

# PRJ3-TrafficLight-SRS

Group 7

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# Introduction

## 1.1 Purpose

The purpose of this document is to specify the general scope and requirements for a advanced traffic light control system. This system is used by the Traffic Control International Inc. The target markets for this system are Germany and the Netherlands.

## 1.2 Scope

The scope of this project is to develop a system to control different types of traffic lights. It shall be able to switch the traffic lights depending from other traffic lights as well as pedestrian lights. This should be displayed in text for presentation and later in a simple GUI.

## 1.3 References

[1] IEEE Software Engineering Standards Committee, “IEEE Std 830-1998,IEEE Recommended Practice for Software Requirements Specifications”, June25, 1998

## 1.4 Definitions, acronyms, and abbreviations

In this document are the following acronyms, and abbreviations used:

Term	Definition
fig.	figure/diagram
etc.	et cetera

## 1.5 Overview

The following document describes the general specifications for the app and the web-interface. It is structured as follows:

- Chapter 1: Introduction  
This section is a general introduction to this document and the usage of it.
- Chapter 2: Overall description  
This section gives a general overview of the requirements of the application.
- Chapter 3: Advanced information  
This section describes the requirements given in the previous section in detail.

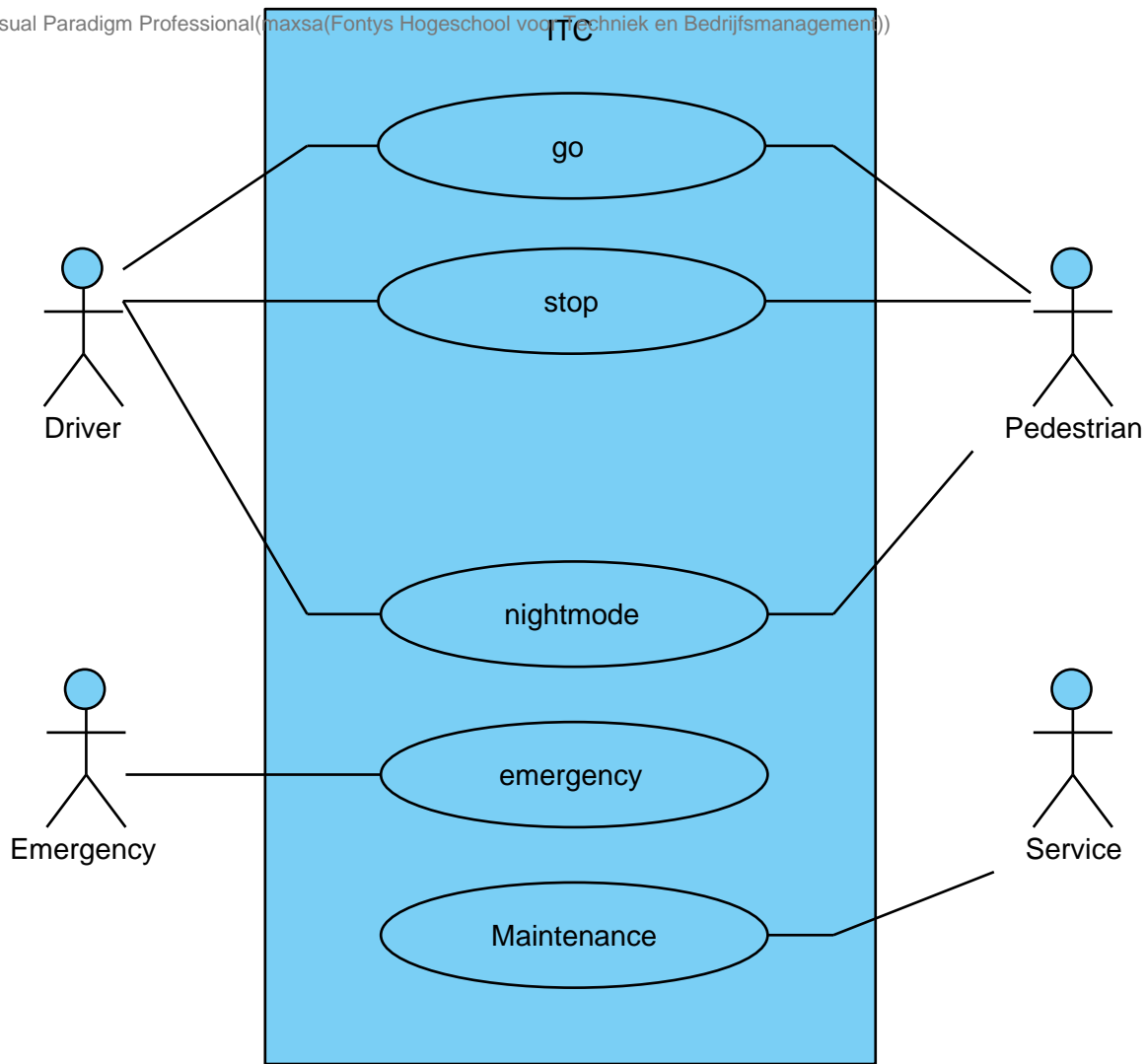
# Overall description

## 2.1 Product perspective

The product stands alone and shall be implemented as a whole system. A simple text display should be implemented to display the full functionality of the product. At later updates of the system a simple GUI for display of functionality shall be added as well. All functionalities shall be available for all users of the system.

## 2.2 Product functions



The major features of the traffic light system are displayed in the use case diagram below.



## 1. Maintenance

ID: UC10



As a service I want to be able to adapt the light alogrythm of the lights.

Primary Actors	 Driver,  Service
Level	User
Complexity	Medium
Use Case Status	Initial
Implementation Status	Scheduled
Preconditions	N/A
Post-conditions	N/A
Author	MNSajonz
Assumptions	N/A

## 2. emergency

ID: UC09



As an emergency service I want the lights to have an emergency service so that I can get to my destination quickly.

Primary Actors	 Driver,  Emergency
Level	User
Complexity	Medium
Use Case Status	Complete
Implementation Status	Partially Complete
Preconditions	The traffic light must be valid and exists. The traffic light must have a defined emergency Behaviour.
Post-conditions	N/A
Author	MNSajonz
Assumptions	N/A

## 3. nightmode

ID: UC08

As a driver and pedestrian I want the traffic light to have a nightmode.



Primary Actors	 Driver,  Pedestrian
Level	Summary
Complexity	Low
Use Case Status	Complete
Implementation Status	Partially Complete
Preconditions	The traffic light must be valid and exists.

<b>Post-conditions</b>	N/A
<b>Author</b>	MNSajonz
<b>Assumptions</b>	The traffic light is now in he nightmode and shows an alert light that signals the driver or pedestrian to cross with attantion.

#### 4. stop

ID: UC06



As a driver or pedestrian I want the light to tell me when to stop.

<b>Primary Actors</b>	 Driver,  Pedestrian
<b>Level</b>	User
<b>Complexity</b>	Medium
<b>Use Case Status</b>	Complete
<b>Implementation Status</b>	Partially Complete
<b>Preconditions</b>	The traffic light must have defined colors. The traffic light must be valid and exists.
<b>Post-conditions</b>	N/A
<b>Author</b>	MNSajonz
<b>Assumptions</b>	The light shows now red.

#### 5. go

ID: UC05

As a driver and pedestrian I want the light to tell me when to go.

<b>Primary Actors</b>	 Driver,  Pedestrian
<b>Level</b>	User
<b>Complexity</b>	Medium
<b>Use Case Status</b>	Complete
<b>Implementation Status</b>	N/A
<b>Preconditions</b>	The traffic light must have a set of defined colors. The traffic light must be valid and exists.
<b>Post-conditions</b>	N/A
<b>Author</b>	MNSajonz
<b>Assumptions</b>	N/A

## 2.3 User Characteristics

Users of the system shall only be employees of the company which maintains the traffic lights and uses the system for controlling them. The system should be designed to allow all types of users the access without high knowledge of technologies.

Available functions:

- change traffic light colors
- change pedestrian light colors
- change traffic lights dependent on other traffic lights as well as pedestrian lights
- change light behavior dependent on the location of the traffic lights
- enable emergency mode for emergency services

## 2.4 Constraints

- at a crossing the traffic light should turn red if a pedestrian light turns green
- if the traffic light turns green the pedestrian light should turn red

These constraints are applicable for all types of crossings like 4 way crossing or 2 way crossings.

## 2.5 Assumption and dependencies

For using the application a device with decent specifications is required to run the GUI. For the text only is only a device with low specifications required. The application does not need an internet connection. For real life usage are traffic lights as well as pedestrian lights required.



# Specific requirements

## 3.1 Functions

In this section are the main functionalities of this system described. Mainly the system shall be able to control different types of traffic lights. These are a normal traffic light for cars and pedestrian traffic lights. These lights shall be able to change its color dependent from the other. These lights shall have the standard light colors and shapes of the country where they are placed. For Germany for example are red, yellow and green required. The behaviour for a normal traffic light is different in every country. This should be adaptable as well as the color and the shapes. The light behaviour for Germany is for example green, yellow, red. If the start color is red the behaviour changes. The behaviour is now red, red-yellow, green. This does not count for the pedestrian light. These are different in every country as well as their color and shape behaviour.

## 3.2 Design constraints

The application shall not require any other hardware than the device used by the user or the traffic lights if executed on a real life example.

## 3.3 Software system attributes

The following section describes attributes of the software that should be maintained as a guideline for implementation.

### 3.3.1 Reliability

If input data is given by the user it shall be checked to secure the expected functionality of the system.

### 3.3.2 Availability

The system shall start at user request and shall run independent from user input. The start phase shall be defined. On this start phase should be all other colors be directed.

### 3.3.3 Maintainability

The system shall not require to be maintained. Once implemented the system it shall be adaptable easily if the system is transferred to another country.

### 3.3.4 Portability

The system shall run on MacOS as well as on Windows devices.

### **3.4 Organization the specific requirements**

The main feature which shall be implemented is that the traffic light are able to change its color. Based on this feature all other features shall be implemented. First the text based interface shall be finished first. If there is time left at the end of main feature implementation there should be a graphical user interface designed.