Vehicle–integrated Driver Alcohol Detection System Hitting the Roads

RESULTATKONFERENS

TRAFIKSÄKERHET

ONSDAG 25 APRIL 2018

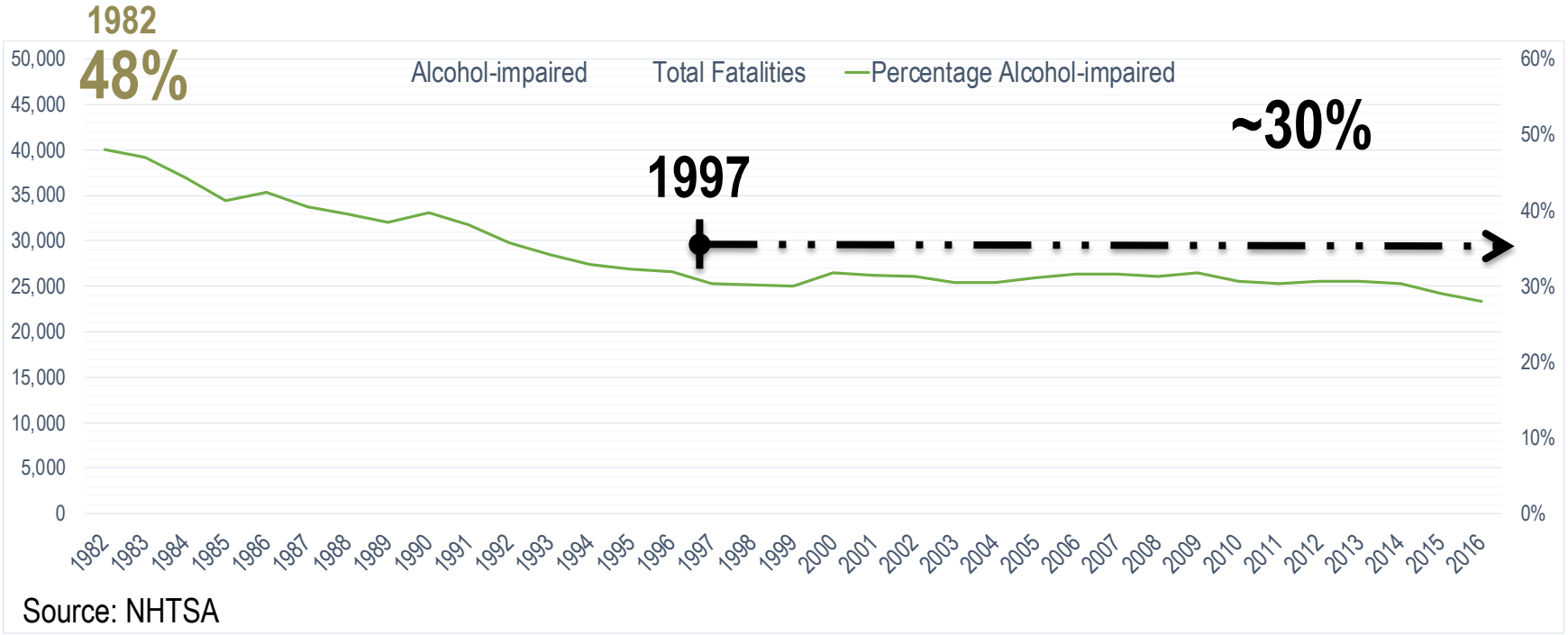
Helping to invent a world without drunk driving

dadss™

Driver Alcohol Detection System for Safety

Alcohol–impaired fatalities holding at ~30% for last 20 years

Motor Vehicle Traffic Fatality Trends



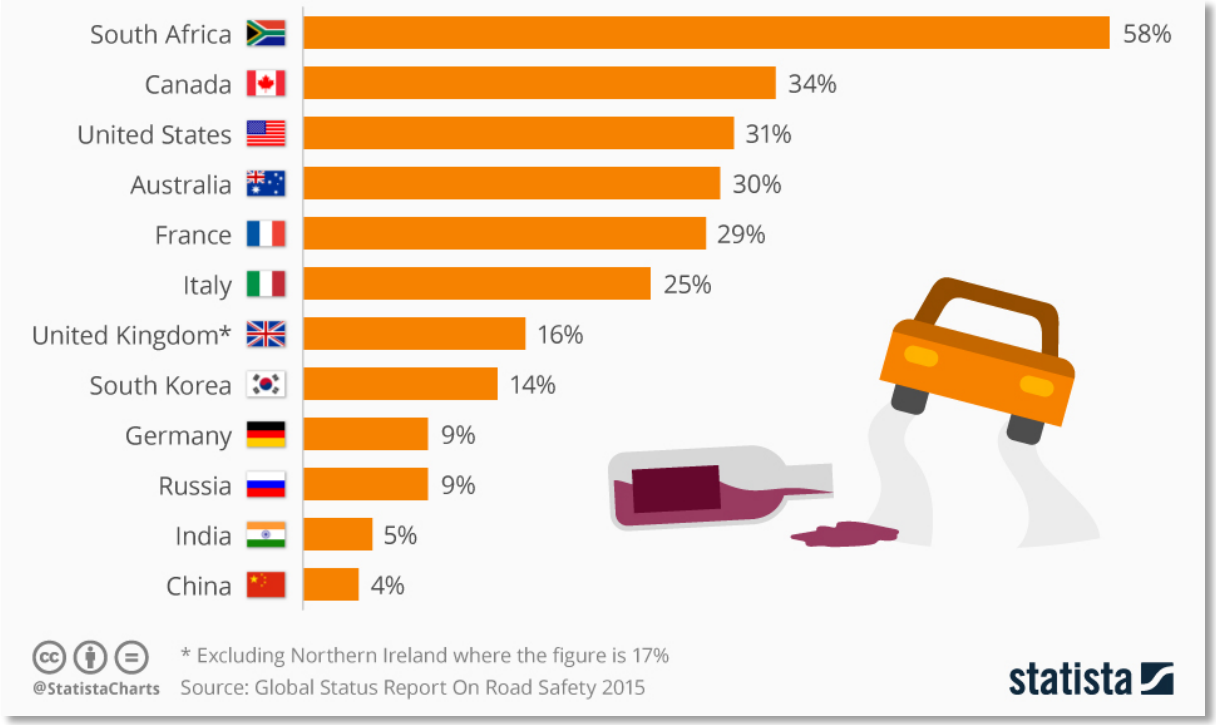
Source: NHTSA

Drunk driving in the U.S. claims approximately 10,000 lives and costs the U.S. $194 billion every year.

dadss
Driver Alcohol Detection System for Safety

Percentage of road accident deaths involving alcohol in 2015

World's Worst Countries for Drunk Driving



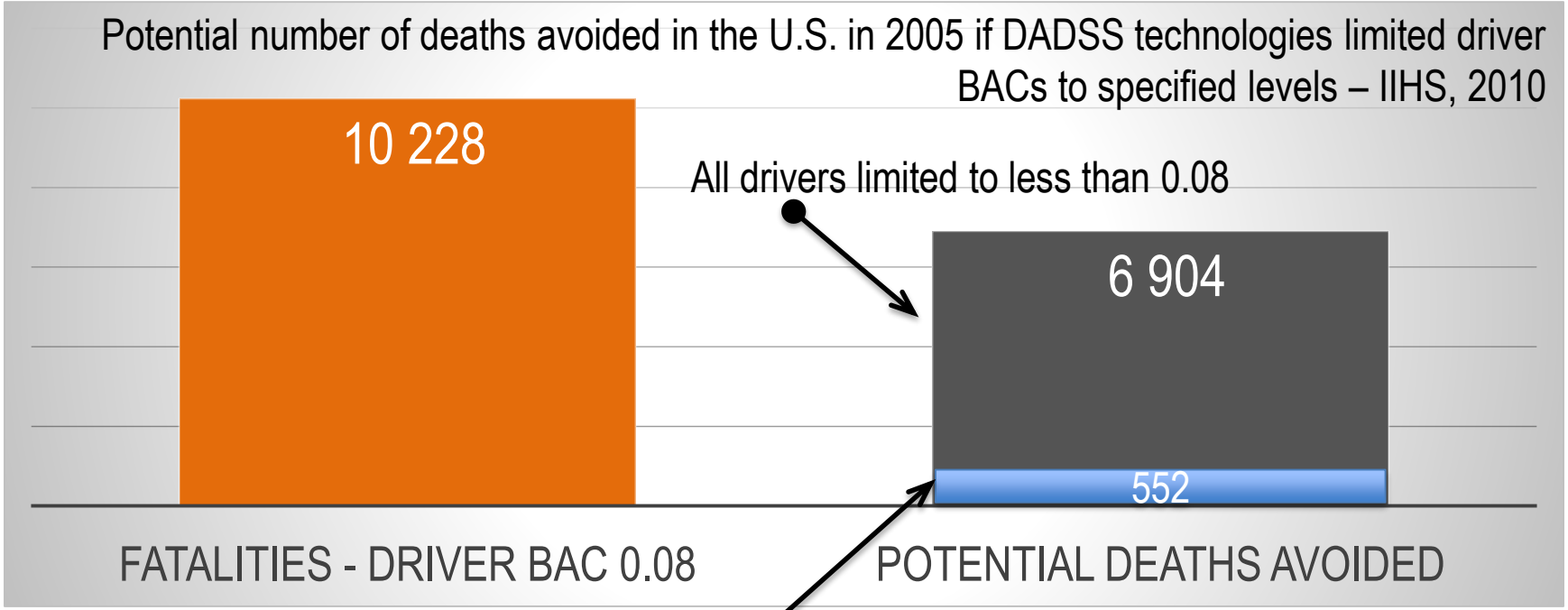
The genesis of the Driver Alcohol Detection System for Safety

A Question

… there was vehicle–integrated technology that could limit driver BACs to less than 0.08?

Attributable to ubiquitous use of DADSS technology

Potential Safety Benefits



Source: IIHS, 2013

Drivers with 1+ priors limited to "Zero" BAC

dadss
Driver Alcohol Detection System for Safety

Helping to invent a world without drunk driving

DADSS Program Launched

- The first–of–its kind technology to detect when a driver is impaired with a BAC at or above 0.08 and prevent the car from moving
- Programmable for a zero–tolerance limit for the underage
- Made available as a safety option in new vehicles, much like automatic braking, lane departure warning, and other advanced driver assist vehicle technologies
- Fast, accurate, reliable and affordable technology that will not affect normal driving behavior

A Public–Private Partnership

DADSS Program Partners

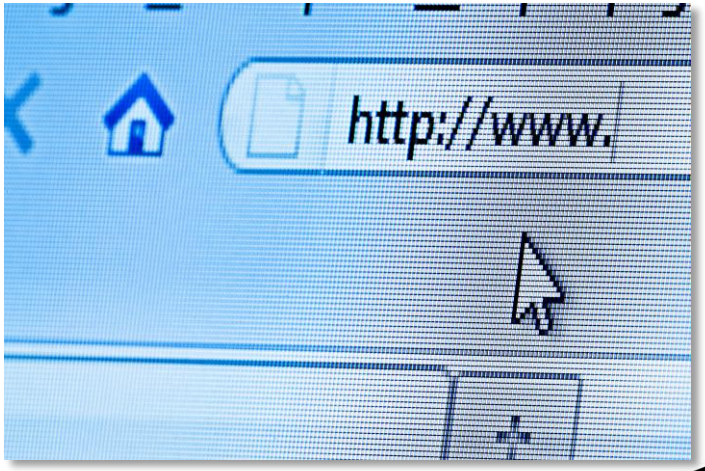
ACTS
AUTOMOTIVE
COALITION FOR TRAFFIC SAFETY, INC.
ADVANCING AND IMPROVING HIGHWAY SAFETY

NHTSA
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

dmv
www.dmvNow.com

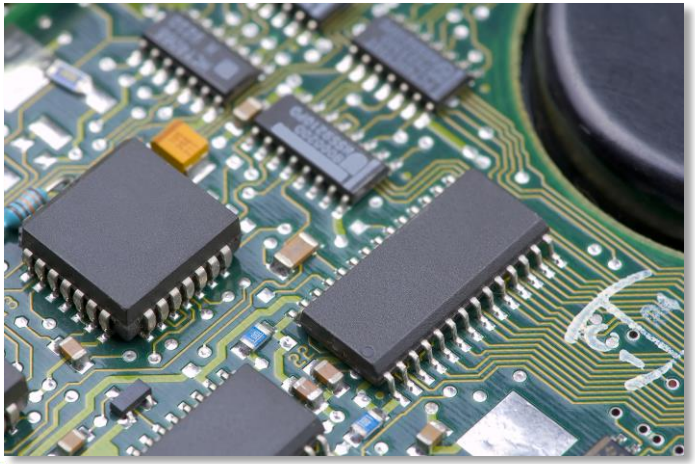
dadss
Driver Alcohol Detection System for Safety

Public–Private Partnerships …



The Internet

GPS



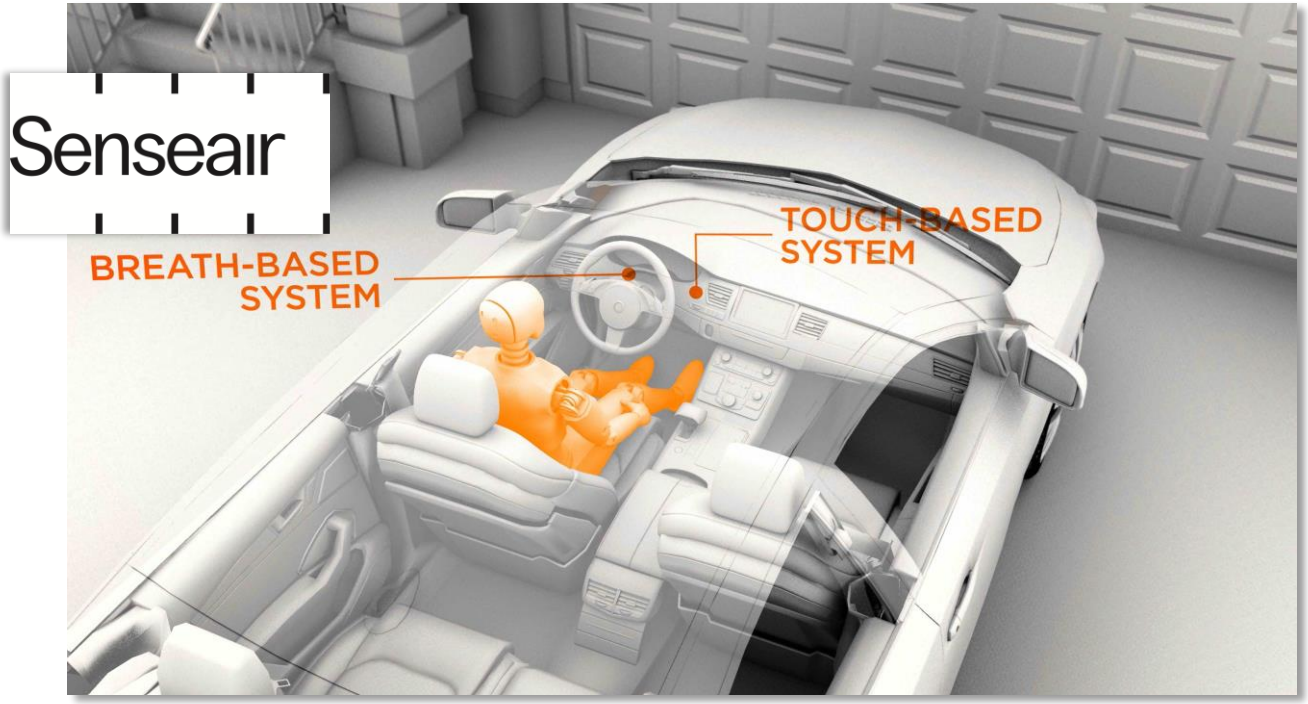
The Microchip

Public–private partnerships like DADSS have led to innovations that enhance our everyday lives, such as the internet, GPS, and the microchip.

dadss™
Driver Alcohol Detection System for Safety

Two options being explored for vehicle integration

The DADSS Concept



✓ Global Technology Scan performed initially; 5 types of approaches identified
✓ Request for Information (RFI) issued; 17 responses received
✓ Request for Proposals (RFP) issued; 8 Providers interviewed
✓ 4 Providers selected for a Phase I Proof–of–Concept award
✓ 3 Providers successfully completed contracts w/ACTS
✓ 2 Providers successfully completed Phase I

DADSS Trial Deployment

Consumer Awareness, Acceptance & Demand

dadss
Driver Alcohol Detection System for Safety

Naturalistic Driving Evaluation

DADSS Trial Deployment

Controlled Driving Evaluation

DADSS Trial Deployment

- OMB approval for pilot deployment requested
- On–road trials in different temperature, humidity, altitude and other environmental conditions
- Sober driver
- Passenger that has consumed limited alcohol
- Trials beginning in Virginia & Massachusetts initially and expanding to other areas

Controlled Driving Evaluation

DADSS Trial Deployment

- Received 15, 2017 Chevrolet Malibu's from General Motors (GM) that are being prepped for integration of breath-based sensors
- Accepted delivery of 116 Gen 3.1 sensors for DADSS laboratory testing and integration into the research vehicles
  - All sensors are in process of being characterized at -40°C, ambient and +85°C using 0, 0.6, 0.8, and 0.1 %BrAC SCD

Sensor Characterization, Validation & Verification

DADSS Trial Deployment

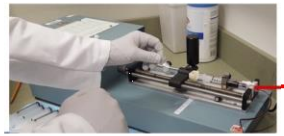
Sensor Characterization, Validation & Verification

Human Subjects Testing

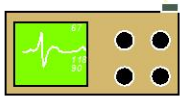
Verifying the prototypes using human subjects in a controlled lab setting at McLean Hospital – a Harvard Medical School affiliate.

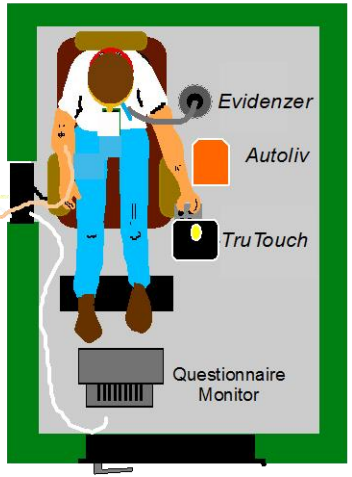
Gas Chromatography

Blood Withdrawal Pump



SaO_2/HR/Temp





Experimental Chamber

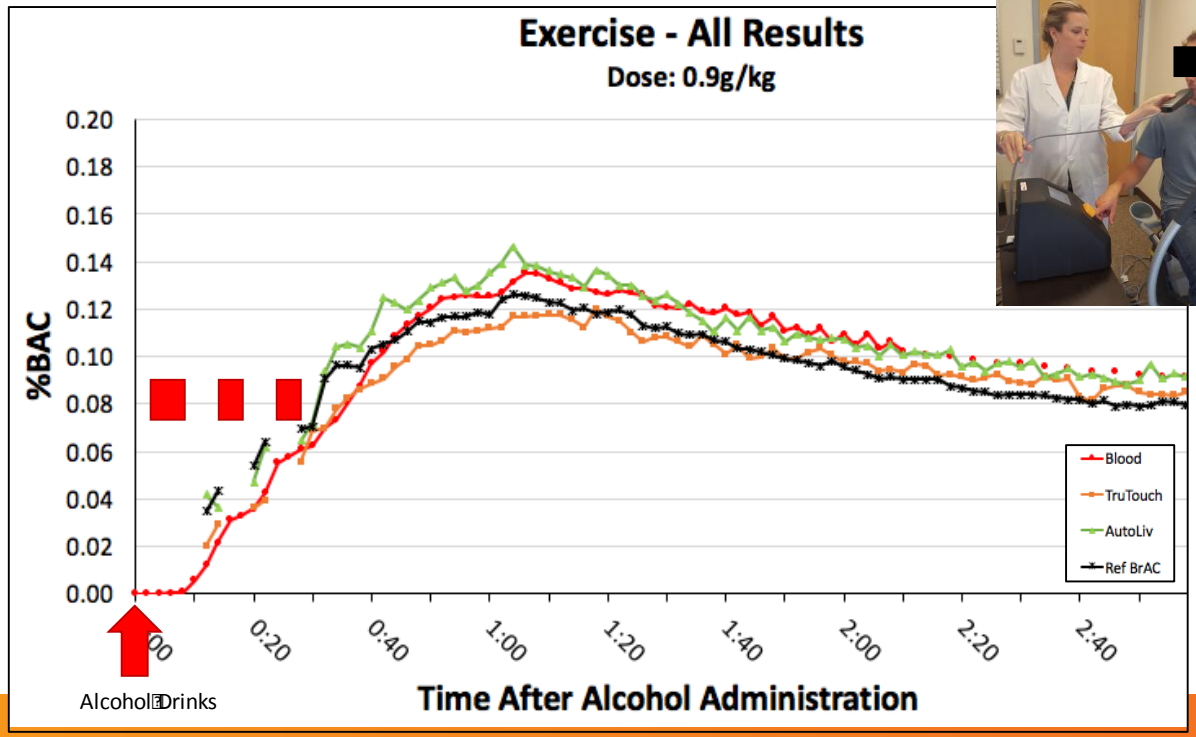
Computer

100 Human Subjects Tests Completed

dadss
Driver Alcohol Detection System for Safety

Sensor Characterization, Verification & Validation

Human Subjects Testing



Evaluate Sensors' correlation to Venous Blood under:

- Lag time
- Eating a snack
- Eating a full meal
- Exercising
- Last call

dadss
Driver Alcohol Detection System for Safety

Pilot Vehicle Build

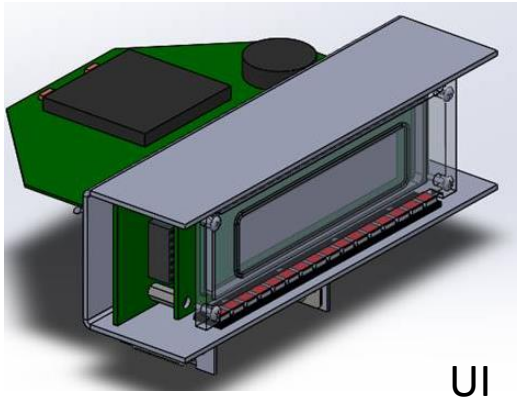
DADSS Trial Deployment

- Completed 3 builds to date, 2 Chevrolet Malibus and 1 Ford Utility Vehicle
- Sensor and data acquisition system integration

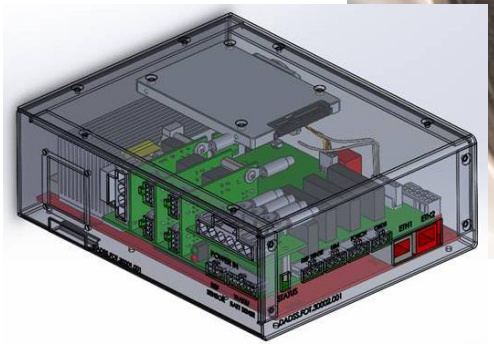
Data Acquisition System (DAS) and User Interface (UI)

DADSS Trial Deployment

Completed design and development of a custom Pilot Vehicle DAS and UI



UI



2018 Washington DC Auto Show

Consumer Awareness, Acceptance & Demand

A vast majority of drivers surveyed – 7 in 10 – had a favorable impression of the DADSS technology as described, with a majority having a “very favorable” impression

dadss
Driver Alcohol Detection System for Safety

The Road Ahead

DADSS Program

- Completing “shakedown” testing of DADSS Pilot Deployment platform vehicles (sensors, DAS, UIM, etc.)
- Started initial 15–vehicle Pilot Deployment Build for controlled evaluation; additional 25–vehicle build to follow in 2nd Half of 2018
- Completing vehicle build modules for vehicle build for naturalistic evaluation
- Finalizing Pilot Deployment Test Plan for controlled evaluation (test routes, number of starts/stops, number of test samples required, etc.)
- Initiating Pilot Deployment in Virginia (Naturalistic and Controlled) and Massachusetts (Controlled) in 2nd Quarter of 2018
- Continue research needed to fully achieve DADSS performance specifications for privately–owned light vehicles
- Further refine DADSS technologies based on research and Pilot Deployment findings
- ***Commercialize one or both DADSS technologies***

DADSS Program Widely Supported

Funding Automakers & NGO Supporters

For more information, visit:

http://www.dadss.org

http://www.driventoprotect.org

dadss™
Driver Alcohol Detection System for Safety

Robert Strassburger

Automotive Coalition for Traffic Safety, Inc.

Transportation Safety Center

21620 Ridgetop Circle

Suite 170

Sterling, Virginia 20166

U.S.A.

+1 (202) 365–4486

rstrassb@actsautosafety.org

dadss

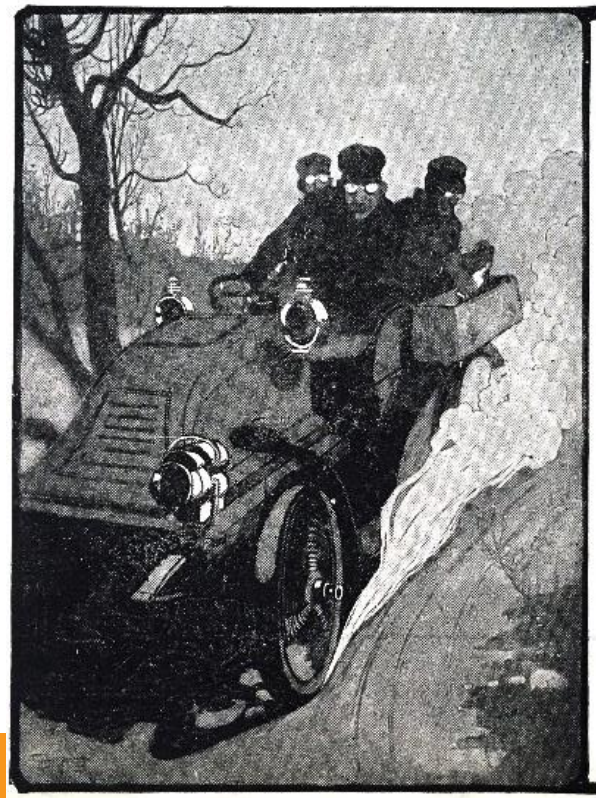
Driver Alcohol Detection System for Safety

Back in the day …

dadss
Driver Alcohol Detection System for Safety

One hundred ten years ago (1908) …

Automobiling goes better with Dewar's



AUTOMOBILING

There is no more exhilarating sport or recreation than automobiling. The pleasure of a spin over country roads or through city park is greatly enhanced if the basket is well stocked with

Dewar's Scotch
"White Label"

the popular brand both in this and the old country. "There is no Scotch like Dewar's," is a proverb among connoisseurs.

AN AUTOMOBILING POSTER.

"Automobiling" (copyright 1908, by Frederick Glassup) is an original drawing by E. N. Blue, shown herewith. Printed in four colors on heavy plate paper, without advertisement, and sent to any address on receipt of 10 cents in silver. Suitable for framing in club-house or home. Next month, a delightful camp scene by the famous artist, Dan Smith.

FREDERICK GLASSUP
Sole Agent for John Dewar & Sons, Ltd.
126 Bleecker Street, New York

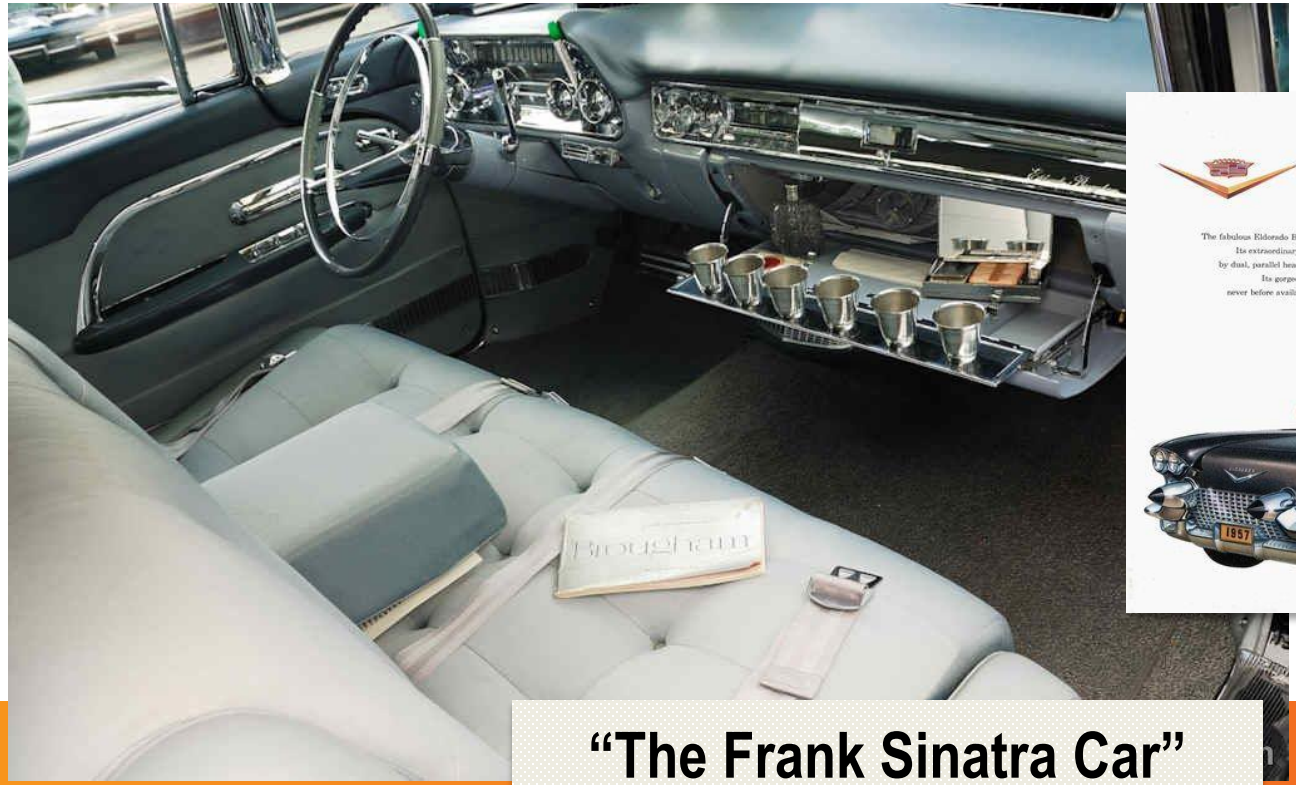
AUTOMOBILING

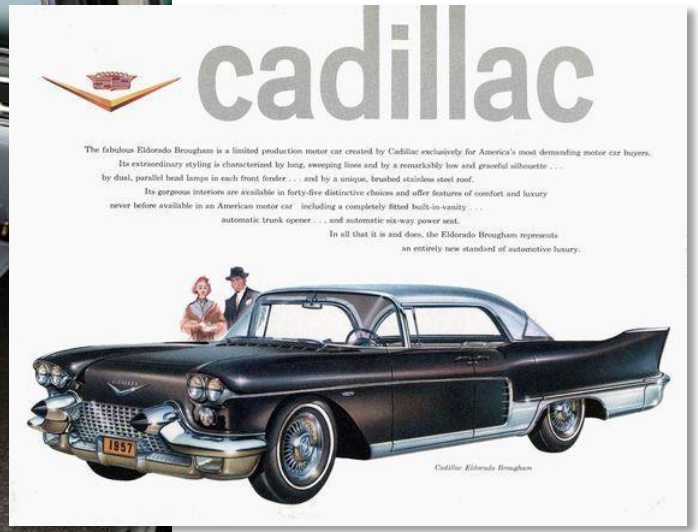
There is no more exhilarating sport or recreation than automobiling. The pleasure of a spin over country roads or through city park is greatly enhanced if the basket is well stocked with Dewar's Scotch "White Label" the popular brand both here in this and the old country.

dadss
Driver Alcohol Detection System for Safety

Sixty years ago … a minibar in every car?

1957 Cadillac Eldorado Brougham





"The Frank Sinatra Car"

dadss
Driver Alcohol Detection System for Safety