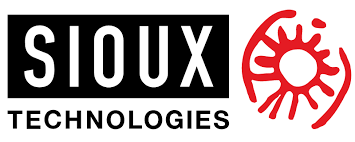
FONTYS UNIVERSITY OF APPLIED SCIENCES HBO-ICT: English Stream

**SIOUX CAR PARKING SOLUTION**

**Project plan**

**Group Enigma**



**Team:**

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| --- | --- |
| **Version** | **Changes** |
| V0.1 | Initial creation of the document. |
| V0.2 | * Added more clarification to the testing process. * Reworked the research questions and added sub questions. * Added version control. |
| V0.3 | * Rearranged document * Updated planning * Updated research questions * Updated deliverables |
| V0.4 | * Updated Testing |

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# Problem Description

The company Sioux wants to implement an innovative and automatic parking system, since their parking area has a limited number of spots. A part of the parking spots are reserved for the employees, the company wants to redirect visitors to an alternative parking area when all the parking spots in the main area are taken. Alongside this they also want to send a text message to the visitor with instructions where to park their car, when the camera on the parking lot detects the license plate. Hence, the visitors should be assigned to license plates beforehand by an administrator.

# Problem Solution

Our group, Enigma plans to develop a software solution that would fully cover all the aspects of the Clients problem. The application should have an interface for the administrator to be able to manage the clients list and the cars assigned to them and also assign new clients.

There should also be a backend part of the application that would use hardware (CTV Camera) to retrieve and then identify the number on each cars plate. Moreover, it will be responsible for the logic behind the whole parking system that directs the driver to the free/available parking spots in the appropriate parking area.

# Introduction

## Project statement

This document will define the development of the parking application. The plan will detail the goals and objectives also serve as an agreement between the team and the formal client.

## Project goal

The goal of the assignment is to develop a parking system that would manage the intake of SIOUX Technologies clients that come by car and would forward them to the reliable and available parking area.

## Project goal

Time – 15 weeks to deliver the application.  
Programming language – Java, NodeJS, Javascript, HTML5, CSS3.

## Formal client

Mr. Jan Willem is our formal client. He will be answering on behalf of the company Sioux and monitor the progress made.

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# Project Deliverables and Non-deliverables

## Deliverables

* The Parking application
* Project plan
* User Requirements
* Design document
* Deployment plan

## Non-deliverables

* Manual for the user

# Research Questions

* How to Identify the vehicle’s license plate using the CCTV Camera?
  + What tools are there to identify license plates trough CCTV Camera?
  + How does the software recognise the license plate?
* Which Scrum Board tool is best suitable for our project?
  + What is scrum?
  + What is a task board?
  + What criteria will be used to evaluate these task board tools?
  + How are these tools able to represent a Scrum board?
* Which front end frameworks are available?
  + What criteria will be used to evaluate these frameworks?
* Which front end framework fits the project the best?
  + What are the pros and cons from the frameworks?
* What is the best way to send a SMS with an automated system?
  + Does there already exist a system that can be used?
  + What are the costs?
  + With which code languages is the system compatible?

# Planning

The project will exist out of 6 sprints, each of 3 weeks. The planning for a sprint will be made at the end of the previous sprint. The sprint planning will be discussed with the client. At the end of each sprint a working demo will be given to the client. Jira will be used to keep a backlog of all stories and tasks that need to be done for the project and current sprint.

|  |  |  |
| --- | --- | --- |
| Sprint | Start date | End date |
| 1 | 15-02-2021 | 05-03-2021 |
| 2 | 08-03-2021 | 26-03-2021 |
| 3 | 29-03-2021 | 16-04-2021 |
| 4 | 19-04-2021 | 19-05-2021 |
| 5 | 22-05-2021 | 04-06-2021 |
| 6 | 07-06-2021 | 20-06-2021 |

# Testing

## Unit Testing

We are going to make unit tests that are based on the acceptance criteria and what could go could go wrong within the system. The unit tests will ensure that the application works comfort the criteria.

For example, the issue "Create a form for an operator to input data.".

* Create unit tests to validate if the user's input is valid.
* Create unit tests to see if the input is handled correctly in the system.
* Create unit tests (When there is an output) to see if the output is as expected.
* Create unit tests (When needed) to see if error handling is done correctly.

## Continuous Integration

We will also create an integration pipeline to enable better quality control and improve software delivery whenever adding new versions of the software together. This almost acts as a two-factor authentication after having the basic unit-testing.

This is how the process will go:

* Run unit tests locally and make sure the features work.
* Upload the code to the CI.
* CI checks if the solution is built correctly.
* CI checks if the solution can run the unit tests correctly.
* Fix the errors which might occur.
* Continuous deployment.

## Acceptance testing

We also will be testing the application manually. This means we will be testing the front end of the application, by going over every page and testing all features as an operator. Making sure all acceptance criteria’s have been met.

For example,

* Check if everything (Buttons, tables, etc.) is displayed where it should be displayed.
* Go through the path that an operator works with the system.
* Check the inputs by giving invalid information and check if it gives the right error.

# Product Backlog

|  |  |  |
| --- | --- | --- |
| User Story | SP | |
| As an operator I would like a user-friendly interface in which I can input new guest data, so the system will be able to recognize the new guests.   * There should be a field for the name, mobile number and license plate * A mobile number should start with 06 and be 10 numbers long | | 30 |
| As an operator I would like to have a database with user info, so the system can use this to identify guests.   * The user info exists out of a name, Mobile number and license plate. | | 60 |
| As a visitor, I want to get a text message that tells me where I can park my car so that I don't have to search for a parking spot myself.   * When a visitor arrives, he will get a text message. * The text message contains information where to park. * The text message needs to be sent within 15 seconds. | | 20 |
| As an operator I want the system to automatically redirect visitors to the offsite parking spaces when the ones at Sioux are all occupied.   * The system should keep track of how many visitors have parked at the Sioux parking area. * The message should contain directions to the offsite parking lot. | | 25 |
| As a visitor, I want a system that automatically recognizes my license plate so that it knows when I arrive.   * The system recognizes the license plate and operates accordingly. | | 40 |
| As an operator I want to login to the system so that strangers cannot access or edit data in the system.   * Only authorized users should be able to login. * No data can be accessed or edited without valid login. | | 20 |
| As an operator I would like to receive a notification when a guest has arrived, so I can prepare to welcome him.   * When a license plate is recognized, the system should send a notification to the operator. | | 15 |