1. **What is the Driver Alcohol Detection System for Safety (DADSS) research program?**

   The DADSS program is researching a first-of-its-kind technology called the Alcohol Detection System (ADS) that will detect when a driver is intoxicated with a blood alcohol concentration (BAC) at or above 0.08 - the legal limit in all 50 states - and prevent the car from moving. It will be quick, accurate, reliable and affordable, and it will be made available as a safety option in new vehicles, much like automatic braking, lane departure warning and other advanced driver assist vehicle technologies.

   The program brings together the National Highway Traffic Safety Administration (NHTSA) and the Automotive Coalition for Traffic Safety (ACTS), which represents the world’s leading automakers, in one of the most important government and private sector partnerships in recent years.

2. **What is the overall goal of the program?**

   DADSS is a collaborative research program to advance the state of alcohol detection systems for vehicles. The goal is to develop a technological solution to the challenge of drunk driving in America, which claims approximately 10,000 lives and costs the U.S. $194 billion each year.\(^1\) With support from safety advocates and the auto industry, Congress has recognized the program’s life-saving potential and made it part of a multi-faceted national commitment to reduce and eventually eliminate drunk driving.

3. **When did this program begin and where is it now?**

   When the program began in 2008, DADSS focused on research and creation of proof-of-concept prototypes to determine which technological approaches were most promising for vehicle integration. After extensive research, it was determined that two technology options were most viable: a breath-based system and a touch-based system. In 2013, NHTSA and ACTS extended their agreement to further research and test the two prototypes to reduce their sizes and ensure they meet strict performance standards related to speed, accuracy, precision and reliability. As part of the ongoing research, the prototypes will be integrated into vehicles for a series of field tests, which will allow engineers to observe driver behavior in natural settings and thoroughly test the systems in real-world scenarios.

4. **Who is involved in this program?**

   The National Highway Traffic Safety Administration (NHTSA) and the Automotive Coalition for Traffic Safety (ACTS) are working together in collaborative research to develop the DADSS technology. ACTS is a nonprofit organization wholly funded by the world’s leading auto makers, including BMW, Fiat Chrysler Automotive, Ford, General Motors, Honda, Hyundai, Jaguar Land Rover, Kia, Mazda, Mercedes-Benz, Mitsubishi, Nissan, Porsche, Subaru, Toyota, Volkswagen and Volvo.

   Two automotive suppliers have received grants to develop and refine prototypes: the Swedish-based Autoliv Development AB is working on a breath-based system and Takata-TruTouch (a partnership between auto supplier Takata of Pontiac, Michigan and technology developer TruTouch Technologies of Sudbury, Massachusetts) is developing a touch-based system.

5. **How might the technology work?**

Two technologies are being researched: a touch-based and a breath-based system. The breath-based system measures the alcohol levels in a driver’s exhaled breath unobtrusively, rather than requiring the deep lung sample of standard breathalyzers. The system is being designed to take instantaneous readings as the driver breathes normally and to accurately and reliably distinguish between the driver’s breath and that of any passengers.

The touch-based system measures blood alcohol levels under the skin’s surface by shining an infrared-light through the fingertip. This technology will be integrated into current vehicle controls, such as the start button or steering wheel, and take multiple, accurate readings in less than a second.

6. **Will the technology be sufficiently reliable?**

A significant part of the research program has been the establishment of DADSS Performance Specifications related to speed, accuracy, precision and reliability. These rigorous standards are based on the Department of Defense’s technology and manufacturing readiness levels, and they are in addition to manufacturers’ six-sigma quality requirements, which demand that every piece of safety equipment installed in passenger vehicles as original equipment performs correctly 99.9997% of the time.

With this combination, the Alcohol Detection System will be held to unprecedented standards to ensure BAC levels are measured quickly and reliably. Not even medical instruments are engineered to have such strict specifications. The DADSS program is being overseen by a team of engineers and scientists, and will be further tested in real-world operating conditions and by independent third parties before being made available as a consumer option.

7. **How is DADSS technology different from interlocks and existing alcohol sensing technology?**

The Alcohol Detection System differs greatly from interlocks and existing alcohol sensing technologies in a few important ways. First, the system is being designed to take accurate, unobtrusive readings in less than a second while the driver interacts with the vehicle as they would otherwise. Second, the system will be offered as a voluntary safety option in new vehicles much like automatic braking, lane departure warning and other advanced driver assist vehicle technologies. Third, the system will meet strict performance standards related to speed, accuracy, precision and reliability that are higher than any other alcohol detection technology available today. And finally, the Alcohol Detection System will be set at .08, the legal limit for all 50 states.

8. **How is this going to stop people who are most likely to drink and drive?**

The Alcohol Detection System is designed to take the guesswork out of BAC measurement and give drivers the certainty they will never put themselves or others in danger by driving over the legal limit. The system can also give parents an extra layer of protection and additional peace of mind knowing that if their children have been drinking, they won’t be able to drive.

For the first time, all drivers will be able to take advantage of a system that is seamless and nonintrusive, representing a breakthrough in technology and vehicle safety. We believe that consumers will want to purchase the technology as a safety option once they learn more about its life-saving potential.
9. Can the technology be set at a limit other than 0.08?

The DADSS program was authorized and funded under strict performance specifications based on a blood alcohol concentration (BAC) level of 0.08 - the legal limit in all 50 states. Since no level of alcohol is legal for drivers under 21, parents can have the system programmed for a zero tolerance policy.

10. When do you expect the system to be in U.S. cars and trucks?

The technology behind the Alcohol Detection System is a new invention – which means there are a number of steps that must be taken before the technology is tested and ready for consumers. DADSS is currently in the research phase to ensure the technology will be precise and accurate when it is introduced to consumers. Progress to date indicates the system could reach acceptable technology and manufacturing readiness levels and begin to be integrated into vehicles in approximately five to eight years. Once completed, auto manufacturers will have the choice to install the system in new vehicles, and the technology will be available for consumers to purchase as a safety option, much like automatic braking, lane departure warning and other advanced driver assist vehicle technologies.

11. Will DADSS technology be installed in every new car and truck?

The DADSS program was authorized and funded as a research program to advance the state of alcohol detection technology. Congress did not mandate the use of any technology in the authorization. Instead, the authorization states that when the program has been completed, automakers will engage in further product development and integrate the technology into motor vehicles if they choose. They will be able to offer the system voluntarily in new cars the way they do other advanced vehicle technology features, such as lane departure warnings or automatic breaking, and consumers will have the choice whether they want to purchase it as a safety option.

12. What happens when a driver is over the legal limit?

With the Alcohol Detection System, when a driver has a blood alcohol concentration (BAC) above the legal limit, the vehicle will start, but not move. This allows the driver to remain warm (or cool) and safe in the vehicle, make a call for help or charge a phone. The system will reset and be ready for another test less than a second after each reading, and will move only when the driver’s BAC is below the legal limit.

13. How will the technology be able to tell the difference between drivers and passengers?

The Alcohol Detection System is being designed to accurately distinguish between the driver and other passengers. The touch-based technology could, for example, be based on a touchpoint programmed by the driver, similar to today’s smart phones, which could also serve as an anti-theft measure. The breath-based technology is testing sensors near the driver’s seat to best isolate the driver’s breath. Either system will require a retest if the person in the driver’s seat gets out of the seat and another person sits down.

14. How will the technology prevent tampering?

Because the technology will be seamless and integrated into the vehicle’s cabin, it will not contain large pieces of physical equipment that could be tampered with from inside the vehicle.

15. Will DADSS technology add to the price of a new vehicle?

Yes, the technology will be an additional cost for those who choose to purchase it as a safety option for their new vehicle. While the exact cost per vehicle has not yet been established, it will be in line with other voluntary safety
systems like automatic braking or lane departure warning. As with any new technology, the more vehicles are equipped with the system, the lower the price will be.

16. Will data on tests be recorded or shared with law enforcement?

Maintaining data privacy has been considered from the early stages of the DADSS program and remains an important priority for all those involved. Both the legislation authorizing the program and the cooperative agreement NHTSA and ACTS are operating under state specifically that security measures and operating procedures must be put in place to protect data from the inadvertent release or disclosure to unauthorized parties.

Today, all automakers have security measures in place to protect customer data from being accessed by unauthorized parties, and DADSS will be no different. In the meantime, all 12 leading automakers involved in the DADSS program have joined with consumer advocacy groups to establish voluntary privacy principles and to provide standards and guidance on future in-vehicle technologies. For more about these principles, click here.

17. Will the system test for drugs such as marijuana?

No. The sole focus of the DADSS program is on developing a system that detects a driver’s blood alcohol concentration. Developing systems that might detect when drivers are under the influence of drugs – whether over the counter, prescription or illegal drugs – would present many additional challenges. Drugs are ingested in very small quantities, and the minute quantities in the blood would be much harder to detect. Moreover, there are many different kinds of drugs that people use, both legal and illegal, so detection systems have to screen for more than one substance.

18. Why would an Alcohol Detection System be necessary if we are eventually going to have driverless cars?

Driverless cars are an exciting concept, but even fully-autonomous vehicles need an unimpaired driver to be able to take control of the wheel as a precaution. Whether a conventional vehicle or an autonomous one, the Alcohol Detection System can help give drivers the certainty they will not put themselves or others in danger by driving over the legal limit, and help parents protect their kids.

19. There are so many safety features being made available in vehicles today – how does the Alcohol Detection System fit in to this trend?

We’ve living in an exciting time for vehicle safety. Technologies that help drivers better perform their task – like the ones we see being offered as consumer options today – are helping to warn of driver drowsiness or an approaching vehicle, but none are able to accurately and precisely measure blood alcohol concentration (BAC). The Alcohol Detection System is a much more sophisticated piece of vehicle safety – taking a biomedical reading of someone’s BAC level to prevent a car from moving. To date, no technology has ever been developed that can passively and unobtrusively measure BAC with the necessary high levels of precision and accuracy while fitting into vehicles with a seamless operation. Additional research is required to meet the high standards we have set for measurement speed, accuracy, precision and reliability. While we have made great strides in the program, there is more work to be done before it can be introduced as a consumer option like the driver-assist technologies we are seeing today.