Project title to invent - v0.0.1

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Last update: 8th April 2024

Contents

1 The project and project goals

The following is a description of the project problem and the goals to be achieved to complete the assignment. We have divided this section into three groups:

- The **preface** (or scenario) helps understand the environment to develop a sound software system.
- The **problem posed** section includes lists to emphasize the critical points.
- The **goals to achieve** by the assignment.

Note: We analyzed the **citizens' stakeholders** in this project.

Preface

Two urgent global concerns are environmental sustainability and climate change; because of air pollution and greenhouse gas emissions, transportation - especially urban commuting - contributes to worsening those issues.

Even today, urban areas are characterized by a heavy reliance on personal vehicles, which are seen as the most comfortable and efficient way of commuting, despite several studies showing that better alternatives exist in most cases.

Improving public transportation systems' efficiency can make them more appealing to daily commuters and is, therefore, a promising way to lessen environmental impact and, at the same time, to increase the overall quality of citizens' life (article).

Problem posed

The project "Eco-City Commute" (ECC) aims to create a comprehensive software system that makes public transportation within an urban area as easy and efficient as possible, promoting its adoption.

ECC receives data from sensors, deployed on public transport means, that provide:

- Information about their respective occupancy rates.
- Real-time information about public transit timetables.
- Information about bike and ride sharing, from specific services (think at ATM in Milano, BikeMi, Mobike, BlaBlaCar, ...).

Based on these pieces of information, ECC offers services to two types of stakeholders:

- **Citizens**: ECC offers a *mobile app* that allows citizens to input:
  - The origin (within the urban area);
  - The destination (within the urban area);
  - Eventually constraint, for example: they do not want to use a bike; they must arrive at destination within a certain timeframe.

The application takes the input and displays (output):

  - Environmentally friendly routes possibly combining different transportation means.

- **Urban area managers**: ECC offers to managers a dashboard through which they can visualize reports concerning the daily usage of the various available transportation means, their occupation rates and delays (if any).

Goals to achieve

We analyzed the **citizens' stakeholders**. So, the main goal was to develop a software system that offers citizens a mobile app to make public transportation within an urban area as easy and efficient as possible. Therefore, the document seeks to meet two objectives:

- Analyze the requirement aspects.
- Make a well-architecture design.

2 Requirement analysis

2.1 Relevant human and non-human actors

2.2 Use cases

2.3 Domain assumptions

2.4 Requirements

2.4.1 Functional requirements

2.4.2 Non-functional requirements

3 Design

3.1 General description of the architecture

3.2 Sequence diagrams

3.3 Critical points and design decisions