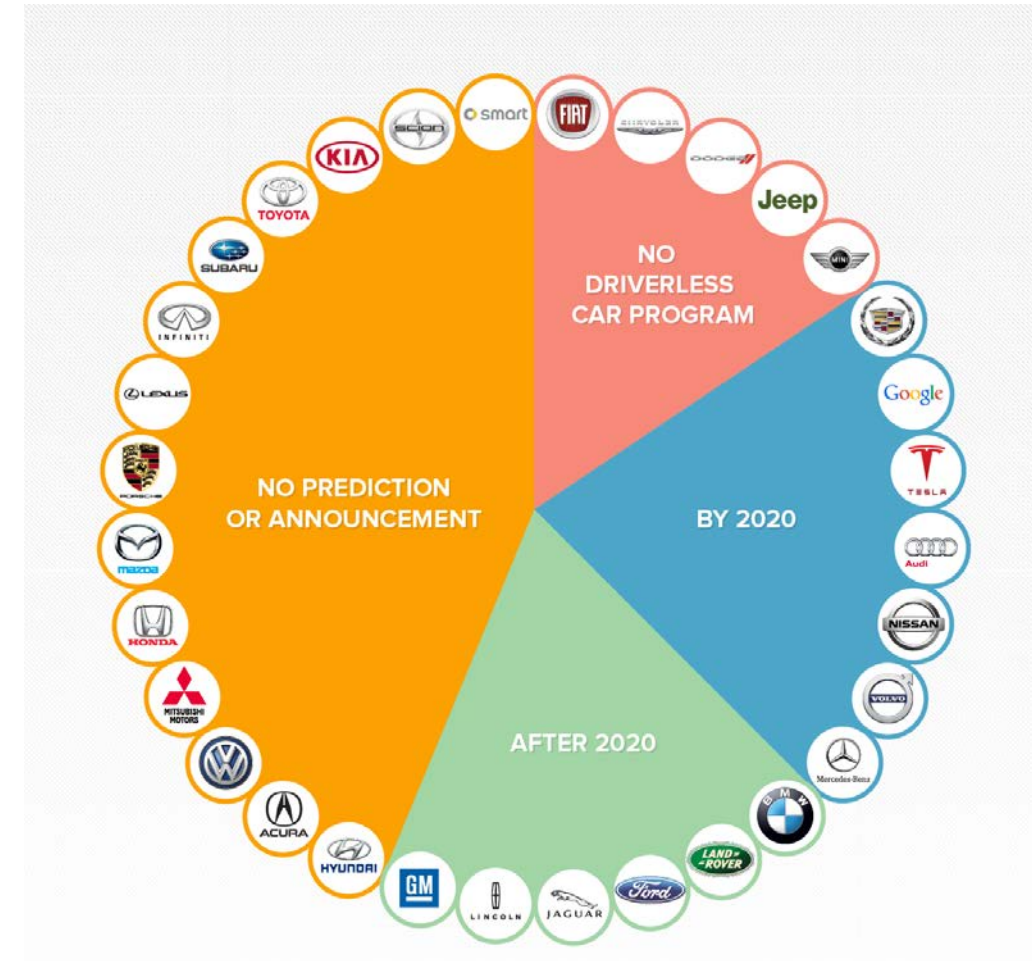
- 1925 – radio-controlled driverless car
- 1960 – Ohio State University’s Communication and Control Systems Laboratory, electronic devices activating driverless cars
- 1980s – DARPA-funded Autonomous Land Vehicle (ALV) project
- 1995 – Carnegie Mellon University’s Navlab “No Hands Across America”





Autonomous Cars Today

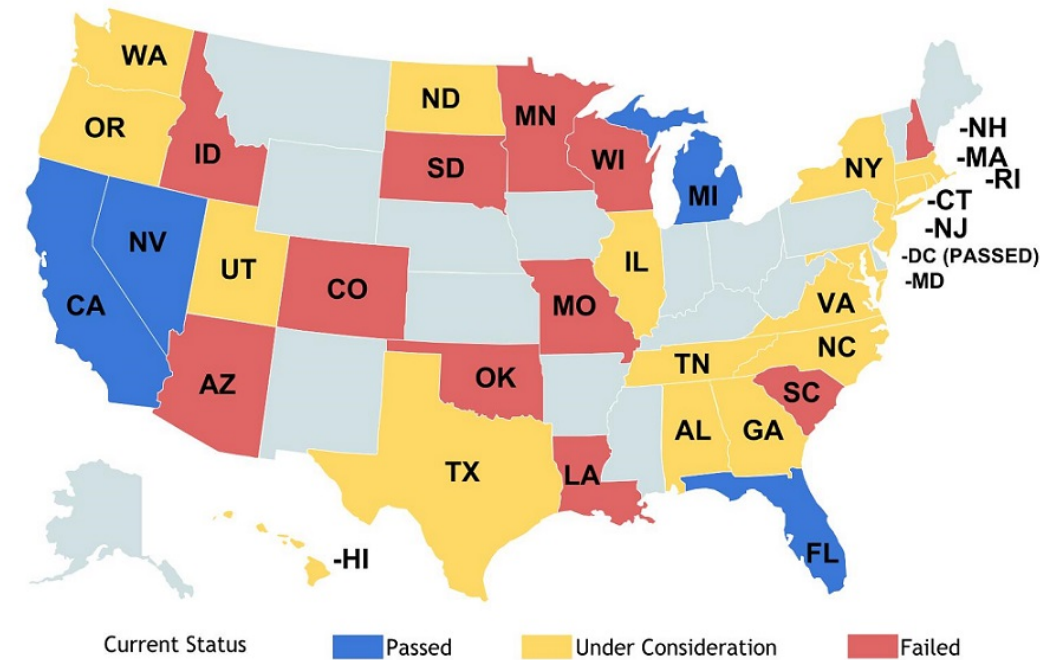
- **Mercedes-Benz** – Mercedes-Benz big-rig
- **Volvo** – DriveMe project for autonomous bus system in Sweden in Spring 2016
- **Apple/Uber** – secretive
- **Tesla** – semi-autonomous Autopilot system in October 2015
- **Google** – long been testing driverless cars



Political Facts of Life



- Politics, not Technology, Controls What Technology is Allowed to Achieve
 - California DMV proposed stricter regulations for autonomous vehicles
- Cost Rules
 - Price for hardware (sensors, processors, and actuators) to make cars autonomous
- A Strong, Coherent Constituency is Essential
 - 3.5 million professional truck drivers and 1 million bus drivers in the U.S.





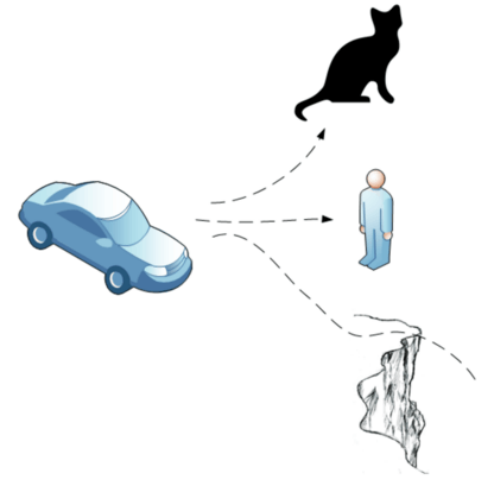
Political Facts of Life Continued

- Technical Problems Become Political Problems
 - Hackers
 - Driverless cars testing accidents
- The Best Technical Solution is not Necessarily the Best Political Solution
 - Incrementally add driver-assisting technologies or build driverless cars as fully as possible



FOL – Moral Challenges

- Who is Responsible?
 - Legal battle of the definition of a “driver”
- Unavoidable Crash Situation
 - Reaction vs. Programmed Instructions
 - Minimize harm
 - Save you or kill owners of vehicle
- The Ethical Dilemma of Self-Driving Cars on TED-Ed
 - <http://ed.ted.com/lessons/the-ethical-dilemma-of-self-driving-cars-patrick-lin>



Research Challenges



- Ongoing process
- Legislative and regulatory action continues to change
- Speculation of what may happen – revolution of entire transportation system
- Self-driving carmakers and transparency



Questions?



Driverless Car Mishap #13

