Engineering consumer understanding of higher levels of automation



Daniel V. McGehee University of Iowa



SIP-adus Workshop on Connected and Automated Vehicles

Tokyo

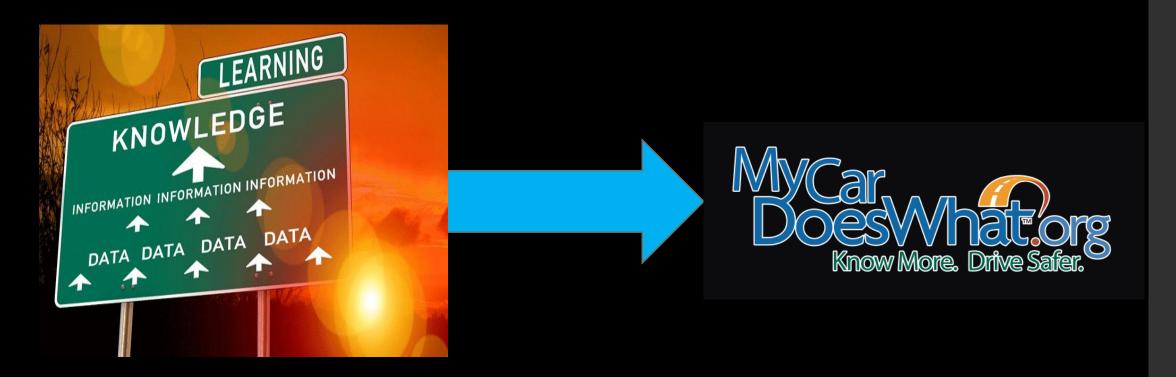
November 16, 2016

アイオワ大学 工学部 教授 博士 **ダニエル マクギヒ**

National Advanced Driving Simulator 所長



What about the driver?



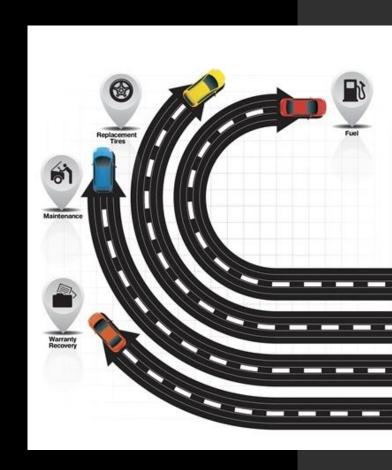
University of Iowa
Consumer Survey of Driving Safety Technologies

Total of 2,015 completions, nationally

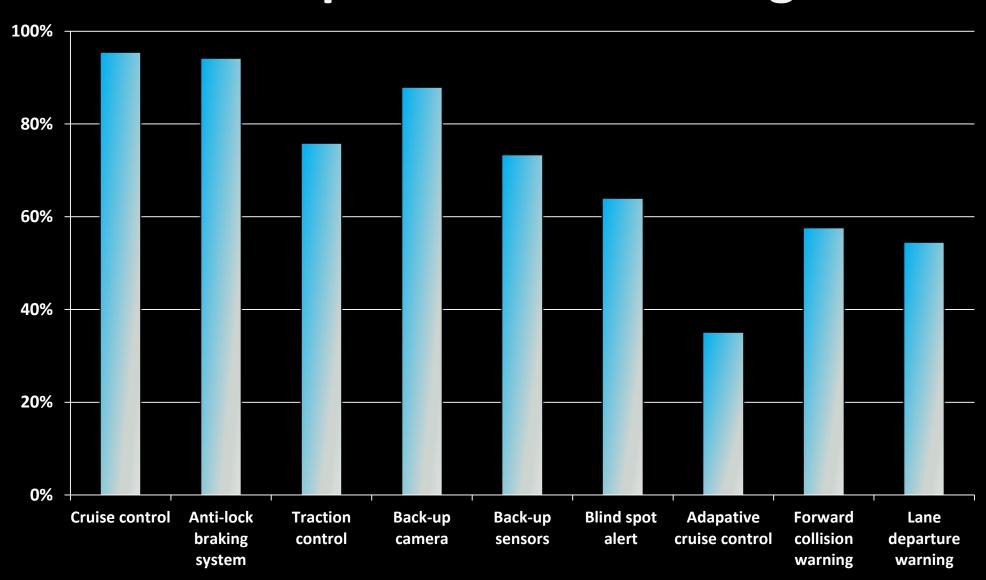
First Comprehensive National Survey

 Dedicated to driver understanding of technology and consumer driving safety

 Resulting data drives the national education campaign



What the Research Told Us: Consumer Exposure to technologies



Vehicle experiences

 40% reported their vehicle had acted in a way that startled them or in a manner they did not expect



• 33% sought information to understand why their vehicle behaved the way it did

National Survey Bottom Line: Consumers Uncertain

While consumers had exposure to <u>ALL</u> of the technologies, there was <u>significant uncertainty</u> about all of the them







Technology Demonstration Study



Driver Knowledge

> All Condition levels, all ADAS

Driver Knowledge Trust of the ADAS

All Condition levels, all ADAS

All Condition levels, all ADAS

Driver
Knowledge

All
Condition
levels, all

Condition
levels, all

Condition
Levels, all

Trust of Willingness
to use

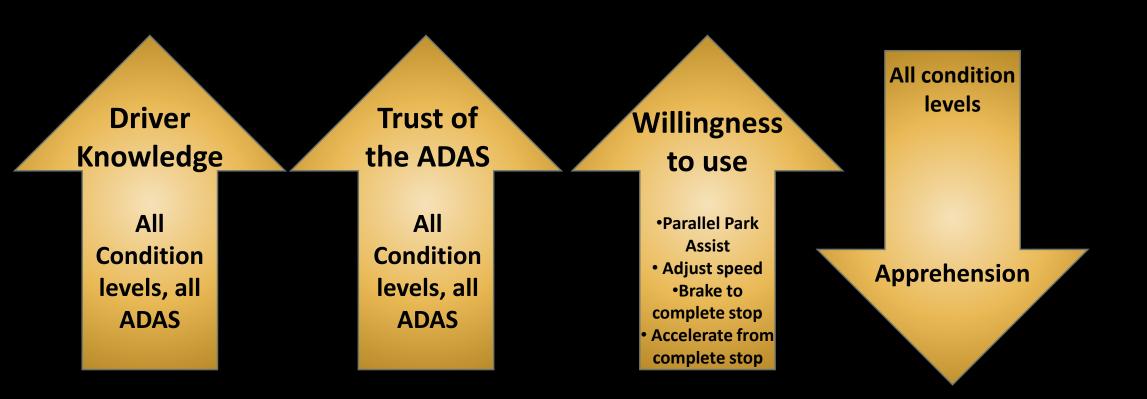
Parallel Park
Assist
Assist
Adjust speed
Brake to

ADAS

ADAS

•Brake to complete stop

Accelerate from complete stop



Driver Knowledge

Respondents
receiving ridealong, then
review of
owner's manual
reported higher
knowledge score
increase

Driver Knowledge Trust of the ADAS

Willingness to use

Apprehension

All condition

levels

All Condition levels, all ADAS All Condition levels, all ADAS

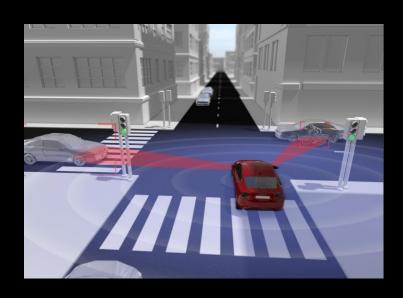
Parallel Park
 Assist
Adjust speed
 Brake to
 complete stop
Accelerate from
 complete stop



ADAS Driver



Driver understanding gaps will continue as the technologies continue to increase in market penetration





Consumer education vital to the success of these technologies

Technology Term Standardization

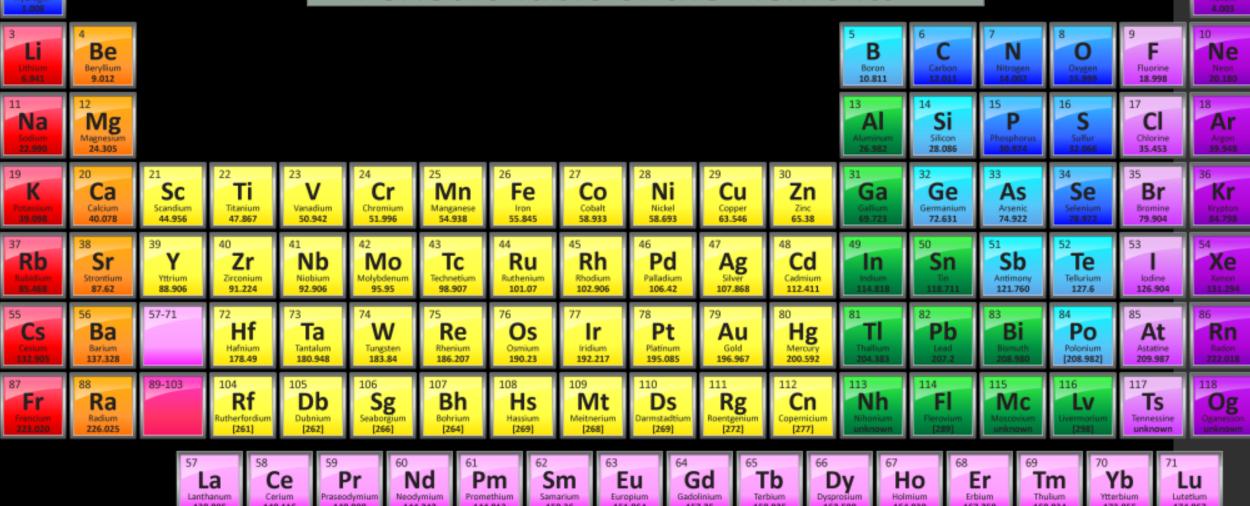
 Significant need to name the core technology then add the brand



Hydrogen

Periodic Table of the Elements









Earth

Metal

Halogen

Lanthanide

Actinide

Periodic table of sushi



Periodic Table of ADAS



Intersection Collision Avoidance



Forward Collision Warning



Automatic Braking



Obstacle Detection



Intelligent Speed Adaptation



High Speed Alert



Curve Speed Warning



Cruise Control



Adaptive Cruise Control



Adaptive Headlights



Night Vision



Parking Sensors



Automatic Parallel Parking



Rear Cross Traffic Alert



Back-up Camera



Back-up Warning



Pedestrian Detection



Active Steering



Adaptive and Active Suspension



Anti-Lock Braking System



Cornering Braking Control



Electronic Braking Assistance





Electronic Stability Control Caravan Electronic Stability Control



Traction Control



Hill Start Assist



Hill Descent Assist



Terrain Management



Road Surface Warning



Tire Pressure Monitoring System



Rollover Detection and Prevention



Lane Departure Warning























START STOP

Sideview Camera Drowsiness Alert Health and Workload Monitoring Audible Route Guidance

Today – a Proposal



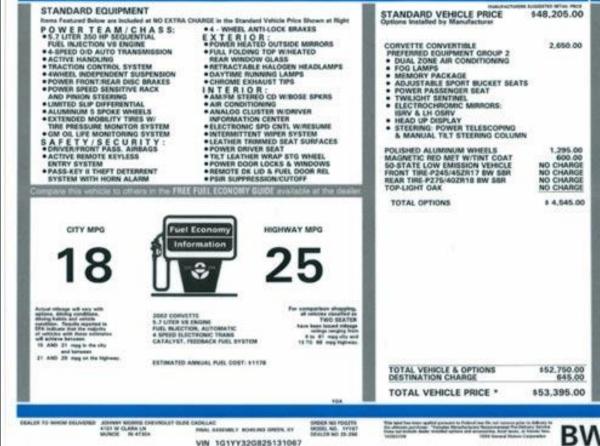
DEALER TO MINOR DELIVERED. ADVANCE MORRIS CHEVROLET CLOS CACHLAC

PRINCIPAL RESERVE F ROMERO DISTRICTOR

VIN 1G1YY32G825131067

The Tokyo—Iowa Accord for ADAS Labels

Today – a Proposal





The Tokyo—Iowa Accord for ADAS Labels All new cars list the core technology name before their own branding



Arigato * Thank You