Vehicle–integrated Driver Alcohol Detection System
Hitting the Roads

RESULTATKONFERENS
TRAFIKSÄKERHET
ONSDAG 25 APRIL 2018

Helping to invent a world without drunk driving
Alcohol-impaired fatalities holding at ~30% for last 20 years

**Motor Vehicle Traffic Fatality Trends**

Drunk driving in the U.S. claims approximately 10,000 lives and costs the U.S. $194 billion every year.
Percentage of road accident deaths involving alcohol in 2015

World’s Worst Countries for Drunk Driving

- South Africa: 58%
- Canada: 34%
- United States: 31%
- Australia: 30%
- France: 29%
- Italy: 25%
- United Kingdom*: 16%
- South Korea: 14%
- Germany: 9%
- Russia: 9%
- India: 5%
- China: 4%

* Excluding Northern Ireland where the figure is 17%

Source: Global Status Report On Road Safety 2015
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

Potential number of deaths avoided in the U.S. in 2005 if DADSS technologies limited driver BACs to specified levels – IIHS, 2010

- All drivers limited to less than 0.08:
  - Total: 10,228
  - FATALITIES - DRIVER BAC 0.08: 6,904
  - POTENTIAL DEATHS AVOIDED: 552

Source: IIHS, 2013

Drivers with 1+ priors limited to “Zero” BAC
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
Public–private partnerships like DADSS have led to innovations that enhance our everyday lives, such as the internet, GPS, and the microchip.
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
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

Human Subjects Testing

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

100 Human Subjects Tests Completed
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
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
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.
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

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- American Association of Motor Vehicle Administrators
- AMERICAN HIGHWAY USERS ALLIANCE
- DISTILLED SPIRITS COUNCIL OF THE UNITED STATES
- FIA FOUNDATION
- FOUNDATION FOR ADVANCING ALCOHOL RESPONSIBILITY
- GHSA
- IIHS HLDI
- madd
- National Organization for YOUTH Safety
- NOYS
- Nationwide
- SAFE KIDS WORLDWIDE
- DADSS

Driver Alcohol Detection System for Safety
For more information, visit:

http://www.dadss.org
http://www.driventoprotect.org
Back in the day …
One hundred ten years ago (1908) …

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AUTOMOBILING

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.

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