

PROJECT MANAGEMENT

Workbook

2024

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This workbook is copyrighted by RWarb Publishing 2014. It goes with the Art & Science of Project Management by Warburton & Kanabar, 2nd Edition. Please email your professor recommended edits if any. It helps students understand PMBOK processes—as students are creating process outputs within the context of an assigned case study. The First Part is in the textbook..

Project Description

This project focuses on developing a comprehensive ticketing solution that includes both passenger and conductor applications. The solution features a mobile-friendly interface where passengers can purchase tickets, view bus routes, and generate QR codes as digital tickets. Conductors can then scan these QR codes for quick validation, facilitating a seamless ticketing process. Additionally, the system integrates payment gateways to enable secure and efficient online transactions.

Project Objectives:

1. **User-Friendly Interface Development:** Create a responsive, intuitive user interface for passenger and conductor apps, enhancing the ticketing experience.
2. **Efficient Ticketing System:** Implement QR code-based ticketing for quick purchase and validation, reducing wait times and paperwork.
3. **Secure Payment Integration:** Integrate multiple payment gateway options to handle transactions securely.
4. **Reliable Data Management:** Ensure a robust database structure to manage routes, ticketing, and transaction logs with a focus on consistency and security.
5. **Cloud Infrastructure and Scalability:** Set up a scalable cloud-based backend to handle high user loads and ensure smooth CI/CD processes.
6. **Compliance and Security Measures:** Adhere to data protection regulations and implement necessary data encryption and security protocols to safeguard sensitive information.

This project aims to streamline the public transportation ticketing process through digital innovation, improving efficiency, security, and user satisfaction.

PART B

Initiating Process Group

Introduces you to two PMBOK Processes

- a) Create Charter
- b) Identify Stakeholders

2.1. PROJECT CHARTER

Project Title	ONLINE TICKET BOOKING SYSTEM FOR RTC BUSES PROJECT
Organization	TSRTC ORGANISATION
Start Date.	1 JUNE 2024
End Date.	30 DEC 2024
Project. Champion	M.ABHINAY
An online ticketing system enables users to purchase tickets for various services (such as transportation, events, or entertainment) through web or mobile platforms. It streamlines the traditional ticketing process, allowing users to book, pay for, and receive tickets digitally. Online ticketing systems eliminate the need for physical tickets, making the process faster, more accessible, and environmentally friendly.	
High level Requirements	Technical skills like Java, HTML, CSS, JavaScript, etc.....
Success Criteria& Who Measures it.	1. High user satisfaction, 99.9% uptime, secure transactions, 98% success rate, fast QR validation (<3s), responsive support. Measurement: Surveys, uptime logs, transaction data, issue resolution time.
Stakeholder List	Passengers, conductors, app developers, backend engineers, database/security specialists, system integrators, project managers, customer support team, payment gateway providers.
Project Budget	2,00,000/-RS

Assigned Project Manager, Responsibility and Authority Level	M Abhinay is the assigned project manager. He will report to the CEO. Abhinay has the authority access to the budget of the project.
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Signatures	CEO of TSRTC ORGANISATION
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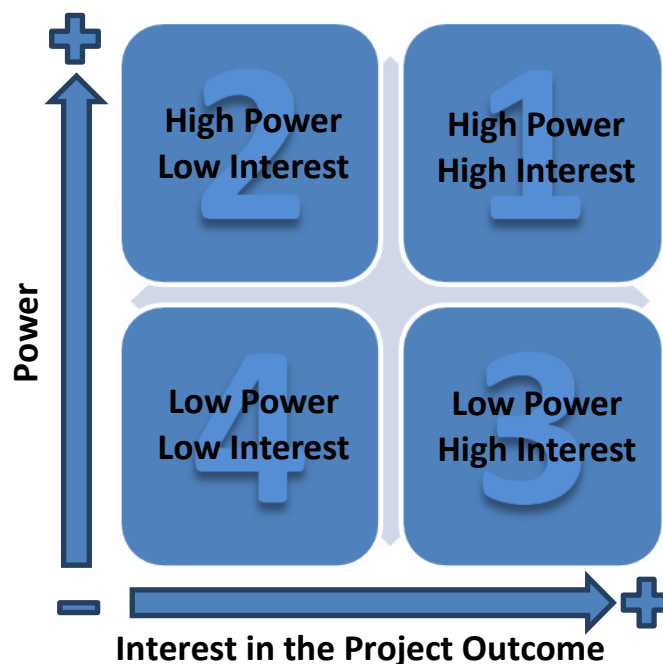
2.2. STAKEHOLDERS

Stakeholder	Role
app developers	Major stake holders
M.Abhinay	backend engineers
D RAKESH KUMAR	database/security specialists
B RAHUL	system integrators
KARTHIK	payment gateway providers

How to Rank the Stakeholders?

In determining the rank of the stakeholders, use the following approach. Identify stakeholders that have substantial interest in the outcome of the project and have substantial power to help achieve the project goals.

- High Power and High Interest in Project Outcome: M ABHINAY
- High Power but Low Interest in Project Outcome: P. Murali krishna
- Low Power but High Interest in Project Outcome: B rahul
- Low Power and Low Interest in Project Outcome: Karthik



2.3. STAKEHOLDERS REGISTER & MANAGEMENT STRATEGY

Stakeholder	Stakeholder Rank (High/Med/Low)	Role	Goal (Interest or outcome for the Stakeholder)
Tsrtc Organization	High interest and High power	funding the project	Approves the scope of the project and also guides the planners for more effective planning and anticipating obstacles as well as correcting flaws according their interests.
Sajjanar	High power and High interest	CEO	Acts as a project champion. Identifies the requirements for the project and communicates the scope of the project to the project manager. And also accommodates the required number of team members to the manager.
M abhinay Goud	Low power and High interest	Project and Operations manager	Approves the scope of the project and also looks after the innovation and creativeness of the project.
B Rahul	Low power and High interest	Creative Director & Lead Planner	Appearance simple look modifications.
Karthik	Low Power and Low Interest	Media manager	To attract public

Planning Process Group

Collect Requirements Process

Requirement Document

Category	Requirement	Stakeholder	Acceptance Criteria
Funding		GOVT	100%
Technical Data	Web Casting	Media Manager	70%
Location Finalization	Tsrtc Bus Depot	Venue manager	75%
Execution of Project	Support and interest from govt employees towards the Online Bus Ticket Booking System	Project manager	100%
Commissioning		CEO	50%

2.4. PROJECT SCOPE STATEMENT

PROJECT OBJECTIVE

To design and implement a **comprehensive digital ticket booking system** for TSRTC that simplifies the ticket purchasing process, ensures secure transactions, and supports scalability for future enhancements.

Enhance convenience for both passengers and conductors through **mobile/web apps** integrated with modern features like QR codes and real-time payment processing.

DELIVERABLES

Mobile and Web Applications:

- Passenger app for ticket booking, route search, and real-time updates.
- Conductor app for ticket validation and QR code scanning.

TECHNICAL REQUIREMENTS

- **Frontend Technologies:**
- **Mobile Apps:** React Native or Flutter.
- **Web App:** React.js or Angular for responsive design.
- **Backend Technologies:**
- Node.js, Django, or Spring Boot for robust API development.
- **Database:**
- Relational: MySQL/PostgreSQL for structured data.
- NoSQL: MongoDB for flexible data handling (if required).
- **Infrastructure:**
- Cloud platform like AWS, Azure, or Google Cloud.
- **Security:**
- Encryption protocols like TLS for data security.
- Compliance with local regulations (e.g., PCI-DSS for payments).

LIMITS AND EXCLUSIONS (Constraints)

- **Budget Constraint:**
Project budget is capped at **₹4,00,000**, necessitating cost-efficient technology choices.
- **Time Constraint:**
Completion within **7 months (01/06/2024 to 31/12/2024)**.
- **Technological Limitations:**
Dependent on existing TSRTC infrastructure and readiness for digital transformation.

RISKS**Technical Integration Challenges:**

- Difficulty in seamlessly integrating third-party APIs (payment gateways, QR code libraries) with the custom backend.
- Compatibility issues between the app, backend, and existing TSRTC IT systems.

Data Security Risks:

- Threat of unauthorized access to sensitive user data (personal and payment details).
- Risk of non-compliance with data protection laws (e.g., GDPR, PCI-DSS) leading to penalties.

ACCEPTANCE CRITERIA

Fully functional mobile and web applications deployed and tested.

Smooth and secure payment processing with no transaction failures.

Seamless ticket validation through QR codes without delays.

Signatures

P murali krishna

D Rakesh kumar

The diagram illustrates a bus ticketing system architecture. The central hub is the **BASE TICKET SYSTEM**. It connects to various components:

- USER LOGIN** (with **BUS BUS BUS AND TIMETIM**)
- SEARCH BUS ROND TIMINGS**
- CONDUCTOR**
- PASSER PORRAL**
- SEARCH TICKET PORRAL**
- MAKE TICKET TICKET**
- CONDUCTOR TICKET**
- GENERATE QR CODE TICKET**
- DODAROR TICKET**
- CONDUCTOR TICKET**
- ADMIN PANEL**
- SYSTEM PAYMENT**
- DONATE TICKET**
- TSRTC**
- RADIOPORT**
- ALL AT PARPORT**
- TSRTC**
- PASSER PORRAL**
- SEARCH BUS ROND TIMINGS**
- CONDUCTOR**
- MAKE TICKET TICKET**
- CONDUCTOR TICKET**
- GENERATE QR CODE TICKET**
- DODAROR TICKET**
- CONDUCTOR TICKET**
- ADMIN PANEL**
- SYSTEM PAYMENT**
- DONATE TICKET**
- TSRTC**
- RADIOPORT**
- ALL AT PARPORT**

2.6.

2.6 MILESTONE

6 Milestones for TSRTC Bus Ticket Booking System

Milestone 1: Requirement Analysis and Planning (01/06/2024 - 15/06/2024): This phase involves creating a detailed project plan with timelines, scope, and objectives. Stakeholders' requirements are gathered and documented, ensuring feasibility and alignment with project goals.

Milestone 2: System Design and Architecture (16/06/2024 - 15/07/2024): The system architecture is designed, covering frontend, backend, database, and infrastructure. UI/UX wireframes for the mobile and web apps are prepared, along with database schema and API specifications. Infrastructure setup plans for cloud deployment are finalized.

Milestone 3: Backend and Frontend Development (16/07/2024 - 30/09/2024): Backend APIs are developed to handle data processing, authentication, and integrations such as payment gateways and QR codes. Mobile and web apps are built to support the project's main features, and initial deployment in a testing environment is completed.

Milestone 4: Integration and Testing (01/10/2024 - 31/10/2024): All components (apps, backend, database, third-party services) are integrated and tested. Functional, performance, and scalability testing are performed, with issues identified and resolved. The system undergoes refinement based on feedback from the testing phase.

Milestone 5: Deployment and Training (01/11/2024 - 15/11/2024): The complete system is deployed to cloud infrastructure. Training sessions are conducted for TSRTC staff, including conductors and administrators. Comprehensive user manuals and technical guides are prepared for smooth operation.

2.7. DEFINE AND ESTIMATE ACTIVITIES AND RESOURCES

Activity List

Activities	Effort	Resource
Designing	Coding	Developers
Developing	Compliance	Cloud
Testing	Testing	Gateway
Deploying	Optimizing	Libraries
Training	Supporting	Documentation

2.8. ACTIVITY DURATIONS

Activity Durations

Activity	Duration (days)
Designing	5
Developing	10
Testing	10
Training	6

2.9. DELIVERABLES LIST BY TEAM

An alternate Way to view the activity list is to view it by resource

Team (Work Resource)	Activities (List Key deliverables only)
Team 1	1. Designing 2. Developing 3. Testing
Team 2	4. Deploying 5. Training

2.10. PLAN RISK MANAGEMENT

Risk	Type of Risk (Good or Bad (threat))	Consequence or Impact
Technical Integration Challenges	Bad	Delays
Data Security Breaches	Bad	Breach
Infrastructure Failures	Bad	Downtime

2.11. PLAN QUALITY MANAGEMENT

Plan Quality

Quality Roles and Responsibilities

2.12.

Role	Responsibility
Operation and project manager	To control all the operations of the project
Creative director	To take responsibility for appearance and look
Vendor, venue, and media manager	To attract the people and increase the production.

2.13. QUALITY MANAGEMENT PLAN

Summarizes the previous Section

Quality Management Plan

Project Title:	Version:	Date:
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Overview:

Ensures that the project meets the defined quality standards through structured planning, monitoring, and continuous improvement.

Quality Responsibilities and Quality Roles: The project manager oversees quality, with team leads responsible for executing quality checks and improvements.

Quality Assurance Approach: Focuses on proactive measures like standardizing processes, performing audits, and ensuring compliance with regulations.

Quality Control Approach: Involves inspecting deliverables, performing tests, and resolving defects to meet quality requirements.

Quality Reporting Plan:

Daily quality checks and progress reports shared with stakeholders to ensure adherence to quality standards.

2.14. DEVELOP HUMAN RESOURCES PLAN

Human Resources Plan

Project Title:

Version:

Date:

Roles and Responsibilities:

1 Ui/Ux Designing

2 Project Development

Staff Acquisition:

Staff Release:

Training:

training is provided by the company in advance and we act very professionally and in a dignified manner

Performance Reviews: performance is reviewed by srikanth (project manager) and necessary improvements are made to make our service more reliable

Regulation and Policy Compliance:

Item description

1	Mobile Application Tools Payment Gateway Integration Backend Server
2	

Note:

2.15. COMMUNICATION MANAGEMENT PLAN

Communication Management Plan

Message	Description (What is it about?)	Report to	Method (How are you communicating?)	Frequency (When and how frequently?)	Sender (Who is sending it?)
venue					
Food menu & Catering					
Decoration, Styling & Makeup					
Sound & Florist					
Budget & progress					

2.16. COST ESTIMATION

1. **Development Costs**
 - **Mobile and Web App Development:** ₹1,20,000
 - **Backend Development and API Integrations:** ₹1,00,000
 - **UI/UX Design:** ₹50,000
 - **Payment Gateway Integration:** ₹30,000
2. **Cloud Infrastructure and Hosting**
 - **Cloud Services (AWS/Azure):** ₹60,000
 - **Deployment and Maintenance:** ₹40,000
3. **Testing and QA**
 - **Functional and Performance Testing:** ₹50,000
 - **Security Audits and Compliance Checks:** ₹30,000
4. **Human Resources**
 - **Project Manager:** ₹60,000
 - **Developers (Frontend, Backend, Database):** ₹1,00,000
 - **QA Specialist:** ₹40,000
 - **UI/UX Designer:** ₹30,000
5. **Miscellaneous Costs**
 - **Software Licenses and Tools:** ₹20,000
 - **Contingency Fund:** ₹20,000

Total Estimated Cost: ₹4,00,000

2.17. PROJECT SUMMARY

Now that we have completed the project plan you can summarize the details such as:

Performance Indicator	Planned
Total Effort	1344 Hr
Total Duration	56 Days
Start Date	21 Jul 2024
End Date	16 Oct 2024
Cost	4,00,000/- Rs

2.18. RISK MONITORING AND CONTROL

Updated Risk Register

Risk ID	Risk	Risk Response	Resource Responsible for Mitigation	Current Risk Status
1	Over Budget	To maintain the costs within the limit	Project(Full Stack)	Within limits
2	Time	To cover all the operations in the mentioned or allotted time limit	Rakesh(project manager)	All operations done within the allocated time limit

2.19.

2.20. **PROJECT CHANGE CONTROL**

Project Change Control manages changes to scope, timeline, or resources. Any change request is assessed for impact on the project's cost, schedule, and resources. Once approved by the change control board (CCB), the change is implemented, monitored, and documented for tracking and accountability.

2.21. **LESSONS LEARNED**

Phase	What Worked?	What Did not Work?	Lessons for Next Project.
Initiation Phase	Stakeholder engagement	Initial resource allocation	Early planning
Planning Phase	System design	Timeline estimation	Detailed scheduling
Execution Phase	App development	Integration with payment systems	Early integration testing

References:

<https://www.tsrtc.telangana.gov.in>

<https://razorpay.com/docs>

Appendix A

Appendix B