

Collated List of Questions from Requirements Elicitation Meeting

1) How to handle non-ideal road conditions?

Sensors and cameras detect lanes, if there is no lane present the system should stop and not correct the path. There is map data available and if present it can update the paths. Threshold for proper lane visibility, both sides should be present for basic visibility of the lane.

2) What specific set of guidelines should the system adhere to?

The driver should be able to override the LMS when they apply a torque (determined by the team) on the steering wheel.

3) When the system is deactivated how does it alert the driver?

There should be a toggle to turn on the system. There should also be a light on to display if the system is on. LKS on then everything has to be on, LKS can be off and the warnings can still be present.

4) How often should the warnings occur?

If the system is on, the frequency should be triggered every time they are in proximity of the lane and about to cross. The warnings can be created however the team decides.

5) How close should the vehicle be to the lane for it to be classified as a lane crossing?

Departure warning is when the vehicle is in proximity to the lane. The exact threshold should be determined by the group. A few inches but should be up to the team.

6) What elements does the LMS have complete control over?

Steering and speed. Speed due to curvature of the road might need to be adjusted in order to readjust back to the lane if needed.

7) When should the LMS system be active in the first place?

35 mph to first activate. The speed can not be modified/configured by the user.

8) What would happen if the driver was driving through a construction zone with multiple lines?

If the vehicle is able to detect a right and left boundary then the system should be active. Any other issues can be overridden by the driver. The system can use lane prediction to detect cones to detect the construction zone.

9) Are the calculations based on offset from the center or proximity of the lane?

The LCS should be based off of the center of the lane. LKS should be based on the distance to the lane boundaries.

10) How is the power threshold of the steering wheel determined?

If the turn signal is enabled then the LMS is overridden, if there is no turn signal then the LMS will be active. There should be a torque limit for the driver then the LMS will also be overridden. Almost like a back up option to the turn signal.

11) Should there be any backup sensors as a failsafe?

There can be backup sensors if needed but there should not be any backup cameras. There should be a warning if the camera is not functioning properly.

12) Will the alerts have access to override any other visual/audio systems?

Visually there should be an override on the screen, but no audio override but should be a separate audio.

13) How should different size vehicles be taken into account when calculating positioning?

The only important factor should be the distance from the center and distance to the lane itself. Should be applicable to all vehicles.

14) If there are repeated lane crossings, should there be an additional warning?

There can be an additional warning because the system is meant for lane management not hands free driving.

15) What are all the factors and data considered when the Path prediction Subsystem is calculating the predicted path of the car?

Prediction path would be basically using the map data and the path of the lane travel ahead of the car. There would be cameras to be able to detect the next 20 meters of the car so that it would be dynamic as the vehicle is moving, and the short term path of the car is calculated on demand.

16) When the Lane Management System takes control of the vehicle, how do the cameras and sensors consider other vehicles on the road that could be a hazard to the vehicle?

Out of scope, the cameras should be detecting lanes only. The system is not changing lanes into a different lane, but keeping the car in the center. If another car comes, then it would be out of scope

17) What type of information about the system should the LMS log for analysis and reporting?

Out of scope, the cameras should be detecting lanes only. The system is not changing lanes into a different lane, but keeping the car in the center. If another car comes, then it would be out of scope

18) How often do you want the system to readjust/recalculate position?

Should be continuous and if the system is on, it should always be refreshing and would only be limited by how fast it can recalculate

19) How much time does the system give the user to readjust before the LMS corrects?

Should be boundary based and not time based. The correction applies during the warning, and the correction can start