Autonomous Vehicles

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Autonomous vehicles defined

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation

0	1	2	3	4	5
No Automation	**Driver Assistance**	**Partial Automation**	**Conditional Automation**	**High Automation**	**Full Automation**
Zero autonomy; the driver performs all driving tasks.	Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.	Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.	The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

Driving automation

- Safety
- Mobility
- Congestion / Traffic
- Emissions
- Health
- Time

Legislation

Traffic Safety Act, SNS 2018, c 29, s. 153:

> A person who is authorized under this Act to drive the vehicle must be positioned at the controls of the vehicle and, at all times while a vehicle is being driven on a highway, the person must be able to personally drive the vehicle, irrespective of whether the vehicle is capable of operating autonomously or in an autonomous mode.

Theory of Liability

- Conventional accidents
  - Emphasis on human error
    - Liability is attributable to: (1) Vehicle operators; (2) Vehicle malfunction or defect; and/or (3) Environmental conditions.

- Future accidents
  - Emphasis on product liability
    - Manufacturing defects
    - Failure to provide adequate instruction or warnings
    - Design defects

"[r]obot drivers react faster than humans, have 360-degree perception and do not get distracted, sleepy or intoxicated..."

John Markoff, *Google Cars Drive Themselves, in Traffic*, N.Y. TIMES, Oct. 9, 2010

Automobile insurance implications

- Liability shift
- Impediment to fair and quick compensation
- New risk
    - Software failure / bugs
    - Programming
    - Cyber breach / hacking
- Fewer accidents / increase in repair and replacement
- Data

Future automobile insurance model

- Single insurance policy → Compensates injured people regardless of whether humans or technology were at fault.
    - o Insurer has the right to subrogate against the manufacturer
    - o Coverage
        - Driver negligence and automated technology
        - Cyber breach / hacking
        - Requirement to maintain Automated technology

Recommendations for present

Ask the right questions:

- Query whether the vehicle has autonomous capabilities?
- What autonomous capabilities does it have?
- What autonomous features were engaged before or at the time of the accident?
- Did the autonomous features function properly?

"Google is working on self-driving cars, and they seem to work. People are so bad at driving cars that computers don't have to be that good to be much better."

Marc Andreesen

STEWART McKELVEY

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