**Rte Software Design**

***SteerTurnIllum***



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| Author: |  | Nicolae-Bogdan Bacrău |
| Version: |  | 1.0 |

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# Glossary

This section contains a glossary of all the important terms and acronyms used inside the document.

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| **Term / Acronym** | **Description** |
| AUTOSAR | AUTomotive Open System ARchitecture |
| VFB | Virtual Functional Bus |
| SWC | Software Component |
| RTE | Runtime Environment |
| BSW | Basic Software |
| OS | Operating System |
| S/R | Sender / Receiver |
| C/S | Client / Server |
| ECU | Electronic Control Unit |
| uC | Microcontroller |
| ADC | Analog Digital Converter |
| DIO | Digital Input / Output |
| PWM | Pulse Width Modulation |

Table 1 - Glossary.

# Introduction

## Purpose of the Document

The purpose of the document is to define the software design of the ***Rte*** for the ***SteerTurnIllum*** embedded academy project.

## Overview

While the AUTOSAR ***Rte*** module is complex and is usually configured via generators, in this project it is manually implemented and contains the following:

* Execution of runnables inside OS tasks.
* S/R interfaces for the communication between the SWCs.

# Design Requirements

1. Rte shall assure initialization values for all S/R buffers declared in *Rte\_Buffers.c* according to the System Requirements.
2. All initializations shall take place in *Rte\_Start()* from *Rte.c*. The *Rte.c.start* file shall be used as a starting point. The .start extension shall be removed for adding the file to the build process.
3. Rte shall assure the implementation of all OS tasks according to timing requirements from the System Requirements and execution flow from the runtime sequence diagrams from the Software Architecture.
4. All OS tasks, *TASK(OS\_\*\_TASK)*, shall be implemented in *Rte\_Tasks.c*. The *Rte\_Tasks.c.start* file shall be used as a starting point. The .start extension shall be removed for adding the file to the build process.

Note: Some of the SWCs runnables keep track of the time through the periodicity of the main function they are executed in. The configured periodicities for all such SWCs runnables inside the provided SWC libraries are:

* *Btn\_Main()* : 1 ms.
* *Turn\_MainTrigger()* : 5 ms.
* *Turn\_MainUpdate()* : 5 ms.
* *SwPwm\_Main()* : 5 ms.
* *Fade\_Main()* : 10 ms.

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## Version Index

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Table 2 - Version Index.