**Capstone Project (CPRO306)**

**Assessment 2: Interim SRS Report**

**Project Title:**

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| --- | --- | --- |
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[1. Project Charter 3](#_Toc193799569)

[2. Project Description 3](#_Toc193799570)

[2.1. Business case and the problem to be addressed/resolved by the project 3](#_Toc193799571)

[2.2. Purpose and objectives 3](#_Toc193799572)

[2.3. Stakeholders 3](#_Toc193799573)

[2.4. Required team 3](#_Toc193799574)

[3. Scope and Key Deliverables 3](#_Toc193799575)

[3.1. Scope 3](#_Toc193799576)

[3.2. Key deliverables 3](#_Toc193799577)

[4. Project Milestones: 4](#_Toc193799578)

[4.1 Setting milestones 5](#_Toc193799579)

[5. Major risks, ethical risks in databases and how to be mitigated 5](#_Toc193799580)

[5.1. Project Risks & Mitigation 5](#_Toc193799581)

[5.2. Ethical Risks in Databases 5](#_Toc193799582)

[6. Feasibility Study 5](#_Toc193799583)

[6.1 Technical Feasibility 5](#_Toc193799584)

[6.2 Operational Feasibility 6](#_Toc193799585)

[6.3 Economic Feasibility 6](#_Toc193799586)

[6.4 Legal & Ethical Feasibility 6](#_Toc193799587)

[6.5 Schedule Feasibility 6](#_Toc193799588)

[7. Feeback 6](#_Toc193799589)

[8. References 7](#_Toc193799590)

# Project Charter

# Project Description

## Business case and the problem to be addressed/resolved by the project

Jot Bikes is a leading retailer that specialize in providing service and rental for Electric bikes and Scooters. The current system for inventory, booking, sales and customer service lacks efficiency. As a result, its causing system delays, make frequent errors and operational inefficiencies. Thus, this project will focus on creating a Rental Management System that will automate these processes, ensuring accurate tracking, seamless booking, and improved customer experience.

## Purpose and objectives

* Develop a centralized system for bike inventory, rental, and sales management.
* Automate booking and secure payment processing to enhance user experience.
* Improve vendor management by providing a dedicated module.
* Implement customer relationship management for better communication and service.
* Provide reporting and analytics for better decision making.

## Stakeholders

* Jot Bikes Management - Oversee project Management implementation and ensure alignment with business goals.
* Admin Staff - Utilize system for managing vendors, bikes, and booking.
* Vendors - Manage bike information system
* Customers (Users) - Register, book bikes and make payments
* IT Development Team - Responsible for system design, development, and maintenance.

## Required team

* Project Manager
* Business Analyst
* UI/UX Designer
* Backend Developer
* Frontend Developer
* Database Administrator
* Quality Assurance Tester
* Technical support
* Stakeholders
* Implementation Team

# Scope and Key Deliverables

## Scope

The development of Jot Bikes Management System will help the administration easy to management internal system such as: sales, shipping, renting, booking, payment, stocks available and details of stocks, vendor and user. This will provide a user-friendly and accuracy system for admin, user and vendor to browse, rent, book and check the products effectively and manage the information easily, including giving feedback and advise between two parties.

* **Include:**
* Login for admin, vendor and user
* User register
* Manage bikes, vendor and users’ information (admin)
* Feedback, check for bikes availability, booking and paying from the user side
* View bookings (include vender), user feedback and users’ details from admin side.
* **Exclude:** Inventory management for Jot Bikes, advanced vendor and admin’s analytics and reports, CRM functionalities, rental and sales management.

## Key deliverables

The key deliverables will be defined for the system to achieve the requirements of all stakeholders and meet the high standards of security and functionality.

**3.2.1 Interfaces:**

* Admin: login, manage payment, vendor and bikes, view booking, users and feedback.
* User: register, login, search for products by brands, check products availability, feedback, view and edit personal details, book and pay.
* Vendor: login, view bookings and payment, manage products.

**3.2.2 Security Features:**

Some security features need to be installed in the system to protect the data, session cookies and key sharing:

* AES encryption: this is used to encrypt the algorithm by transfer the data into an unreadable format to protect the data.
* Firewalls: this acts as a barrier between external threats and internal network to protect the data being infiltrated from the attackers.
* SSL certificates: this encrypts the sensitive data that only directed user can view its own information.
* HTTPS: this is a security version of HTTP
* Multi-Factor authentication (MFA): it will ask the user to verify its identification with various methods by adding extra layer of security on the platform (especially login section).
* Payment Gateway Security: maintain the safety payment data of the user on the e-commerce website.

**3.2.3 Documentation:**

* The development details of the system will be stored and documented, including user guides, technical and installation instructions, security support.

**3.2.4 Testing and Quality Assurance**:

* User and integration testing will be conducted in accordance with testing plan and execution.

**3.2.5 Deployment:**

* Plan to release the system with appropriate platform and tools.
* Plan for support and maintenance at least once a year.

**3.2.6 Training Materials:**

* Training will be provided for administrator and vendor, including user side. This could take up to 1 week for staffs to understand the entirely system and perform smoothly.
* User guides and instructions will be provided for the user.

# Project Milestones:

* + - * The development process will be defined based on the requirements of all stakeholders through the standards of Project Management Milestone Plan.
      * Identify the main checkpoints of the project according to the approved system development process.
      * Project Milestone will help staffs and stakeholders stay on the right track and achieve all requirements effectively without any risks and unnecessary expenses on time.

## 4.1 Setting milestones

4.1.1. Initiation - The goals, objectives and necessary tools will be identified according to the requirements of all stakeholders and develop into a project plan. A draft plan will be developed in this stage.

* + 1. Planning – At this stage, team members and project managers will work together for project’s details information such as: budget, specific tools, timeline, resources and risk management strategies. A finalized plan will be developed, through the draft one in the initiation stage, with standards and procedures to maintain the quality of the system.
    2. Execution – The finalized plan will be put into action, regular meetings are needed to ensure that everything is under control to reduce the chance of out of time, budget or did not meet the main checkpoint of the project plan.
    3. Monitoring and Control – The project manager will in charge of monitoring the progress of the project is meet the goals and objectives of the project, including timeline and budget. At this stage, staffs, stakeholders and users can test the system to ensure that it is user-friendly, easy to monitor and meet their expectations.
    4. Project Closeout – This is the completion stage of the project, the team will submit the final system and deploy it to the platform and server, including evaluates the outcomes, and all the documentation will be sign off.

The Project Management Milestone allows the team can define the goals, objectives, main points, risks and key deliverables to proceed the appropriate finalized project according to the expectations and needs of the stakeholders. This helps all the team to stay on the right while working individually so the system project can be done within the timeline and budget.

# Major risks, ethical risks in databases and how to be mitigated

## Project Risks & Mitigation

|  |  |  |
| --- | --- | --- |
| Risk | Description | Mitigation Strategy |
| Integration Challenges | Integrating services like payment gateway or MongoDB may not work as planned and may require more time. | Build a small prototype and seek help from experienced professional |
| Limited Development Time | The 11-week timeframe might be short as this project undergoes the whole SDLC (System Development Life Cycle phase). | Important for team to stick to a sprint schedule and manage scope tightly. |
| Security Feature Implementation | With limited backend experience, implementing advance security feature might poses some challenge. | Use existing library which is secure and tested and allocate some time to implement it. |
| Data Security and Privacy | Data might be leak in an unsecured transmission or storage. | Implement encryption when data is moving and at rest. |
| Team Availability | Team member might have challenge completing task due to other commitment. | Ensure team member are sticking to iterative sprint. To track weekly progress. |
| UX/UI Design | Some UX/UI design might overcomplicate which can be confusing and frustrating to use. | Conduct a quick usability test and collect feedback from user. |

## Ethical Risks in Databases

|  |  |  |
| --- | --- | --- |
| Ethical Risk | Impact | Mitigation Strategy |
| Improper Data Collection | Collecting personal data more than needed for booking, may breach local regulation. | Only request essential field such as name, email, phone number, etc. Also inform user why the data is collected. |
| Insecure Authentication | Lack of RBAC (Role Based Access Control) might let unauthorized users see admin/vendor data. | Use a secure login and authentication method and apply RBAC. |
| Lack of User Consent | User might experience sudden increase in targeted advertisement email. | Include an opt-in checkbox during the sign in page. |
| Poor Data Retention Practices | Legal impact if the data is held longer than required as defined by the local regulation and it also poses ethical risk for the company. | Follow a data retention policy and allow user to delete their account upon request. |
| Data Misuse by Admin | Admin might sell customer database to a third party. | Limit the visibility on the admin side to only what they need and keep log for all access to sensitive information so it can be trace back. |

# Feasibility Study

Based on feasibility study framework proposed by (Kendall & Kendall 2011), this project is evaluated across five key dimensions: technical, operational, economic, legal & ethical, and schedule feasibility. Each dimension is discussed in detail in the following subsection.

## 6.1 Technical Feasibility

The project is feasible with the current skill set of the development team and the publicly available tools and framework. The project will be using React for the frontend due to its scalability, responsiveness and extensive library of open-source package to enhance user experience (Vipul A. M; Prathamesh Sonpatki 2016). However, the backend is currently under evaluation, but the team is currently considering between the implementation of Firebase, Node.js with MongoDB or AWS Service. The final backend solution will be determine based on the team familiarity and cost.

Additionally, the project will also showcase a mock implementation of a payment gateway to simulate how real-world transaction will occur. The system will be designed with scalability and maintainability in mind, which will ensure that the system can operate efficiently in both testing and future live production environment.

## 6.2 Operational Feasibility

The proposed system is operationally feasible, and it aims to improve overall user experience by enabling users to book, browse, and pay seamlessly with the interactive feature. There is little to no intervention needed from the staff only admin needed to manage vendor records, updating bike inventory and monitor bookings. To further streamline the project, CRM (Customer Relationship Management) feature will be integrated too such as automated emails, rentals history tracking which will improve customer retention and post-rental engagement.

## 6.3 Economic Feasibility

As the project will be developed in-house as part of a university capstone project, time investment is mainly part of the development cost. This project will be developed using free and open-source tools that are available to the team such as React, Firebase (free tier), and GitHub.

While the initial build doesn’t come with a price tag, the system will be designed with a potential for scalability. In the event the project will go live, there will be expected operational cost such as cloud hosting services, domain name and SSL certificate, Third-Party Integration for payment and maintenance & update.

## 6.4 Legal & Ethical Feasibility

The project will comply with local regulation such as Australian Consumer Law that regulate warranties, return, and customer right (Australian Government 2025). Additionally, NSW Electric Bike Regulation that regulate according to AS EN15194 which specifies maximum power of 250 watts and speed limit of 25 km/hr. Also, Privacy Act 1988 & Australian Privacy Principles (APPs) which requires mandatory breach notification (Office of the Australian Information Commissioner 2024). Furthermore, Work Health & Safety (WHS) which is required to ensure employee safety. Lastly, Cybersecurity best practices will be followed, such as role-based access, authentication and encryption will be enforced.

## 6.5 Schedule Feasibility

Based on research and analysis of similar project, the timeline is estimated to be realistically achievable within 11-week period. Which comprised of distinct phases such as planning and requirement gathering, design and development, testing, and staff training. Implementation of agile methodology (Stellman & Greene 2017), continuous stakeholder engagement, and iterative sprints reduce potential risk and keep project on track.

# Feedback

Based on the feedback received from the lecturer, changes have been made accordingly.

1. Feedback: “Ensure the report reflects actual project timeline, which is 11 weeks for the whole duration of the project till the final deliverable.”

Action taken: The team has ensured that all the documentation and planning reflect the 11-week project timeline, including changes on the iteration plans and deliverable schedules to align with the final submission date.

1. Feedback: “Set up a version control, it can be GitHub or google doc and make sure to create a discussion forum”

Action taken: GitHub repository has been created, and it is now public. Version control is being used to track team contributions, all documents will be committed there. GitHub discussion tab has been enabled and its actively used for iteration updates and team contributions.

Link to GitHub Repository: <https://github.com/HendraLim1/ProjectCapstone/tree/report-development>

Link to GitHub Discussion: <https://github.com/HendraLim1/ProjectCapstone/discussions>

# References

<https://www.smartsheet.com/content/project-milestone-examples#:~:text=Project%20milestones%20mark%20the%20achievement%20of%20key%20goals,project%20lifecycle%3A%20initiation%2C%20planning%2C%20execution%2C%20monitoring%2C%20and%20closeout>.

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