

Autonomous Vehicles: Ready or Not, Here They Come...Maybe???

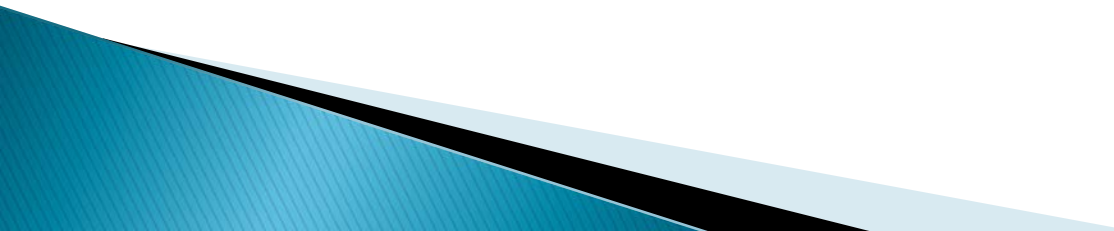
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What is an Autonomous Vehicle?

NHTSA defines vehicle automation as having five levels:

- ▶ **No-Automation (Level 0):** The driver is in complete and sole control of the primary vehicle controls – brake, steering, throttle, and motive power – at all times.
- ▶ **Function-specific Automation (Level 1):** Automation at this level involves one or more specific control functions. Examples include electronic stability control or pre-charged brakes, where the vehicle automatically assists with braking to enable the driver to regain control of the vehicle or stop faster than possible by acting alone.
- ▶ **Combined Function Automation (Level 2):** This level involves automation of at least two primary control functions designed to work in unison to relieve the driver of control of those functions. An example of combined functions enabling a Level 2 system is adaptive cruise control in combination with lane centering.
- ▶ **Limited Self-Driving Automation (Level 3):** Vehicles at this level of automation enable the driver to cede full control of all safety-critical functions under certain traffic or environmental conditions and in those conditions to rely heavily on the vehicle to monitor for changes in those conditions requiring transition back to driver control. The driver is expected to be available for occasional control, but with sufficiently comfortable transition time. The Google car is an example of limited self-driving automation.
- ▶ **Full Self-Driving Automation (Level 4):** The vehicle is designed to perform all safety-critical driving functions and monitor roadway conditions for an entire trip. Such a design anticipates that the driver will provide destination or navigation input, but is not expected to be available for control at any time during the trip. This includes both occupied and unoccupied vehicles

Type of Autonomous Vehicle

- ▶ Different manufacturers are developing different models or types of vehicles with different levels of autonomy
 - ▶ Apple/Google v. Nissan, Audi, Volvo
 - ▶ Tesla
 - ▶ Independent or hobbyist
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Autonomous Vehicles are Coming!



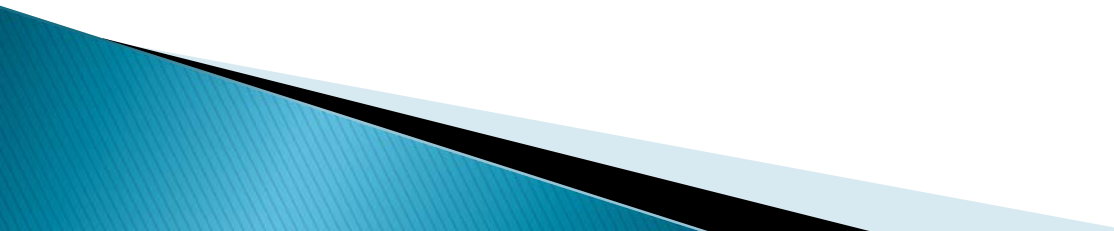
TONY AVELAR/ASSOCIATED PRESS
A prototype of Google's self-driving car



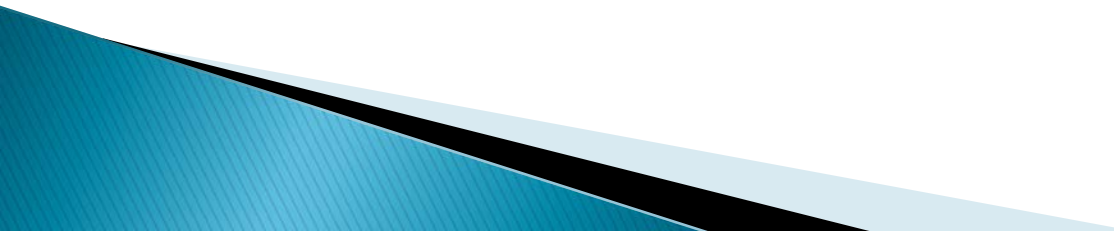
Researchers from Stanford University cooperated with the Volkswagen Electronics Research Lab to develop *Shelley*



Challenges facing Autonomous Vehicles

- ▶ Model/Technology
 - ▶ Insurance
 - ▶ Legislation
 - ▶ Political
 - ▶ Consumer Acceptance
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Autonomous Vehicles – SOS

- ▶ Issues facing the Illinois Secretary of State
 - Driver or Operator?
 - Vehicle Owner?
 - Plating requirements?
 - Testing – Reporting requirements?
 - Crash Data Recorders?
 - Insurance requirements?
 - Miscellaneous?
- 

AV/SOS – Drivers

- ▶ Current IVC – Sec. 6-101 – “No person...shall drive any motor vehicle upon a highway in this State unless such person has a valid license or permit...issued under this Act.”
 - Different category of DL?
 - No DL at all?
- ▶ Exceptions – suspended DL’s, mental/physical disabilities, DUI’s, w/o mandatory insurance, child support, certain crimes

AV/SOS – Drivers

- ▶ Different types of DL's – CDL's, school bus drivers, weight class DL's, motorcycles
- ▶ Driving schools – online, commercial, high school, 18–21 year olds
- ▶ Different Fees – money from DL's fund
 - Road Fund
 - Drunk and Drugged Driving Prevention Fund
 - Motor Carrier Safety Inspection Fund

AV/SOS – Drivers

Distracted Driving

Illinois law prohibits the use of hand-held cellphones, texting or using other electronic communications while operating a motor vehicle. Hands-free devices or Bluetooth technology is allowed for persons age 19 and older.


Even using hands-free technology is considered a distraction while driving and can be dangerous. If you must make a phone call, even with hands-free technology, it is recommended that you pull off to the side of the road before making the call.

The only time Illinois drivers can use a hand-held cellphone is:

- To report an emergency situation.
- While parked on the shoulder of a roadway.
- While stopped due to normal traffic being obstructed and the vehicle is in neutral or park.

Drivers who are in a crash resulting from distracted driving may face criminal penalties and incarceration.

AV/SOS – Vehicles

- ▶ VSD – titles and registers vehicles driven on the highways of Illinois
 - ▶ All vehicles registered for use on the highways must meet FMSCA standards
 - ▶ Certain ATV's, dirt bikes, golf carts, etc are not registered by SOS
 - ▶ To receive valid registration in IL you must title the vehicle in IL
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AV/SOS –Vehicles

- ▶ Registering the AV
 - Special registration (license) plate to identify AV?
- ▶ Insurance requirements
 - More than mandatory insurance minimums?
- ▶ Oversight
 - Expertise??
- ▶ Security
 - IT security / hacking?
- ▶ “Black box” data
 - Who is entitled to this information and for how long?
- ▶ Licensing the driver/operator
 - Depends on the AV???

AV – IL Legislation

▶ HB3136 – Rep. Franks

- Introduced bill – created new Chapter in IVC on autonomous vehicles
- Definitions
 - Autonomous technology – “means technology that has the capability to drive a vehicle without the active physical control or monitoring by a human operator.”
 - Autonomous vehicle– “means any vehicle equipped with autonomous technology that has been integrated into that vehicle. An autonomous vehicle does not include a vehicle that is equipped with one or more collision avoidance systems, including, but not limited to, electronic blind spot assistance, automated emergency braking systems, park assist, adaptive cruise control, lane keep assist, lane departure warning, traffic jam and queuing assist, or other similar systems that enhance safety or provide driver assistance, but are not capable, collectively or singularly, of driving the vehicle without the active control or monitoring of a human operator.”
 - “An "operator" of an autonomous vehicle is the person who is seated in the driver's seat, or if there is no person in the driver's seat, causes the autonomous technology to engage.”
 - “A "manufacturer" of autonomous technology is the person that originally manufactures a vehicle and equips autonomous technology on the originally completed vehicle or, in the case of a vehicle not originally equipped with autonomous technology by the vehicle manufacturer, the person that modifies the vehicle by installing autonomous technology to convert it to an autonomous vehicle after the vehicle was originally manufactured.”

AV – IL Legislation

- ▶ HB3136 would require the Secretary:
 - To create a new program for approving or permitting manufacturers of AV's to test said vehicles on the roadways in IL.
 - Adopt rules concerning the number of autonomous vehicles on public roads, new driver license requirements, registration, and rules concerning revocation, suspension or denial of any license or approval
 - although most of these areas are governed by statute.
 - To hold public hearings on any regulation deemed necessary to ensure an autonomous vehicle's safe operation and if the application is seeking approval for using the av' on the roadways without a driver/operator.
 - to collect evidence of a \$5M certificate of insurance for each autonomous vehicle,
 - but made no mention of potential liability issues that may arise from a driverless/operatorless autonomous vehicle
- ▶ As introduced, the bill contradicts itself as to whether a driver or operator needs to be present in the vehicle and whether the bill is only for testing of autonomous vehicles or for mainstream use on the roadways

AV – IL Legislation

- ▶ HB3136 – Amended –
 - Creates the
 - “Automated Motor Vehicle Study and Report Act”
- ▶ The Secretary of State shall conduct a study on the feasibility of the operation of automated motor vehicles in this State and produce a report on its findings.
- ▶ The report shall include, but not be limited to, the following:
 - (1) research on whether automated motor vehicles reduce traffic fatalities and crashes by reducing or eliminating driver error;
 - (2) research on whether automated motor vehicles reduce congestion and improve fuel economy through better utilization of existing highway capacity and more efficient operation of a vehicle's acceleration and braking controls; and
 - (3) recommendations on which, if any, current laws should be amended to accommodate the introduction or testing of automated motor vehicles in this State

AV – Model Legislation

- ▶ Observer of the Uniform Law Commission's Study Committee on State Regulation of Driverless Cars
 - Model legislation – 2016?
- ▶ AAMVA – study group – driverless cars
 - Model legislation – fall 2016?

Final Thoughts

- ▶ Too many unknowns
 - Technology advancements
 - Consumer acceptance
 - Driver v. operator
 - Testing period
 - Infrastructure
 - Data security /hacking
 - Insurance issues
 - Ownership
 - Revenue!
- ▶ Questions???

Thank you!

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