

The DADSS Research Program

Inventing a World Without Drunk Driving

Public-private partnership developing a first-of-its-kind alcohol detection technology that will be offered to vehicle owners as a safety option. The technology will be **fast, accurate, reliable and affordable** - and unobtrusive to a driver under the legal limit of 0.08%

Technology Under Development



Breath-based system: measures the alcohol in a driver's naturally exhaled breath by comparing carbon dioxide molecules with alcohol molecules. We have seen an 85% reduction in size and progress in shifting from directed breath to passive sensors. Gen 3.1 sensor just delivered for lab testing and vehicle integration. Similar sensors already in use in Swedish public transit.

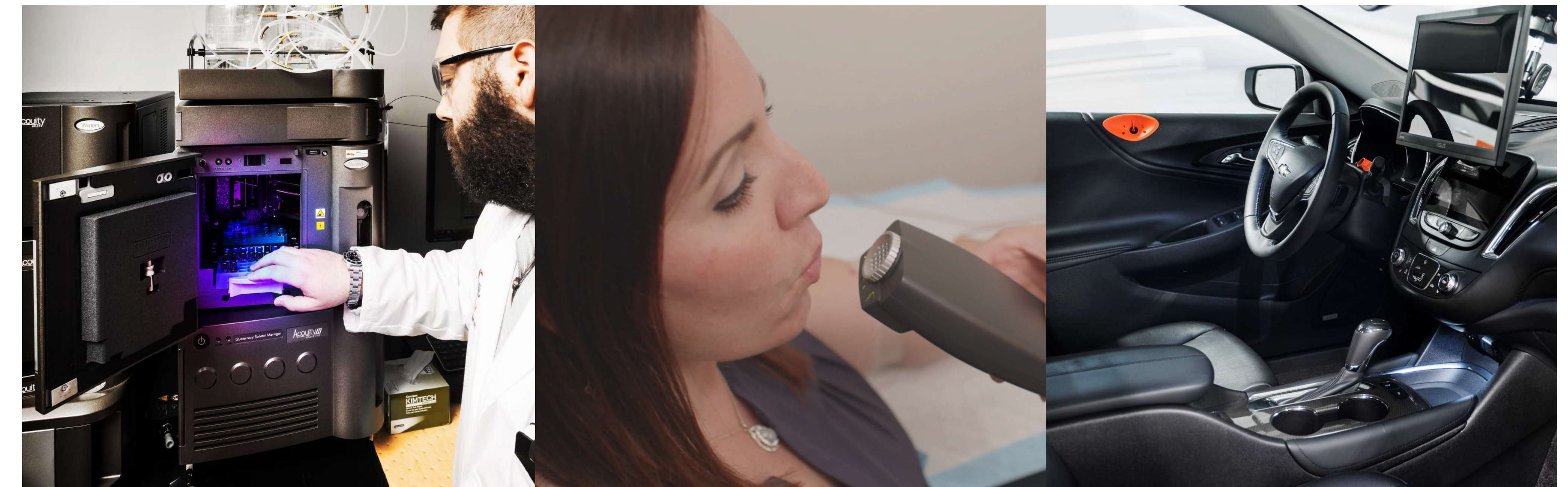
Touch-based system: measures the BAC under the skin's surface by shining an infrared-light through the fingertip. We have seen a 55% reduction in size and have just delivered the Gen 5 sensor, which includes a new optical touch-pad system and hardware update to address laser fluctuations. Engineers are continuing to reduce the number of lasers needed and are testing first anti-circumvention prototype.

Research Process

Learning Experience: We are building consumer awareness, acceptance and demand in synch with the readiness of the technology. Recently, we shared prototypes, live demonstrations, videos and interactive displays with families at the 2018 Washington Auto Show.

Research: In a 2015 survey, drivers age 21+ had a **very positive reaction** to the technology, with a mean rating of 75 (on a 0-100 scale), and a majority said they would want the system in their next new vehicle.

Research Process



In the lab: we are subjecting prototypes to rigorous analysis using customized equipment that simulates different BAC levels. Our sample reference materials are achieving precision targets 4x better than our specifications.

Human subject testing: we are evaluating sensors using human subjects and blood samples in a controlled laboratory setting at McLean Hospital. We are also building data on alcohol absorption and elimination.

Field Operational Tests (FOT): we have developed a pilot FOT program for sensors in a real-world driving environment and have integrated 4 breath sensors into a Chevrolet Malibu, along with a data acquisition system.



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Driver Alcohol Detection System for Safety

