

ENSE 374 – Software Engineering Management

GearShare

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Table of Contents

1 Introduction..	5
2 Design Problem..	6
2.1 Problem Definition/Business Case.	6
2.2 Project Charter	6
3 Solution..	7
3.1 Solution 1.	7
3.2 Solution 2.	7
3.3 Final Solution.	7
3.3.1 Components.	7
3.3.2 Features.	7
3.3.3 Environmental, Societal, Safety, and Economic Considerations.	7
3.3.4 Limitations.	7
4 Team Work.	8
4.1 Meeting 1.	8
4.2 Meeting 2.	8
4.3 Meeting 3.	8
4.4 Meeting 4.	8
5 Project Management	9
6 Conclusion and Future Work.	10
7 References.	11
8 Appendix.	12

- Proof read the text for typing and grammar mistakes.
- Follow the IEEE Bibliography style for the references by selecting "References/ Citations & Bibliography/ Style".

List of Figures

List of Tables

1 Introduction

This project aims to create a web-based application that allows individuals to rent vehicles directly from other vehicle owners. Unlike traditional car rental services or rideshare platforms like Uber, users of this service would be responsible for selecting and booking a car from other users, creating a peer-to-peer marketplace. Similar to platforms like Turo, this app taps into the sharing economy, offering convenience and cost savings by enabling car owners to monetize their vehicles when not in use. The platform will include features like vehicle listing, search and booking functionality, secure payments, and user reviews.

Project Design and Background

This project aims to design a web-based application that facilitates peer-to-peer vehicle rentals. Users can list their vehicles, search for available rentals, book vehicles, and securely process payments. This platform taps into the sharing economy, where vehicle owners can monetize their unused vehicles, providing convenience and cost savings to renters by offering a decentralized alternative to traditional rental companies. Similar to platforms like Turo, this

application supports direct interaction between owners and renters, offering a personalized rental experience, with the added layer of user reviews for trust and transparency.

Relevant Background Information

The rise of the sharing economy has significantly impacted various industries, including transportation. Companies like Uber and Turo have demonstrated the potential for peer-to-peer platforms to disrupt traditional services by empowering individuals to monetize their assets. This trend is driven by the increasing need for convenience, affordability, and flexibility in transportation solutions, making peer-to-peer vehicle rentals a logical extension of this model. Unlike traditional rental services, these platforms leverage user trust, reviews, and direct interactions to create a marketplace built on shared resources.

Rationale

The need for a platform like this arises from several factors:

1. **Consumer Convenience:** Renting directly from a vehicle owner may offer more flexibility, personalization, and affordability than traditional rental services.
2. **Cost Efficiency:** By cutting out the middleman, both vehicle owners and renters can benefit from lower costs.
3. **Market Demand:** As seen with Turo's success, there is clear demand for a peer-to-peer car rental service that benefits both owners and renters.

Stakeholder Requirements

Stakeholders have outlined the following requirements:

1. **Vehicle Listing and Management:** Vehicle owners should be able to list their cars, including details like availability, pricing, and photos.
2. **Search and Booking :** Renters must have a user-friendly interface to search for available vehicles by location, type, and price, with real-time availability.
3. **Secure Payment Gateway:** A trusted and secure method for handling payments between vehicle owners and renters is essential.
4. **User Reviews and Ratings:** To build trust, both renters and owners should be able to rate their experiences and leave feedback.

For further details, you can review the [Project Requirements Document].

Overview of Upcoming Sections

In the subsequent sections, the document will cover the following:

- **Detailed Design Specifications:** A breakdown of the technical architecture, user interface design, and system workflows.
- **Implementation Strategy:** A phased plan outlining the development and deployment of the platform, including testing and user feedback mechanisms.
- **Challenges and Considerations:** An analysis of potential obstacles, such as legal issues, user acquisition, and platform scalability.

2 Problem Definition

2.1 Business Case

Business Case Link-

[https://github.com/Lintondsouza/ENSE-374-Project/blob/main/Business%20Case%20%20\(1\).pdf](https://github.com/Lintondsouza/ENSE-374-Project/blob/main/Business%20Case%20%20(1).pdf)

2.2 Project Charter

Project Charter Link-

<https://github.com/Lintondsouza/ENSE-374-Project/blob/81e1dd22eca7465b100a3c8bedabf4ce141f49fb/Project%20Charter.docx>

3 Solution

In this section, you will provide an account of some solutions your team brainstormed to implement the project. Some solutions might not have all the desired features, some might not satisfy the constraints, or both. These solutions come up in your mind while you brainstorm ways of implementing all the features while meeting the constraints. Towards, the end you select a solution that you think has all the features and satisfies all the constraints. Remember that an engineering design is iterative in nature!

3.1 Solution 1

Write a brief description of your first solution and provide the reasons for not selecting this one.

3.2 Solution 2

This is an improved solution but might not be the final solution that you select. Give a brief description of this solution here.

3.3 Final Solution

This is the final solution. Explain why it is better than other solutions. You may use a table for comparison purposes. After providing the reason for selecting this solution, detail it below.

3.3.1 Components

What components you used in the solution? What is the main purpose of using individual component? Provide a block diagram (with a numbered caption, such as Fig. 1) representing the connectivity and interaction between all the components.

3.3.2 Features

Give an account of all the features your solution has. These features may be tabulated (with a title) for improved comprehension.

3.3.3 Environmental, Societal, Safety, and Economic Considerations

Explain how your engineering design took into account environmental, societal, economic and other constraints into consideration. It may include how your design has positive contributions to the environment and society? What type of economic decisions you made? How did you make sure that the design is reliable and safe to use?

3.3.4 Limitations

Every product has some limitations, and so is the case with your design product. Highlight some of the limitations of your solution here.

4 Team Work

Since this is a group project, you must have a fair distribution of tasks among yourselves. To this end, you must hold meetings to discuss the distribution of tasks and to keep a track of the project progress.

4.1 Meeting 1

Link: https://github.com/Lintondsouza/ENSE-374-Project/blob/81e1dd22eca7465b100a3c8bedabf4ce141f49fb/Meeting_Minutes/First%20Meeting.docx

4.2 Meeting 2

Link: https://github.com/Lintondsouza/ENSE-374-Project/blob/81e1dd22eca7465b100a3c8bedabf4ce141f49fb/Meeting_Minutes/Meeting%202.docx

4.3 Meeting 3

Link: https://github.com/Lintondsouza/ENSE-374-Project/blob/81e1dd22eca7465b100a3c8bedabf4ce141f49fb/Meeting_Minutes/Meeting%203.docx

4.4 Meeting 4

Link: https://github.com/Lintondsouza/ENSE-374-Project/blob/696be4607dc54d56f6994903ec4d9f40ef458436/Meeting_Minutes/Meeting%204.docx

5 Project Management

Provide the link to 'Milestone-based Schedule' document. Use Gantt chart as well to show the progress of your work here. Mention all the tasks along with their predecessors. Provide the slack time of each task and identify the critical path.

6 Conclusion and Future Work

- A summary of what you achieved.
- Provide Link to 'Lessons Learned Report' document.
- While keeping the limitations of your solution, provide recommendations for future design improvements.

7 References

- Use the IEEE reference style.

- Do not put any reference if it is not cited in the text.

8 Appendix

If you want to provide an additional information, use this appendix.