

Abstract

Nowadays software engineering and development is getting more and more significant in the automotive industry, thanks to the emerging requirements (comfort, security and environmental issues) on the modern vehicles. For these extremely complex functions the ECU-s (Electronic Control Unit) are responsible and they are making up a significant part of the vehicle's internal network.

As the vehicles internal system were getting more complex, there was a need for standardizing the software development in the automotive industry. This is the reason why the significant automotive companies created the AUTOSAR standard family. With the help of this innovative standard solution, it is possible to break down the development into smaller phases which gives the possibility to work independently on different modules.

The goal of my thesis was to implement the E2E Library module, which can be found in the AUTOSAR Libraries. Therefore firstly I had to be familiar with the End-to-End Communication Protection Library version 4.4.

As working on my bachelor thesis, I had the opportunity to take a deep dive into the requirement based software engineering. For the first step, my task was to create the requirement list based on the standard, on which I completed the necessary check regarding the implementation. As far as we are talking about embedded systems, it is crucial to optimize the software, thus I have had to make engineering decisions with the aim of choosing the best solution. As a result of that, I gained a huge amount of experience in the field of software engineering.

As a result of my work on my thesis, I have successfully implemented the E2E Library module's profiles, and created a module test-infrastructure, with that I could make sure of the correct functionality of the E2E Library version 4.4.