

## Abstract

The automotive industry is among the fastest growing industries nowadays. Owing to the huge amount of capital being invested in the industry annually, automotive technologies are being developed at an accelerated rate. With the exploding growth of electronics, it is inevitable that electric components play an increasingly critical role in the development of new cars.

Smart cars today have a multitude of safety and comfort functions, often replacing mechanical parts with their corresponding electric versions. Functionality of these features are centered in separate electronic control units (ECU) throughout the car. These units communicate with each other through standard automotive network communication protocols (typically CAN, FlexRay, LIN and Ethernet), realizing a distributed control system.

As the complexity of individual ECUs increase, it is more economical and practical to design them independently of each other (by different development teams or even companies). These components demand substantial interaction with its environment during development phase. Said interaction is frequently provided by Restbus (remaining bus) simulation, where a designated testing unit emulates the required behaviour of the ECUs' environment.

My task is the design and implementation of a flexible script language with the intention to efficiently describe and create extensive test cases determined by use case analysis. The language should provide interfaces for CAN and FlexRay communications for ECU testing. The main benefit is the ability to emulate complex communication behaviours through high level script commands, hiding software specific details from the test engineer.

My ultimate objective is the creation of a desktop application, to facilitate the creation and downloading of individual scripts in a custom-made IDE<sup>1</sup>.

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<sup>1</sup> Integrated Development Environment