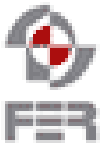

PedalaMi
Project Vision and Plan

Version 1.0

Revision History

Date	Version	Description	Author
2021-10-22	1.0	First version	The entire team

1. Introduction

1.1 Purpose of this document

The purpose of this document is to provide a high-level overview of the PedalaMi project. It introduces the project vision of the team and provides some details on how the team is going to manage the internal organization.
A more detailed description of this document's scope is provided in Section 1.4.

1.2 Document organization

The document is organized as follows:

- Section 1, *Introduction,* describes the purpose, the scope and the contents of this document;
- Section 2, *Background and objectives,* describes PedalaMi goals and the impact it will have;
- Section 3, *Project group,* describes the composition of our team;
- Section 4, *Development process*, describes how we are going to manage the development, giving an overview of our SCRUM implementation;
- Section 5, *Organization and communication*, describes our internal organization and how we are going to communicate and coordinate our work;
- Section 6, *Initial time plan*, provides an approximate timeline for the project;
- Section 7, *Quality assurance*, describes our plan to guarantee a high quality of the final product;
- Section 8, *Project risks*, describes the risks that may come out as consequences of the PedalaMi project or during its development.

1.3 Intended Audience

The intended audience is:
- Project Team
- Project Supervisors
- Customer
- Future DSD Students

1.4 Scope

This document aims to highlight the fundamentals of the PedalaMi project, providing the main objectives of the application and listing the requirements from a high-level perspective. It also describes our project vision, highlighting the future impact of the final product. Moreover, it tries to draw up the team's organization and the development process that the team is going to follow.

Finally, it provides an approximate timeline for the project and our quality assurance plan and also illustrates the possible risks of the project.

Mainly, the document will give a general overview of the project without focusing on specification details.

1.5 Definitions and acronyms

1.5.1 Definitions

Keyword	Definitions
Scrum	Agile framework for the management of the development process of a software product, in an iterative and incremental way.
Sprint	Fixed-time cycles of work on which Scrum structure is based. Typically less than one month in length, placed one after the other.
Kanban Board	Agile methodologies to increase productivity and optimize the workflow. It consists of boards with drag-and-drop elements.

1.5.2 Acronyms and abbreviations

Acronym or abbreviation	Definitions
NTR	Nothing to Report. There is no information on a specific topic available or necessary.
DSD	Distributed Software Development
CI	Continuous Integration
CQ	Continuous Quality
GPS	Global Positioning System
UI	User Interface
MDH	Mälardalen University
POLIMI	Politecnico di Milano

1.6 References

- **Scrum: “**Scrum Handbook”, *Jeff Sutherland’s*

2. Background and objectives

2.1 Customer

The customer for this project is Deloitte Digital, represented by Guido Perrucchini and Giuseppe Valerio Gramazio. Guido is a wind energy engineer who graduated at the Politecnico of Milan and at the Technical University of Denmark. He has worked as a Cloud developer consultant in Deloitte since June 2021 and as an Analyst since February 2020. Giuseppe is a consultant in Deloitte too. After his Bachelor's Degree at Politecnico of Milan, he obtained a Master's Degree in Computer Engineering at the University of Pavia. He also earned eleven Salesforce certifications in a variety of areas, including advanced administration and cloud computing.

2.2 Project objective

PedalaMi is a project that aims to promote the use of bikes as a green and sustainable alternative to the non-zero-emissions means of transport, which still represent the most preferred choice in the field.
This objective is pursued by providing the users with an interactive system that encourages cycling thanks to a funny reward and challenge-based system, in order to enrich the standard riding experience to make it more appealing to casual bikers.

2.3 Project impact

Nowadays, almost all cities suffer from traffic congestion, which also leads to high levels of air pollution, often above the maximum acceptable threshold.
As this project encourages its users to ride bicycles instead of using cars, PedalaMi has a positive effect on the reduction of traffic jams, positively impacting not only its user's lifestyles but also the entire society.
Guiding people towards a more carbon-free attitude, PedalaMi also helps in the reduction of air pollution, allowing its users to have an active part in the effort to contribute to the planet's sustainability.

Riding a bike stimulates the production of endorphins, hormones that relieve fatigue and pain. Moreover, it helps to release stress and tension, helping to feel more focused and relaxed. For this reason, PedalaMi also has a positive impact on its user's life, improving their health and making them feel more comfortable with themselves.

2.4 High-level requirements

Once a user has logged in with an account, he could start and record a new ride session.

With each ride, the system has to keep track of the user, saving the routes and trails and, with specific algorithms, calculate all the statistics (e.g. average speed) and assign them points based on those statistics and the current weather.

When a user stops an ongoing session, the system shows the earned points, the information and the statistics about the finished ride.

A user can monitor all the rides he has recorded through a dashboard and select one that he wants to see more in the details.

A user can create a new team or join an existing one. When a user creates a new team, he becomes admin of it and decides to set up private events that could be attended only by team members.

Events can be private, as mentioned earlier, or public. Public events can be attended by teams or single users and are published only by system admins. A team admin can't directly open a public event, but he can propose a

new one to the system admins that can accept or refuse to publish it.

3. Project group

The project is developed by a team of 10 people, 6 from Polimi and 4 from MDH. Each team member has a different background but everyone shares great motivation.

3.1 Group members

Table 1. List of team members

Member	Email	University
Liene Andersone	lae18001@student.mdh.se	MDH
Panagiotis Bampilis	pbs21001@student.mdh.se	MDH
Gezim Blliku	gbu21001@student.mdh.se	MDH
Massimiliano Giovagnola	maxi.gio98@gmail.com	POLIMI
Lorenzo Italiano	lorenzo.italiano@mail.polimi.it	POLIMI
Marcus Mörtstrand	mmd17003@student.mdh.se	MDH
Vincenzo Riccio	vincenzo.riccio@mail.polimi.it	POLIMI
Giancarlo Sorrentino	giancarlosorrentino99@gmail.com	POLIMI
David Støvlbæk	davidchristian.tams@mail.polimi.it	POLIMI
Emanuele Triuzzi	emanueletriuzzi@gmail.com	POLIMI

3.2 Roles and responsibilities

Table 2. Team members' roles and responsibilities.

Member	Role	University
Liene Andersone	Developer	MDH
Panagiotis Bampilis	Developer	MDH
Gezim Blliku	Developer	MDH
Massimiliano Giovagnola	Developer	POLIMI
Lorenzo Italiano	Product Owner	POLIMI
Marcus Mörtstrand	Scrum Master	MDH
Vincenzo Riccio	Developer	POLIMI
Giancarlo Sorrentino	Developer	POLIMI
David Støvlbæk	Developer	POLIMI
Emanuele Triuzzi	Developer	POLIMI

4. Development process

The PedalaMi project is developed using the approach proposed by the Scrum framework. The team has discussed and agreed upon a two-week sprint length instead of the other options of one, three, or four. During each sprint the role of the Scrum Master will be assigned to a different member of the team, starting from Marcus, who has been assigned the role for the first sprint. At the start of each sprint, a meeting is held to discuss the next sprint and agree on how much resources must be allocated to the different tasks, or "stories". Also, the Scrum Master is holding daily meetings on Discord to have a better knowledge of the progress of the project. Its status and the current stories can also be monitored on GitHub, as it provides a Kanban board within the project repository. The entire team felt it was more convenient and easier to use it instead of creating new accounts on a different website, for example, Trello.

The different developers have not been assigned yet their more specific roles within the project, in order to let everyone first familiarize with the different frameworks before assigning more specific roles and starting creating our stories.

5. Organization and communication

During this project, the team will communicate using various tools, depending on the tone and formality of the communication needed.

The Scrum Master on our team will arrange each formal meeting in advance using the Google Calendar.

5.1 Planned Meetings

- Each Friday at 9:30 am a weekly meeting is scheduled with the project supervisors through Zoom.
- The Product Owner will have recurrent meetings with the customer, at least once every two weeks
- Whole-team meetings are held at least twice a week

5.2 Formal Communication Tools

- **Email**: a critical tool that our Product Owner uses to engage with customers or schedule meetings with them.
- **Zoom**: a video conference tool used for official meetings with the supervisors and the customer. With Zoom, attendants can easily join recurrent events using a pre-generated link and share their screen in order to present their work.
- **Github Projects:** a section of the GitHub repository in which to store the product backlog and the Kanban Board which are used to split the different tasks among team members and monitor what to work on. This gives an overview of the overall progress, what each person is working on and what needs to be done next.

5.3 Informal Communication Tools

- **Telegram**: a crucial tool for immediate messaging between group members in order to discuss any issue at any time or schedule meetings. It is simple and quick to use on practically any device.

- **Discord:** a tool that provides chat functionality and persistent live audio and video channels each user can join and leave whenever he wants, without the need to schedule meetings. It is used as an informal communication tool, mainly for asking quick questions to each other, for unplanned meetings, for discussing different topics or simply for working together.

5.4 Storage

- **Git**: a tool that provides version control of the project and ensures that all the material is backed up online on Github and always available.

- **Google Drive:** a distributed storage system to have all files and documents safely stored in the cloud, that anyone in the team can access and update. GoogleDrive is also fully linked with the GSuite document editing services, allowing several users to work on the same shared document at the same time online, without having to download any additional tools.

6. Initial time plan

Taking into account the deadlines defined on the DSD course website, an initial time plan to be followed during the development of the project has been developed.

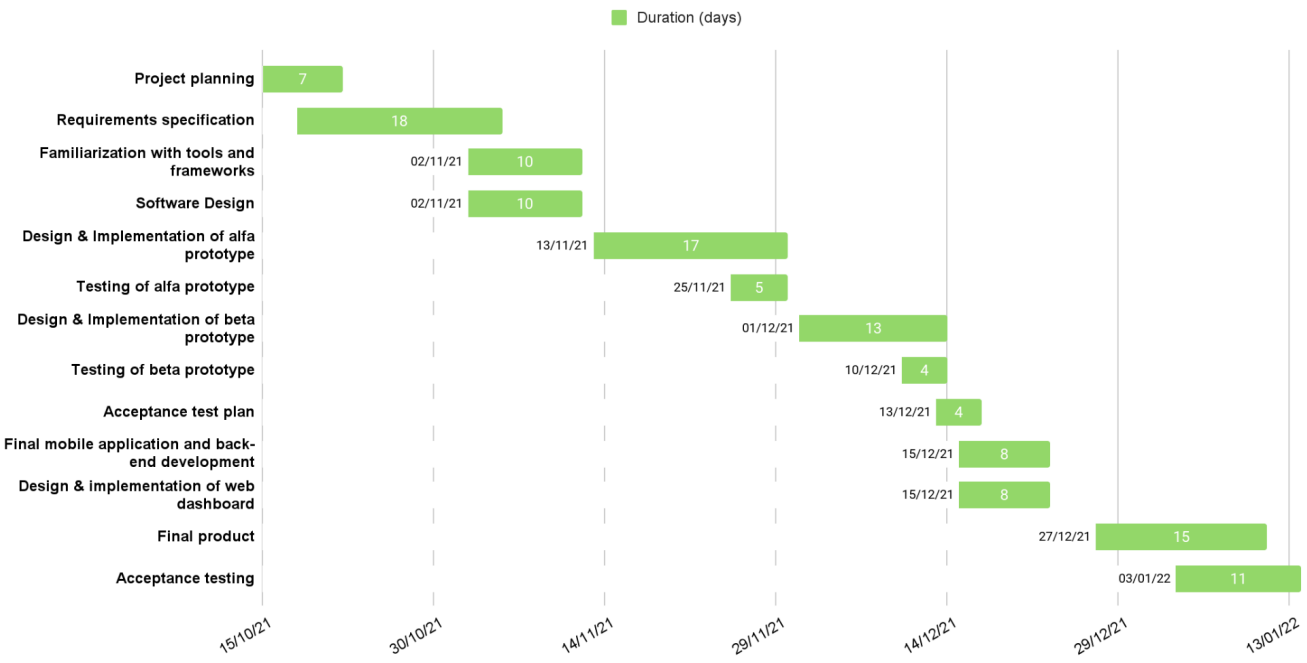

Figure 1. Gantt Chart

7. Quality Assurance

In order for the project to run as smoothly as possible, it must be ensured that the quality requirements are met before each delivery is submitted. To do so these different activities will be carried out throughout the project:

- **Document revisions** - to assure the quality of all the documents that have to be handed in, at least one person besides the SCRUM Master will always help to revise every document before its deadline.

- **Testing activities** - after every finished sprint or whenever a new functionality for the application is ready, the new feature(s) will be tested amongst the team members to ensure that it works as intended.

- **Alpha and Beta prototype testing** - final prototype testing that could be done using one of the CI/CQ tools chosen by the team will be performed as soon as almost ready prototypes are available. The debugging process has to be done continuously to assure a working prototype. During this testing phase, team members, their friends and our supervisors could evaluate the user experience by trying out the application using it in a real-life setting.

- **Acceptance testing** - to verify the final version of a product an acceptance deep and complete tests will be planned and performed with the customer.

8. Project Risks

The potential risks that could occur during the current project are described in **Table 3**, based on three different categories:

Internal risks - the problems that might arise during the development process and teamwork itself:

Technical issues - issues with tools during the development process:

External risks - that could occur after the release of the finished product:

Table 3. List of possible risks during the project work

RISK	IMPACT	MITIGATION
Internal risks		
Unclear definitions for some requirements.	HIGH	Have a clear discussion with the customer for more detailed specifications.
Lack of punctuality in deadlines.	MEDIUM	Make sure that all team members are aware of when the deadlines are at all times.
Poor collaboration in the team in case of any kind of disagreement.	MEDIUM	Extra meetings focused on correct communication and collaboration between team members.
Possible misunderstandings in communication between team members.	MEDIUM	Regular meetings to discuss the arising problems.
Technical issues		
Difficulties with new tools and with the SCRUM framework.	HIGH	Take time to familiarize with the tools and their documentation pages. Sharing the knowledge between team members.
Difficulties with tool integration.	HIGH	Choose the tools and services known to be easily integrated.
Accuracy issues with the GPS.	MEDIUM	Choose reliable APIs for this feature.
Unnecessary battery drainage while using the app.	MEDIUM	Optimize the implementation of the application as much as possible.
External risks		
The user might be distracted by the app while riding the bike due to some notifications.	HIGH	Create a simple UI for the riding mode in order to be less distracting possible.
Lack of bike lanes and the increase of bike riders can harm other drivers.	MEDIUM	No solution to this risk has been found so far.
Outdated maps in relation to the app's data could lead to users' disorientation.	MEDIUM / LOW	Frequent map updates to avoid any location and route inaccuracy.