

# Driverless Cars

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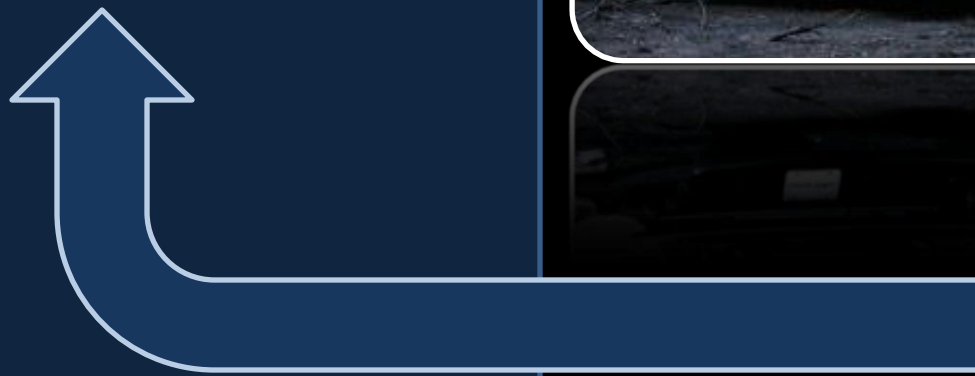
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Source: CNN Money/Autos



MEEN  
489

# Howdy from Kitt



<http://blog.fultonleasing.co.uk>

No Hands!





# Currently Offered Technology

- Current options lead to Automated Cars
- Electronic Stability Control (ESC)
- Adaptive Cruise Control
- Blind Spot Detection
- Lane Departure Warning
- Collision Mitigation



# Google's Contribution

- October 2010
- Software Decisionmaking
- Google Data Centers
- Two Drivers
- Stanford and Carnegie Mellon



# Google's Contribution

- 140,000 Miles Driven
- 1,000 Miles of Trips without Intervention
- Knows the speed limit of Every Road
- Programmed Personalities
- 1 Accident
- 7 Cars



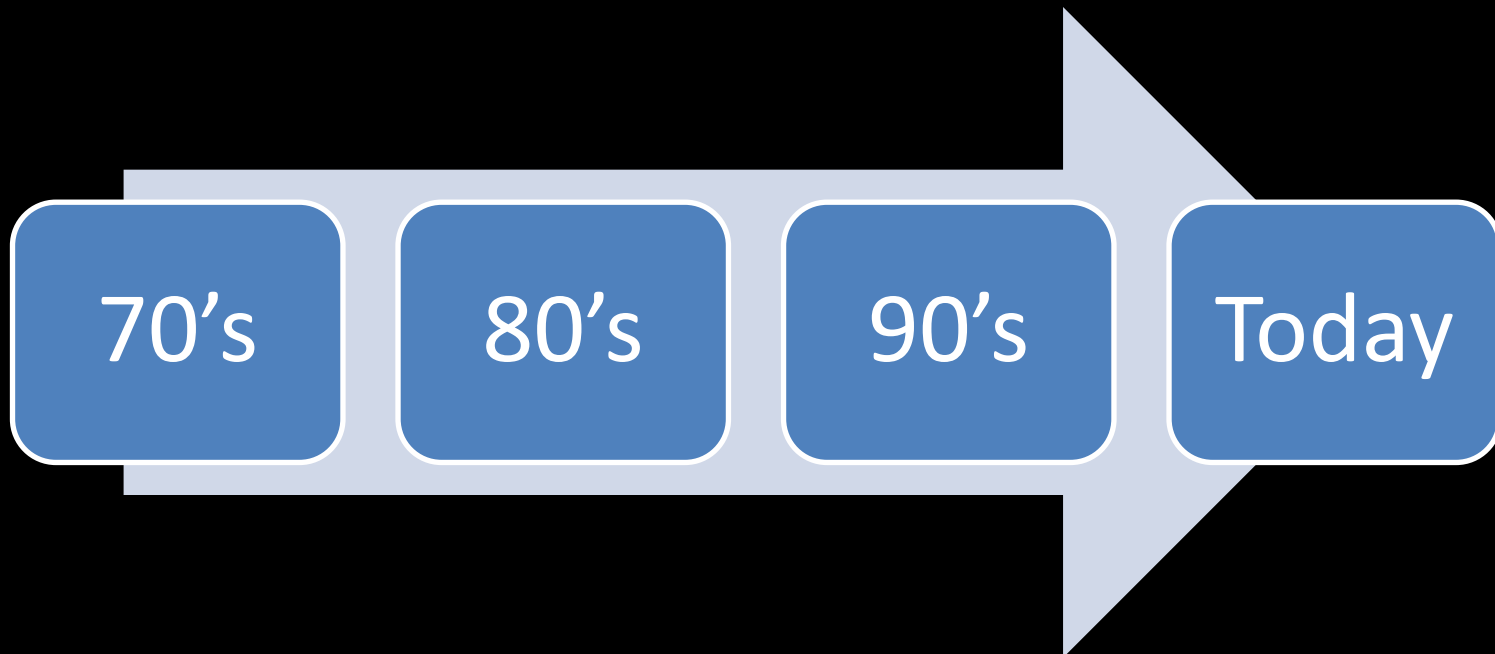
# DARPA Grand Challenge

- Goal: Develop autonomous ground vehicles for military use.
- Three separate challenges
- 2004 - 150 mile course. Best performance: 7.36 miles
- 2005 - 132 mile course. Five finishers
- 2007 - 60 mile urban challenge . Follow traffic rules.



# History

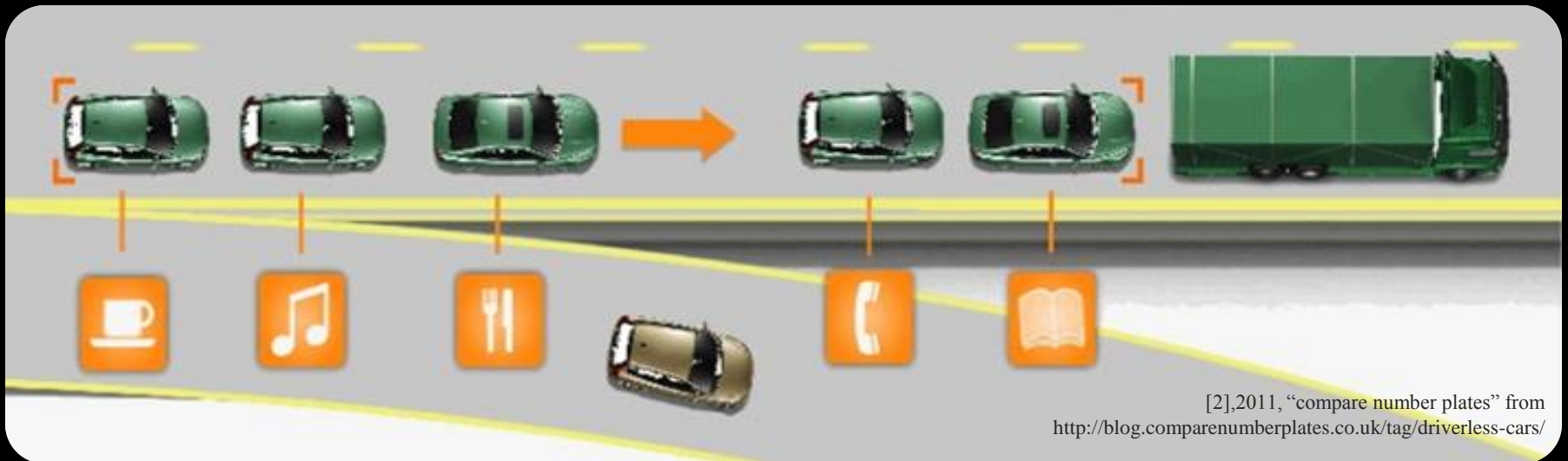
- 1977 : Tsukuba Mechanical Engineering Lab (Japan).
- 1980s: DARPA - Autonomous Land Vehicle (ALV).
- 1990s: Mercedes-Benz's VaMP and Vita-2 .
- 2010 : Google car





# SARTRE

- Safe Road Trains for the Environment.
- Platoon system: Train-like convoys.
- Improve fuel efficiency, reduce accidents, reduce journey times.



[2],2011, “compare number plates” from <http://blog.comparenumberplates.co.uk/tag/driverless-cars/>

# The Future

- We will need to wait between 10 and 20 years
- Expensive technology
- Lots of legislation
- SARTRE: Near approach



<http://www.whitebunnywabbit.com/technology>

# Advantages

- Safety
  - Reduce number of crashes
  - Cut out human error
- Shipping of Goods
  - More efficient trucking industry
  - Economic Boost
- Reduced Energy Consumption
  - Lighter automobiles
- Road Capacity
  - Automobile Train

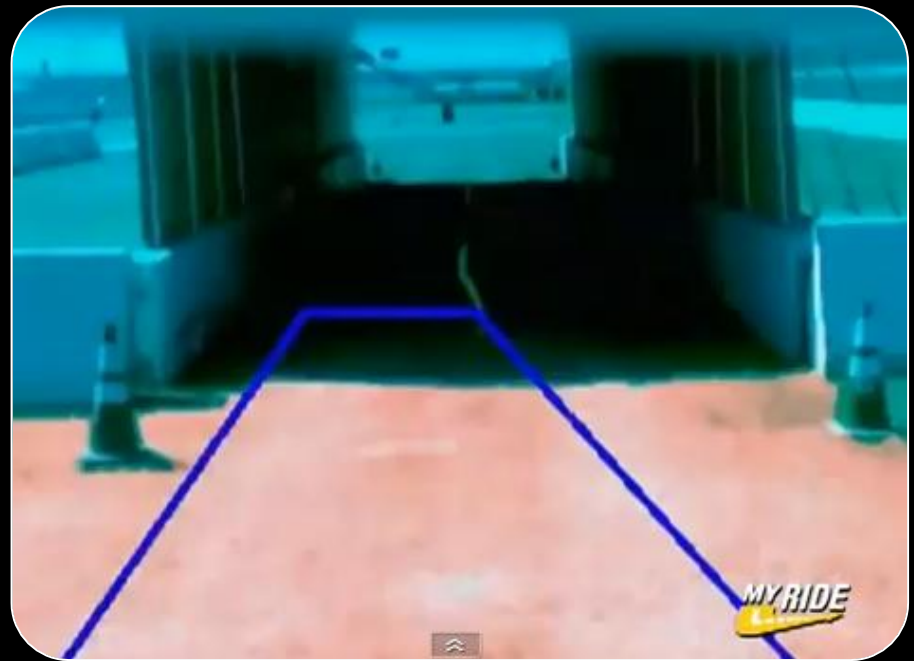
# Issues

- Cost
- Accountability
  - Who is responsible for failure?
- Reliability
  - Defense against drunk drivers?
  - Computer dependability
- Job Loss
  - Trucking industry
- Automotive/Government Regulation
- Social Acceptance



# Technology

- Novelty lies in car's brain
- Sensors: camera, radar, & scanning 3-D laser



# Google's Sensors



Two people in car - driver to take over in an emergency, and engineer to monitor software

# References

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Don't try this at home





Questions?