



FINAL TERM PROJECT REPORT

(Group No.04)

PROJECT MANAGEMENT PLAN

<PROJECT NAME: TRAFFIC CONTROL MANAGEMENT SYSTEM >

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DATE : 14/05/2024



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1. INTRODUCTION:

Ushering in a new era of traffic management, the Traffic Control Management System (TCMS) is a revolutionary software solution designed by our team of skilled engineers. This sophisticated system transcends the limitations of past technologies, offering a powerful feature set seamlessly integrated with an intuitive user interface. Acting as a virtual traffic conductor, TCMS collects real-time data from a network of sensors and cameras, meticulously analyzing it to predict and respond to congestion before it arises. Armed with this comprehensive knowledge of traffic flow, TCMS empowers authorities to dynamically adjust traffic light timings, reroute vehicles around bottlenecks, and disseminate real-time advisories to drivers. This proactive approach not only optimizes road network efficiency, minimizing travel times and fuel consumption, but also prioritizes safety by mitigating congestion and preventing accidents. The result is a transformative impact on our transportation system, creating a smoother, safer, and more predictable driving experience for everyone.

2. PROJECT MANAGEMENT APPROACH

Executive Summary: This outlines the project management approach for the implementation of a Traffic Control Management System. This project will be executed by a cross-functional team, with clear roles, responsibilities, and resource allocation.

Project Team:

Project Sponsor: Responsible for overall project vision, strategic decisions, and resource allocation. Holds authority for major project changes and approving additional funding if required.

Project Manager: Oversees project planning, execution, and monitoring. Manages the project team and ensures alignment with project goals.

Technical Lead: Leads the technical aspects of the project, including software development, integration, and quality assurance.

Functional Experts: Subject matter experts from various providing domain-specific insights to ensure system alignment with operational needs.

Development Team: Comprising software developers, database administrators, and UI/UX designers responsible for system development and user interface.

Testing Team: Conducts thorough testing of the system to identify and rectify any defects or inconsistencies before deployment.



Implementation Team: Manages the deployment of the system across locations, ensuring a smooth transition from existing processes.

Resource Allocation:

Financial support, technological infrastructure, and human resources are all required for this endeavor. A certain portion of each team member's working hours will be devoted to the project. Servers, networking hardware, and development environments make up the technical infrastructure. The acquisition of hardware, software licensing, training, and emergency funds will all be covered by financial resources.

Resource Constraints:

Time: The project timeline is set at [duration] months. Delays could impact the system's relevance and potential financial benefits.

Budget: The project budget is [amount], with periodic reviews to track spending. Additional funding may require authorization from the Project Sponsor.

3. PROJECT TITLE: Traffic Control Management System

4. JUSTIFICATION:

In the transportation sector, the Traffic Control Management System is a revolutionary invention. It reworks route experiences to match passengers expectations by automating processes, cutting down on errors, and guaranteeing smooth travel, quick services, and efficient maintenance. Enjoyable visits, positive reviews, and more satisfaction follow from this. The strategy simultaneously reduces costs, increases revenue, and improves worker productivity for secondary stakeholders by redefining traffic operations. Its sophisticated data facilitates targeted marketing, dynamic pricing, and strategic decision-making. The emphasis on efficient communication and cooperation also fosters a positive work atmosphere, which raises employee satisfaction and retention. As a result, the Traffic Control Management System emerges as a crucial instrument that enhances traffic's profitability, standing, and competitiveness while offering substantial benefits to both users and auxiliary stakeholders.



5. OBJECTIVES AND PROJECT SCOPES:

Objectives:

1. The main goal is to guarantee passengers pleasure and deliver first-rate passenger service.
2. To ensure staff satisfaction and retention, the road must provide a favorable work atmosphere and offer training, growth opportunities, and perks.
3. Ensure seamless transactions by processing payments securely and creating invoices.
4. Need to make sure the traffic is successful by keeping a close eye on financial performance and taking calculated risks to cut expenses and boost income.
5. Strict security measures must be put in place to safeguard traffic and visitor information.
6. Keep an eye on and manage the inventory of the many materials needed for traffic operations, including cleaning supplies, food and drink, linens, and amenities.

Scope:

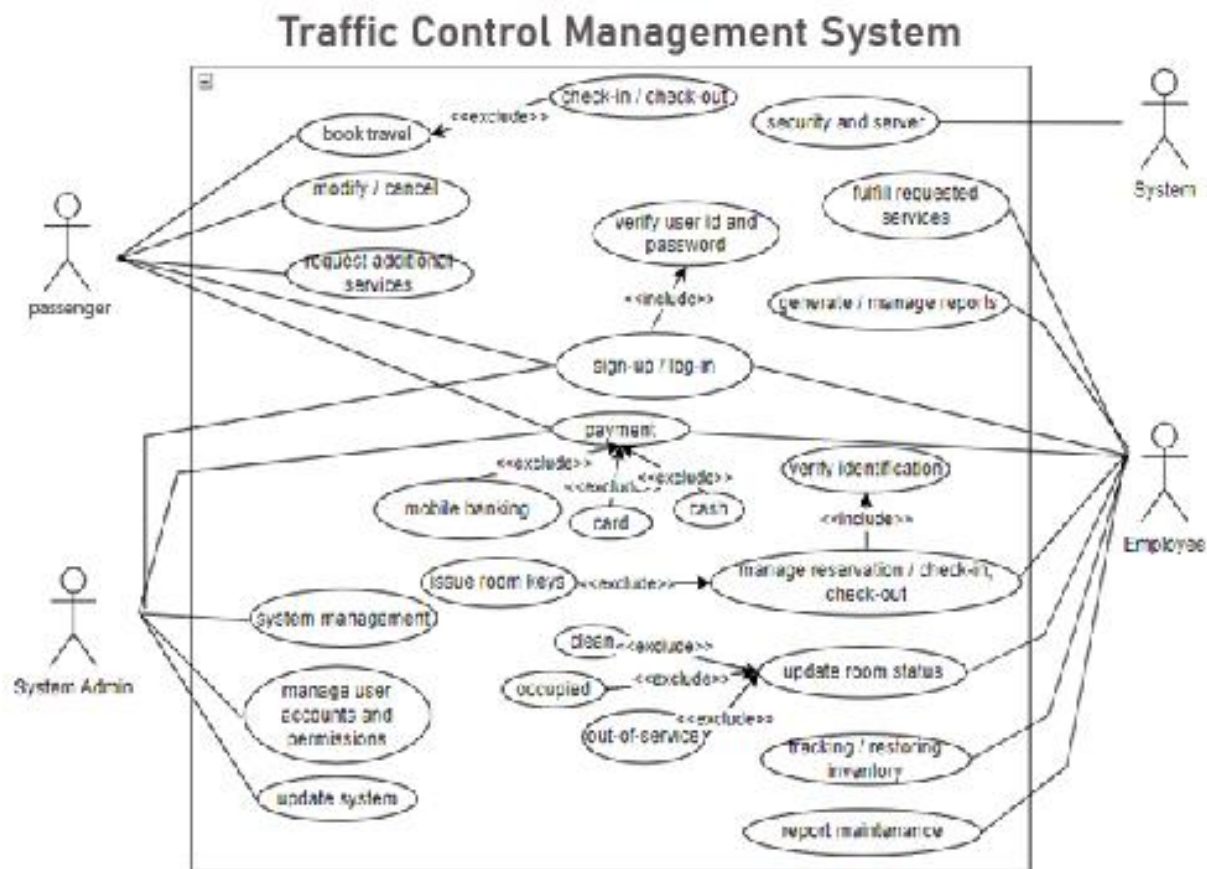
1. **Crowd Management:** The system should give users the ability to display traffic online and give traffic officers the tools they need to assign routes, manage room availability, and change routes.
2. **Passenger In-Out:** The system should make it easier for passengers to enter and exit vehicles, assign routes, issue key cards, and handle payments.
3. **Routes Management:** The system needs to assist in controlling pricing, availability, and sorts of crowds.
4. **Billing and Invoicing:** The system should be able to manage financial activities pertaining to labor costs and services, track payments, and produce correct invoices.
5. **Routing and repair:** Instruments for organizing traffic patterns, repair requests, and routing schedules to guarantee that roads are kept clean and in good condition.
6. **Security and User Access:** Controlling user access and authorization to guarantee the confidentiality and security of data. Management of feedback and reviews: Gathering and managing passenger feedback and reviews to track satisfaction and enhance services.
7. **Service and Training:** Providing passengers service as well as system training for traffic workers.



6. OVERVIEW OF THE PROJECT:

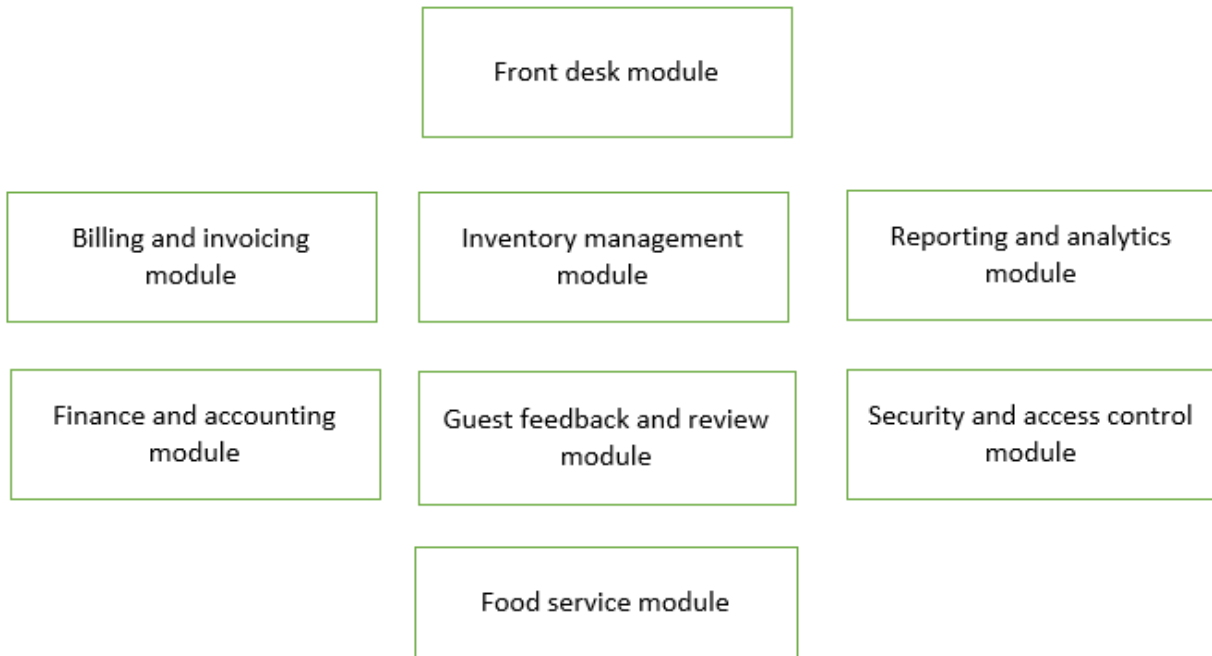
An innovative software tool designed to optimize and expedite traffic operations is the Traffic Control Management System. This all-inclusive system has features for invoicing, reporting, allocating routes, passenger check-in and check-out, scheduling, and reservation management. The primary users of this system are passengers, staff members, and administrators. By confirming their user ID and password, the three of them may log in to the web application. Passengers can adjust traffic, change, or cancel their trip schedule, and request extra services like emergency assistance or rapid moving. Workers carry out a variety of tasks, such as mending objects, fixing roads, monitoring and replenishing stock, scheduling travel, keeping track of arrivals and departures, and producing reports, among other things. There are three methods of payment: cash, credit cards, and mobile banking. Overall, the Traffic Control Management System transforms traffic operations by streamlining procedures, improving passenger experiences, and offering insightful data for smart management.

The use case diagram for the proposed system is given below-





Also, the modules for the proposed system are given below –



7. STAKEHODERS ANALYSIS: Two types of Stakeholders-

Primary stakeholders Traffic Control Management System:

- **Traffic controller:** Controllers are responsible for making any important decisions& overseeing all issues related to traffic. This can include obtaining the necessary business licenses, ensuring the property is well-maintained, investing in improvements or expansions, and all core traffic operations.
- **Traffic management:** Traffic Control Management System is an area of the transportation industry that involves overseeing the operations of a crowd. The team responsible for running the traffic smoothly and ensuring passengers have a good experience.
- **Passengers:** People who travel at the road, pay for fast travel, and expect a comfortable and pleasant stay with proper security.
- **Staff:** Employees working in the road. They do whatever makes passengers comfortable, including taking reservations, planning parties and maintaining the traffic.
- **Maintenance personnel:** Workers take care of repairs and upkeep, ensuring everything functions properly.
- **IT department:** This department oversees all the systems and software used across the traffic. Whether it's reservations and passenger service software, maintenance scheduling



systems, internal phone lines connections, all digital solutions are the responsibility of the IT department.

- **Accounting department:** Accounting department responsible for managing financial transactions such as- budgeting and payroll. This department records and maintain the financial records and performance of a traffic business. Good accounting makes the finances of a traffic easy to understand for management and other stakeholders – so they can make informed decisions.

Secondary stakeholders of Traffic Control Management System:

- **Local community:** People who live around the traffic are known as a local community. They are affected by activities like traffic & noise. But the local community will become even more important to define and differentiate brands. As more travelers seek to have unique and local experiences
- Highlighting the best region has to offer will create an authentic experience for passengers, and by partnering with the local community.
- **Government authorities:** Officials who ensure the traffic follows regulations and laws, like building codes and safety standards.
- **Investors:** Individuals or groups who financially support the development and growth. They invested money in the traffic and want to see a return on their investment.
- **Competitors:** Other traffic in the area that the traffic competes with for passengers and business by providing proper service and safety.

8. MILESTONE LIST

Changes to milestones or delivery dates for a Traffic Control Management System project are addressed using key events and collaborative processes in the Scrum model. These gatherings, which include Backlog Refinement, Sprint Planning, Daily Standups, and Sprint Review and Retrospective sessions, offer forums for open debate, adaptation, and reprioritization. In order to maintain open communication with stakeholders, the Product Owner and Development Team collaborate to modify plans as necessary. The continuous improvement emphasis of the framework helps the team to address problems and make appropriate adjustments, ensuring that the project is in line with objectives and providing value to stakeholders.

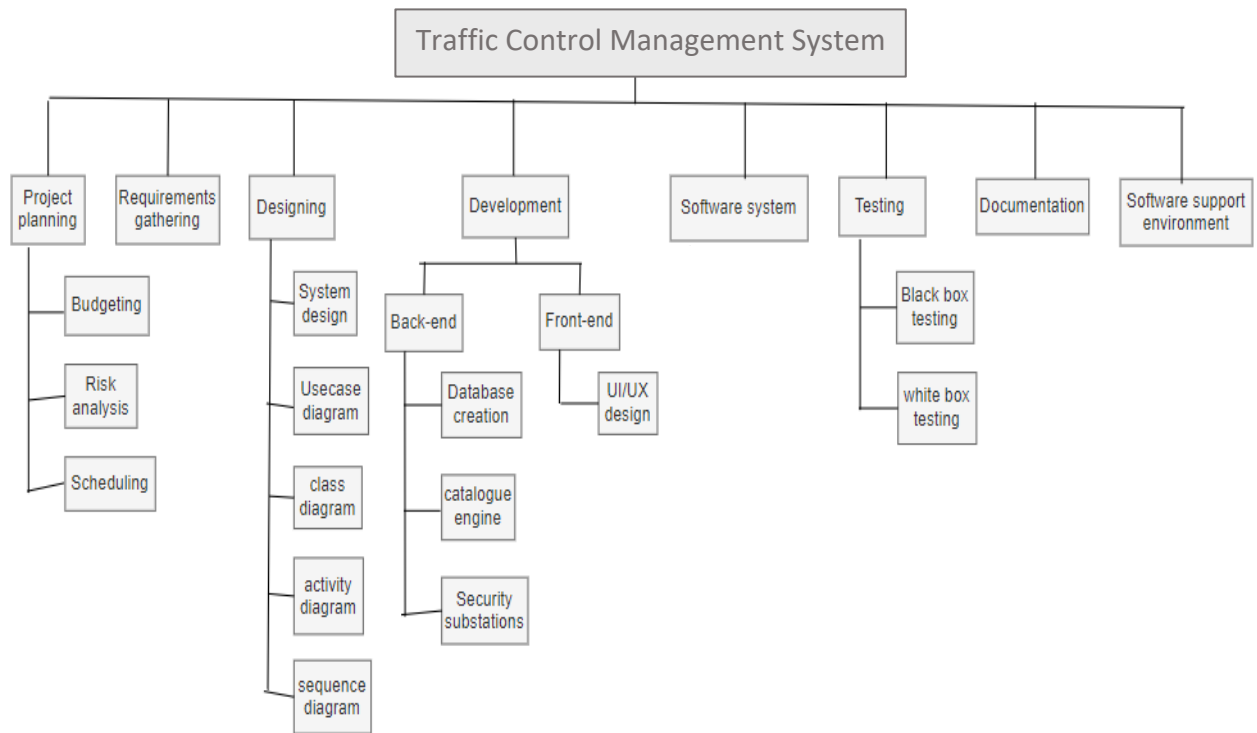


9. Process Model to be followed:

The selected process model for this project is “SCRUM”. Scrum is a type of Agile framework. It is light-weighted, easy to understand also Scrum framework help the team to work together. Scrum uses Iterative process. The Scrum model for a Traffic Control Management System Traffic Control Management System involves iterative development cycles called "sprints." During each sprint, a cross-functional team of developers, designers, and testers work collaboratively to deliver incremental improvements to the system. The process includes tasks like backlog creation, sprint planning, daily stand-up meetings, development, testing, and sprint review. This iterative approach allows the Traffic Control Management System to evolve gradually, ensuring that features are implemented, tested, and refined in a structured and efficient manner.

As in Scrum, passengers’ satisfaction is more important which helps to develop Traffic Control Management System in a proper way. By that, the traffic can give service to the passengers properly and can ensure passengers satisfaction. Also, Scrum framework is fast moving, money efficient and adaptive in nature because it has short sprint. For all of this advantages Scrum model is chosen for this project.

10. WORK BREAKDOWN STRUCTURE:



11. ESTIMATION: For estimation we took COCOMO MEODEL and Activity Network Diagram

COCOMO MODEL:

In our project, we can assume that SLOC is 15000. This project is semi-detached project.

$$\begin{aligned}
 \text{Effort} = \text{PM} &= \text{Coefficient} \langle \text{Effort Factor} \rangle * (\text{SLOC}/1000) ^P \\
 &= 3.0 * (15000/1000) ^{1.12} \\
 &= 62.28 \text{ persons-months}
 \end{aligned}$$

$$\begin{aligned}
 \text{Development Time} = \text{DM} &= 2.50 * (\text{PM}) ^ T \\
 &= 2.50 * (62.28) ^{0.35} \\
 &= 10.61 \text{ months}
 \end{aligned}$$

$$\begin{aligned}
 \text{Required Number of people} = \text{ST} &= \text{Effort (PM)}/\text{Development Time (DM)} \\
 &= 62.28 / 10.61 \\
 &= 5.87 \sim 6 \text{ persons}
 \end{aligned}$$



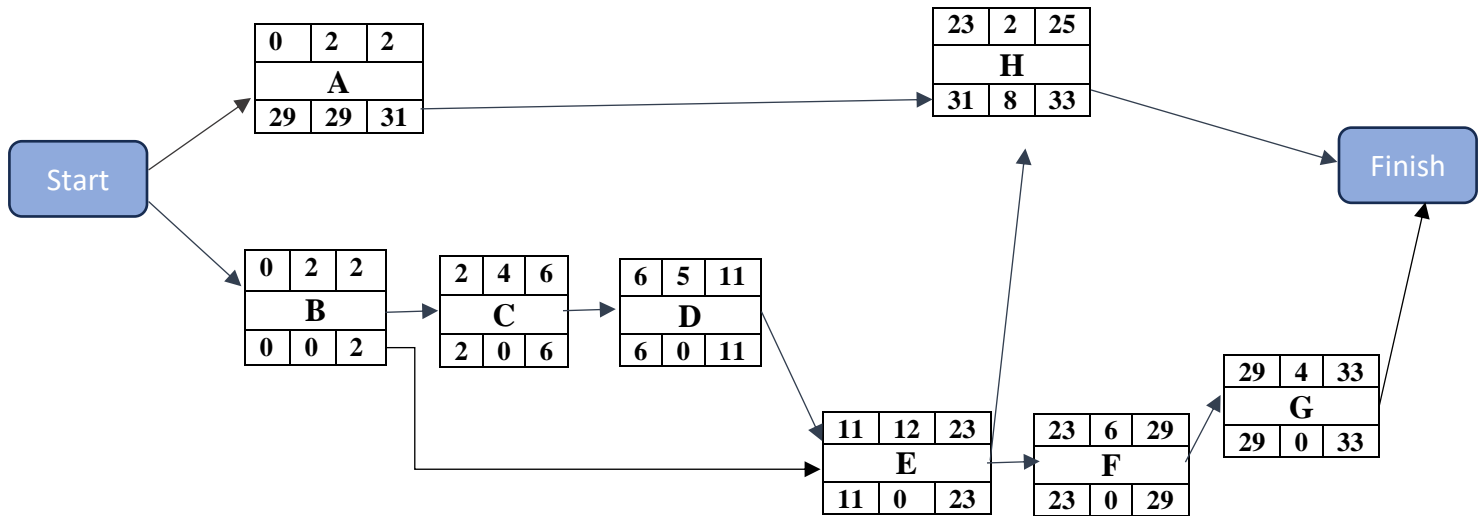
From the above estimation,

Software Project Type	Coefficient Factor	P	T
Semi-detached	3.0	1.12	0.35

Activity network diagram:

Label	Activity	Duration	Precedence
A	Hardware selection	2	-
B	Software selection	2	-
C	Planning	4	B
D	Design	5	C
E	Coding & Testing	12	B, D
F	File take on & Build	6	E
G	User training	4	F
H	Start-up	2	A, E

Earliest Start (ES)	Duration	Earliest Finish (EF)
Activity Label, Activity Description		
Latest Start (LS)	Float	Latest Finish (LF)



Critical path analysis :

$$A - H = 2 + 2 = 4 \text{ weeks}$$

$$B - C - D - E - F - G = 2 + 4 + 5 + 12 + 6 + 4 = 33 \text{ weeks}$$

$$B - E - F - G = 2 + 12 + 6 + 4 = 24 \text{ weeks}$$

$$B - E - H = 2 + 12 + 2 = 16 \text{ weeks}$$

So, Path -2 is the critical path as it has the highest number.

12. RESOURCE REQUIREMENTS

12.1 SOFTWARE REQUIREMENTS

I. Operating Systems:

- Mac, OS, Android, Linux, Windows

ii) Software Components:

- Web Server: Apache Tomcat 9.0
- Database: MongoDB 4.2
- Modeling Frameworks: spring boot (android), Asp.net (desktop).

12.2 HARDWARE REQUIREMENTS

- Server: Intel Xeon multi-core CPU, 16GB RAM, 1TB storage



- Client: Standard business PC (Intel i3 4th generation/ AMD Ryzen 3 2nd generation, 4 GB RAM minimum recommended)
- CC Camera
- Server

12.3 HUMAN RESOURCE REQUIREMENTS

- **Management and Administrative Staff:**

General Manager
Operations Manager
Front Office Manager
Traffic Controller
Human Resources Manager
Finance Manager

- **Front Desk and Passenger Services:**

Controller
Concierge
Porters

- **Maintenance:**

Maintenance Technicians

- **Sales and Marketing:**

Sales Representatives
Marketing Executives

- **Human Resources:**

Recruiters
Training and Development Specialists

- **Finance:**

Accountants

- **Security:**



Security Guards

- **Event Planning and Coordination (if applicable):**

Event Planners

Event Coordinators

- **Health and Safety:**

Health and Safety Officers (ensuring compliance with safety regulations)

- **IT and Technology:**

IT Support Specialists (for managing reservation systems, tech infrastructure, etc.)

- **Transportation (if applicable):**

Drivers

13. PROJECT SCHEDULE:

The project timeline is estimated to be 6 months consisting of 12 two-week sprints.

- Sprint 1 - Requirements finalization
- Sprint 2-3 - Core framework and backend development
- Sprint 4-8 - Feature development
- Sprint 9-11 - User testing and fixes
- Sprint 12 - Final validation and release

14. DELIVERY PLAN: The delivery plan in the Scrum model of project planning is a detailed plan that outlines the steps required to deliver a product increment. It includes a list of tasks, estimated time required to complete each task, and any dependencies between tasks. The plan is created during the Sprint Planning meeting and is used to guide the team's work during the Sprint. The delivery plan is reviewed and updated at the Daily Scrum meeting to ensure that the team is on track to meet its goals. It is flexible and can be adjusted as needed throughout Sprint to accommodate changes in priorities or new information.

15. RISK ANALYSIS:

- **Lack of Resource:** Resource limitations could hinder the development and quality of the project by limiting the supply of skilled workers, equipment, or infrastructure.



- **Scope creeping:** Scope creep occurs when the project's specifications alter or expand as it is being developed. Delays, higher expenses, and probable timeline problems can emerge from this.
- **Late Delivery of products:** Late product delivery can lead to missed deadlines, higher expenses, unsatisfied passengers, and wasteful resource use, which could influence the project's reputation and success.
- **Budget risks:** These are risks related to the project's budget. Examples include cost overruns, unexpected expenses, and changes in funding.
- **Wrong Estimation:** Improper estimating can result in schedule delays, cost overruns, scope expansion, and lowered quality.
- **Lack of Testing:** Having fewer beta testers than anticipated can lead to limited feedback and a shortened list of potential problems. This could increase the likelihood of defects going undetected, usability problems, and inadequate testing of the software's performance in real-world circumstances.

16. QUALITY CONTROL PLAN:

➤ Service Standards and Guidelines:

Clear service standards for each department, such as front desk etc. Establish guidelines for passengers' interactions, cleanliness, response times, and other key aspects of passenger experience.

➤ Staff Training and Development:

Develop a training program for new employees, covering service etiquette, communication skills, and other relevant areas.

➤ Passenger Feedback and Surveys:

Set up a system for collecting passenger feedback and conducting satisfaction surveys. Analyze feedback to identify areas for improvement and address any issues promptly.

➤ Performance Metrics and KPIs:

Define key performance indicators (KPIs) for each department, such as occupancy rates, passenger satisfaction scores, and revenue per available room (RevPAR). Regularly track and evaluate these metrics to gauge the traffic's performance.



➤ **Maintenance and Cleanliness:**

Cleaning and maintenance schedules to ensure that facilities and common areas are well-maintained. Conduct routine inspections to verify compliance with cleanliness standards.

➤ **Compliance with Regulations:**

Ensuring that the traffic complies with local, regional, and national regulations related to, health, safety, and labor.

➤ **Technology and Systems:**

Regularly update and maintain the traffic's technology systems, including systems, systems, and passenger management software.

➤ **Emergency Preparedness:**

Develop and communicate emergency procedures for staff to follow during fire alarms, natural disasters, medical emergencies, etc.

➤ **Supplier and Vendor Management:**

Establish quality standards for suppliers and vendors providing goods and services to traffic. Regularly review and assess their performance to ensure they meet the required standards.

➤ **Continuous Improvement:**

Encourage a culture of continuous improvement by regularly reviewing processes and identifying areas for enhancement.

➤ **Communication Channels:**

Maintaining clear communication channels between departments to ensure seamless coordination and efficient problem-solving.

➤ **Staff Recognition and Incentives:**

Implement a recognition program to reward outstanding employees who consistently exceed quality standards.

17. BUDGET:



Development Cost:

Total working days = Monthly working days * DM = 22 * 12 = 264 days

Total Working hours = Working hours per day * Total working days = 8*264 =2112 hours

Development cost per employee = Total Working hours * per hour salary [per hour salary = 200]
= 2112 * 200 = 422,400 BDT

Total development cost = ST * Development cost per employee = 7 * 422,400
= 2,956,800 BDT

Project manager salary for 12 months = (12*20,000) = 2,40,000 BDT (UI/UX)

Management and other employees' salary for 12 months =35,000BDT (Designer)

Salary for 12 months = (15,000 * 12 * 1) = 1,80,000BDT Database Administrator

Salary for 12 months = (15,000 * 12 * 1) = 1,80,000BDT

Maintenance Cost:

Monthly 12 Hours (6 months and per hour salary 1000) Cost = (12 x 6 x 1000) = 72,000 BDT

Hardware Expenses:

Server cost = 1,20,000 BDT

Desktop/Laptop cost = (7 * 60,000) = 4,20,000 BDT

Printer cost = 20,000 BDT

Total hardware expenses = (120,000 + 420,000 + 20,000) = 5,60,000BDT

Other Expenses:

Office rent for 14 months = (12*15,000) = 1,80,000 BDT

Utility bills = 1,50,000 BDT

Stationaries cost per month = 2,000 BDT

Total cost for 12months = (2,000 * 12) = 24,000 BDT

Total Estimated cost = (2,956,800 + 2,40,000 + 2,40,000 + 2,10,000 + 1,80,000+ + 72,000 + 4,20,000 + 1,80,000 + 24,000) = 4,522,800 BDT



25% profit of total estimated cost = $(0.25 \times 4,522,800) = 18,091,200 \text{BDT}$

Total estimated budget = $(45,522,800 + 18,091,200) = 22,614,000 \text{ BDT}$

19. CONCLUSION:

TRAFFIC CONTROL MANAGEMENT SYSTEM is a company that specializes in providing enterprises with distinctive solutions. We put a lot of effort into creating solutions to meet your specific needs so that the job is completed correctly the first time. We employ the newest technologies and pay special attention to usability. This approach was particularly designed with humans in mind. It provides modules that are easy to use and include submodules that provide the user conveniences. This system is designed in a way that is easy for non-techies to understand and use. This system has intelligent links and is fully GUI-based.