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PowerEnJoy

Project Plan Document

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# 1. Introduction

## 1.1. Purpose and scope

## 1.2. List of definitions and abbreviations

# 2. Project size, cost and effort estimation

## 2.1. Size estimation: function points

The function points approach has the aim to provide an estimation of the size of the project, considering as parameters the functionalities that the system has to accomplish and the complexity of the operations.

To evaluate the size of PowerEnJoy system, we refer to the statistical data provided from the analysis of previous projects, which is reported in the following table.

|  |  |  |  |
| --- | --- | --- | --- |
| *Function types* | *Complexity weight* | | |
| *Low* | *Average* | *High* |
| Internal logic files (ELF) | 7 | 10 | 15 |
| External logic files (ILF) | 5 | 7 | 10 |
| External inputs (EI) | 3 | 4 | 6 |
| External outputs (EO) | 4 | 5 | 7 |
| Eternal inquiries (EQ) | 3 | 4 | 6 |

### 2.1.1. Internal logic files

In this section we are going to find out all the possible ILFs involved in the processes of PowerEnJoy system, and we will indicate for each ILF the estimated complexity according to the table provided before.

* The system has to manage the information about the registered users, which include name, surname, phone number, email, SSN, credit card number and driving licence number, together with a password provided by the system during the registration phase and the always available user’s position. Even if may seem that there are a lot of information about a registered user, they all can be stored in a single table or a flat data structure, so the complexity is low.
* The system has also the necessity to collect information about cars, which include the ID number, the position, the battery level, a Boolean to indicate if it’s in charge, and the state (available, unavailable or out of order).
* A reservation is made of a user and a car, which are non-primitive attributes, and a reservation timer, with is primitive.
* Safe areas consist on a set of positions, and it has a set of power stations
* The position, again, is a “primitive” entity, in the sense of it doesn’t contain any attribute. The complexity is low.
* A bit more complex situation is the management of a ride, because it depends on plenty information, which can be primitive data like duration, number of passenger, total price, battery level at the end of the ride itself, Booleans that indicate the presence of the money saving option, the termination of the ride, if the car is left in charge at the end of the ride, and accidents, as well as non-primitive information like reservation, information about the money saving option, the position and the car.
* The money saving option has a starting position, an ending position and the best power station to leave the car.
* A power station has its own position and a Boolean to indicate the availability.

Here is provided a table as a recap.

|  |  |  |
| --- | --- | --- |
| ILF | Complexity | FPs |
| User | Low | 7 |
| Car | Low | 7 |
| Reservation | Low | 7 |
| Safe area | Low | 7 |
| Position | Low | 7 |
| Ride | Average | 10 |
| Money saving option | Low | 7 |
| Power station | Low | 7 |
| Total | | 59 |

### 2.1.2. External logic files

PowerEnJoy system doesn’t rely on many ELFs, since it doesn’t cooperate with many external services. The only feature it must accomplish is to render maps on the client side applications, which isn’t a much complex operation.

The following table recaps the complexity of the ELFs:

|  |  |  |
| --- | --- | --- |
| ELF | Complexity | FPs |
| Mapping service on client app | Low | 10 |
| Mapping service on car app | Low | 10 |
| Mapping service on assistance coordinator program | Low | 10 |
| Total | | 30 |

### 2.1.3. External inputs

PowerEnJoy supports many interactions with users among different interfaces. In this section we are going to identify all the main functionalities offered by the system with the corresponding complexity in terms of EIs.

On the client app (mobile app or web app):

* Login: this is a simple operation that involve only the corresponding controller. Its contribute is 3 FPs.
* Sign up: this is a simple operation that involve only the corresponding controller. Its contribute is 3 FPs.
* Make a reservation: this is a simple operation that involve only the corresponding controller. Its contribute is 3 FPs.
* Unlock a car: this operation involves various checks, including the one of the position. Its contribute is 4 FPs.

On the car app:

* Start a ride: this operation involves various checks, including the one of the position. Its contribute is 4 FPs.
* Activate the money saving option: this operation involves various checks, including the one of the position. Its contribute is 4 FPs.
* Finish a ride: this operation involves various checks, including the one of the position. Its contribute is 4 FPs.

On the assistance coordinator program:

* Login: this is a simple operation that involve only the corresponding controller. Its contribute is 3 FPs.
* Tag/untag a car as out of order: this is a simple operation that involve only the corresponding controller. Its contribute is 3 FPs.

Here is a table that recaps the paragraph:

|  |  |  |
| --- | --- | --- |
| EI | Complexity | FPs |
| Sign up | Low | 10 |
| Login (user) | Low | 10 |
| Make a reservation | Low | 10 |
| Unlock a car |  |  |
| Start a ride |  |  |
| Activate the money saving option |  |  |
| Finish a ride |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Total | | 30 |

### 2.1.4. External outputs

As a part of its normal functionalities, the PowerEnJoy system occasionally needs to communicate with the user outside the context of an inquiry. These occasions are:

* Communicate the final cost of the ride: this is a complex process, since it involves many data and checks.

Here is a table as a recap:

|  |  |  |
| --- | --- | --- |
| EO | Complexity | FPs |
|  | Low | 10 |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Total | | 30 |

### 2.1.5. External inquiries

An inquiry is a data retrieval request performed by a user. In

* See available cars (user): this is a simple operation that involves only the corresponding controller. Its contribute is 3 FPs.
* See position and battery of cars (assistance coordinators): this is a simple operation that involve only the corresponding controller. Its contribute is 3 FPs.
* See all the information about a ride: this is a simple operation that involve only the corresponding controller. Its contribute is 3 FPs.

The following table shows a recap:

|  |  |  |
| --- | --- | --- |
| EQ | Complexity | FPs |
|  | Low | 10 |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Total | | 30 |

### 2.1.6. Overall estimation

## 2.2. COCOMO

# 3. Tasks and schedule

# 4. Resources allocation

# 5. Risk management

# 6. Other info

## 6.1. Sample documents

* Assignments AA 2016-2017.pdf
* Documents previously provided:
  + PowerEnJoy – RASD.pdf
  + PowerEnJoy – DD.pdf
  + PowerEnJoy – ITPD.pdf
* Sample documents:
  + Project planning example document.pdf
* Course slides:
  + Project Management Basics + Advanced.pdf

## 6.2. Used tools

* Microsoft Word 2016, for the drafting of the ITPD
* Microsoft OneDrive, to allow concurrent editing
* GitHub, to store the project in a repo

## 6.3. Hours of work

For redacting and writing the Project Plan Document we spent approximately 25 hours per person.

## 6.4. Changelog

No changes in the document for the moment.