



Safety Plan Lane Assistance

Document Version: 1.1

Template Version 1.0, Released on 2017-06-21



Document history

Date	Version	Editor	Description
5/21/2018	1.0	Ninad K	Initial Draft
5/22/2018	1.1	Ninad K	Corrections on confirmation measures

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Introduction

Purpose of the Safety Plan

The purpose of the safety plan is to provide an overview of the safety framework for the Lane Assistance System. It also aims to clearly assign responsibilities at the inter-organization level using the DIA as well as the intra-organization level by defining roles and responsibilities for each task.

Scope of the Project

For the lane assistance project, the following safety lifecycle phases are in scope:

- Concept phase
- Product Development at the System Level
- Product Development at the Software Level

The following phases are out of scope:

- Product Development at the Hardware Level
- Production and Operation

Deliverables of the Project

The deliverables of the project are:

- Safety Plan
- Hazard Analysis and Risk Assessment
- Functional Safety Concept
- Technical Safety Concept
- Software Safety Requirements and Architecture

Item Definition

This project covers the **Lane Assistance System** which is an Advanced Driver Assistance System (ADAS). It consists of two sub-systems:

1. **Lane Departure Warning:** This part is responsible for alerting the driver if the system determines that there is an unintentional or inadvertent change of lanes. This could be done by vibrating the steering wheel to draw the driver's attention or through audio cues.
2. **Lane Keeping Assistance:** The other part of the overall system to steer the car back in to the correct lane. The system will be responsible for identifying the lane boundaries and making sure the vehicle is able to safely maintain its course within these boundaries.

Goals and Measures

Goals

The primary goals of this project are:

1. To identify the hazards associated with the Lane Assistance System and to minimize the risks associated with the hazards.
2. To clearly define the responsibilities of the various team members so that work is handled efficiently.
3. To ensure that all safety measures adhere to ISO 26262 – extensively documenting all the features of the system, risks and measures taken to reduce the risk.

Measures

Measures and Activities	Responsibility	Timeline
Follow safety processes	All Team Members	Constantly
Create and sustain a safety culture	All Team Members	Constantly
Coordinate and document the planned safety activities	Test Manager	Constantly
Allocate resources with adequate functional safety competency	Project Manager	Within 2 weeks of start of project
Tailor the safety lifecycle	Safety Manager	Within 4 weeks of start of project
Plan the safety activities of the safety lifecycle	Safety Manager	Within 4 weeks of start of project
Perform regular functional safety audits	Safety Auditor	Once every 2 months

Perform functional safety pre-assessment prior to audit by external functional safety assessor	Safety Manager	3 months prior to main assessment
Perform functional safety assessment	Safety Assessor	Conclusion of functional safety activities

Safety Culture

The company's focus is on giving the highest priority to safety. The company's culture emphasizes the fact that safety can at no point be compromised.

Employees are encouraged to diligently adhere to all safety requirements and this behaviour is rewarded. Conversely, any employee's work not measuring up the required safety guidelines is penalized.

Independent audits are frequently conducted and accountability is fixed for every component of every system so the right people can be assigned to fix any issues pertaining to the system.

An intellectual diversity is maintained on functional safety tasks so that all perspectives are considered before any action is finalized.

Safety Lifecycle Tailoring

As mentioned in the **Scope** section, below is the lifecycle of the project tailored to suit the Lane Assistance System.

For the lane assistance project, the following safety lifecycle phases are in scope:

- Concept phase
- Product Development at the System Level
- Product Development at the Software Level

The following phases are out of scope:

- Product Development at the Hardware Level
- Production and Operation

Roles

Role	Org
Functional Safety Manager- Item Level	OEM
Functional Safety Engineer- Item Level	OEM
Project Manager - Item Level	OEM
Functional Safety Manager- Component Level	Tier-1
Functional Safety Engineer- Component Level	Tier-1
Functional Safety Auditor	OEM or external
Functional Safety Assessor	OEM or external

Development Interface Agreement

The DIA defines the roles and responsibilities of the various organizations involved in the development process of a product. The objective of this agreement is to clearly specify which company is responsible for providing which part/component/product/service for the overall system and how they intend to do so.

This ensures that all the involved parties perform the development activities assigned to them in a responsible manner and all components adhere to ISO 26262.

With regards to the Lane Assistance System, the OEM is responsible for providing a working Lane Assistance System.

The Tier-1 company is responsible for integrating it with the vehicle and ensuring that all functional safety aspects are adhering to ISO 26262 standards after the integration. The Tier-1 company is responsible for ensuring that the individual sub-system (Lane Assistance System) does not interfere with the other components of the vehicle and works as expected.

The Functional Safety Auditor and Assessors are responsible for independently verifying the test results and safety aspects defined by the Tier-1 company.

Confirmation Measures

The primary objective of the confirmation measures is to ensure that the project confirms to ISO 26262 and the steps taken during the project have quantifiably increased the safety i.e. reduced the risks.

In a confirmation review, an independent reviewer will inspect and verify if the project is adhering to the ISO 26262 standards.

In a functional safety audit, it is verified if the actual implementation of the project meets all the safety standards and requirements.

A functional safety assessment confirms that the product implementation along with the original design and plan are able to achieve functional safety.

A safety plan could have other sections that we are not including here. For example, a safety plan would probably contain a complete project schedule.

There might also be a "Supporting Process Management" section that would cover "Part 8: Supporting Processes" of the ISO 26262 functional safety standard. This would include descriptions of how the company handles requirements management, change management, configuration management, documentation management, and software tool usage and confidence.

Similarly, a confirmation measures section would go into more detail about how each confirmation will be carried out.