

Collated Questions from Customer Meeting

- Is it safe for the car to come to a stop in the road if the driver is inattentive?
 - When the car comes to a gradual stop, the hazards should be put on.
 - It would be beneficial if the car could move into the nearest shoulder instead of stopping in the current lane, but this is not required.
 - Technically not safe, but hazards should notify other drivers.
 - Dangers include other cars, road conditions, and stopping distance.
- What are the precise rules that determine whether the user is attentive?
 - There is not a firm numerical value on what the cutoff for attentiveness is, but there will be an infrared camera that tracks the eyes. Sensitivity can be adjusted.
 - Camera will check eye and face angle.
 - Main indicator of inattentiveness will be a light bar that goes off above the steering wheel.
 - The light bar will be green if the vehicle currently has HFD enabled.
 - The light bar will be blue if the driver is using the wheel (i.e., changing lanes), but the HFD system is still active and ready to resume control once driver is complete.
 - If user is not engaged at all or the camera cannot detect the driver for any reason, the light will start flashing green for around three seconds.
 - After three seconds, the light will start flashing red and seat vibrations will activate.
 - After three more seconds, the previous measures will continue, but a vocal cue will come on telling the user they need to regain control of the vehicle.
 - If the user does not regain control of the vehicle, then hazards will be turned on and the vehicle will come to a stop.
 - If this occurs, HFD system will not be usable for the rest of the session.
- Is there anything in place to assure the safety of the inattentive person after the car comes to a stop?
 - Not in scope for this project.
- How much pressure/torque must be applied to the steering wheel or brake to exist HFD?
 - Do not focus in depth on this.
 - Assume any amount of intervention with the brake, steering wheel, or throttle will stop HFD.
- What occurs if another car cuts the vehicle off?
 - Always detecting a path around 700m in front of the vehicle in real time.
 - Whenever that path is interrupted, go into phase two of the inattentiveness warning to let the user know they must regain control of the vehicle.
 - The user should always be handling emergency actions. HFD is not built for swerving, hard breaking, or lane changing.
- What other scenarios should the vehicle slow itself to a stop?
 - If the path does not have LiDAR data (i.e., construction).
 - Noisy/defective sensors.

- Inclement weather conditions.
 - If any of these scenarios occur, the system should go to warning level three, BUT the driver will be allowed to reactivate HFD after the issue is corrected. These issues are not the fault of the driver.
- Should the user be allowed to activate HFD on a route with construction?
 - LiDAR should be updating enough to tell if there is construction.
 - In general, user should not be allowed to activate HFD on a road LiDAR has deemed to be under construction.
- What happens if one of the sensors/systems goes out with HFD enabled?
 - The system should go to warning phase three and give control to the user.
 - HFD system should not be able to be enabled the rest of the trip.
- What happens if the warning system fails?
 - Likely handled by a lower-level warning, such as an icon/light on the dashboard.
 - Give control back to the user.
- Does the HFD light indicator have a color before being active?
 - If not active but ready to activate, the HFD light indicator is white.
- What conditions must be met to activate HFD?
 - Check that all sensors are functional.
 - Light indicator should be white.
 - Adaptive cruise control is on and functional.
- Does the user require any training to use the HFD system?
 - User should read the car manual, but there is no training required.
 - The warnings should be intuitive enough that the user should understand the reason for the warning.
- What is the ideal following distance for the system? At what point does the adaptive cruise control speed up/slow down?
 - Assume the system has full capabilities of adaptive cruise control so that the HFD system can operate independently.
 - Can do some research to find exact numerical representations if wanted.
- How aggressive is the automatic braking?
 - There is no automatic braking available in this system.
- At what speeds is the system operational?
 - Speeds ranging from 15 mph-85 mph.
- How do you envision the UI?
 - The light indicator on the steering wheel is the main way of user communication, along with a dashboard indicator.
- How would an individual fix a faulty system?
 - The system cannot be changed by outside entities; only the original companies can make modifications to the system.
- What privacy/data-security measures are in place for the HFD system?
 - There should be redundancy checks, role-based access, permissions, and heartbeats.