Waterfall Model Document

Document 1 – Business Case Document.

Why is this project initiated?

The Tour Management System is initiated to address inefficiencies in organizing, managing, and delivering tour-related services. The tourism industry faces various challenges, including manual booking processes, lack of real-time coordination, difficulty in managing tour packages, and inefficient customer service. The system aims to streamline operations for tour operators, travel agencies, and customers by automating key processes.

Improving Operational Efficiency

- Automates tour package creation, booking, and itinerary management.
- Reduces manual work and errors in tour scheduling and coordination.

Enhancing Customer Experience

- Provides an online platform for easy tour selection, booking, and payments.
- Offers real-time updates on bookings, availability, and tour details.

Centralized Data Management

- Stores and manages customer information, booking history, and tour details in one system.
- Reduces dependency on paperwork and manual record-keeping.

Revenue Growth and Business Expansion

- Enables dynamic pricing, promotional offers, and package customization.
- Facilitates seamless integration with third-party service providers (hotels, transport, guides).

Real-time Communication and Support

- Allows instant notifications, itinerary updates, and emergency assistance.
- Chatbots or customer service support for quick issue resolution.

Regulatory Compliance and Safety

- Ensures compliance with travel regulations, permits, and safety guidelines.
- Tracks traveller details for security and emergency management.

What are the current problems?

- Manual Booking Process Travel agencies rely on phone calls, emails, and spreadsheets, leading to errors and delays.
- Limited Customer Engagement Lack of an online platform prevents customers from easily exploring and booking tour packages.
- Inefficient Data Management No centralized database for managing customers, bookings, and payments, causing inconsistencies.
- Lack of Automation Time-consuming manual processes for payment collection, invoice generation, and report analysis.
- Operational Bottlenecks Difficulty in tracking tour availability, cancellations, and customer feedback.

With this project how many problems could be solved?

Manual and Inefficient Booking Process to Automated Online Booking

- Customers can book tours in real-time via an online platform.
- Eliminates overbooking and human errors in scheduling.

Difficulty in Managing Tour Packages to Centralized Package Management

- Tour operators can create, modify, and update tour packages instantly.
- Itineraries can be customized and shared with customers digitally.

Lack of a Centralized Database to Integrated Data Storage

- Customer records, bookings, and financial transactions are stored in one system.
- Easy access to past and current bookings, customer preferences, and analytics.

Payment and Financial Management Issues to Seamless Online Payments

- Secure payment gateway integration (credit/debit cards, UPI, wallets, etc.).
- Automated invoices, refunds, and payment tracking.

Ineffective Marketing and Sales Strategy to Automated Marketing Tools

- Integration with social media, email campaigns, and targeted promotions.
- AI-driven customer recommendations for personalized offers.

Problems That Will Be Partially Solved, Not Completely but Improved,

Poor Customer Experience to Enhanced Support and Interaction

- 24/7 chatbot assistance for quick inquiries and issue resolution.
- Self-service portal for bookings and modifications. (However, human intervention may still be required for complex requests.)

Poor Communication and Coordination to Real-time Notifications & Updates

- Instant alerts for itinerary changes, cancellations, and travel advisories.
- Improved coordination between tour operators, hotels, and transport providers (but dependent on third-party integrations).

Compliance and Security Issues to Enhanced Security & Regulatory Compliance

- Secure customer data encryption and fraud prevention mechanisms.
- Helps manage travel permits and documentation digitally, but legal compliance still requires manual verification in some cases.

Out of the 8 major problems, at least 5 can be completely solved, while 3 can be significantly improved with automation and real-time data management.

What are the resources required?

Human Resources:

- Business Analyst
- Project Manager
- ✤ UI/UX Designer
- Frontend Developer
- Backend Developer
- Database Administrator
- Software Tester
- DevOps Engineer
- Customer Support

Technical Resources:

- Development Tools & Software:
- Frontend Development: React, Angular
- Backend Development: Node Js, Python, PHP, Java
- Database Management: MySQL, Mongo DB
- Cloud & Hosting: AWS, Microsoft Azure, or Firebase.
- Version Control: GitHub, GitLab or Bitbucket.
- Payment Integration: Paypal, Razorpay, credit/debit.
- Manual & Automated Testing: Selenium, JMeter.

Infrastructure Resources:

- Workstation & Development PC's
- Servers & Cloud Storage
- Internet & Networking

Financial Resources:

- Software Development Cost: 20,00,000/-
- Cloud Hosting & Domain: 16,000/- Per Month.
- ✤ API & Third-Party Services: 40,000/-
- Marketing & Training Cost: 1,60,000/-
- Ongoing Maintenance: 80,000/- Per Year

These are the above resources required for building Tour Management System.

How much organizational change is required to adopt this technology?

Implementing the Tour Management System requires moderate to high levels of organizational change, depending on the current level of digitalization within the organization.

Process Changes (High Impact)

- Automation of Manual Tasks Booking, payments, customer communication, and tour management will shift from manual handling to a digital system.
- Real-Time Updates & Notifications Staff will need to adapt to automated alerts for itinerary changes, cancellations, or customer requests.
- Customer-Centric Operations Enhanced data-driven decision-making based on customer behaviour and preferences.

Workforce Adaptation (Moderate Impact)

- Training on New Software Employees (tour operators, customer service, finance teams) need training to effectively use the system.
- Change in Job Roles Some roles may shift from administrative tasks (manual booking, ledger keeping) to customer engagement and analytics-based decision-making.
- Tech Support & IT Integration The organization may need to hire or upskill IT staff to manage system updates and security.

Financial Investment: (Moderate Impact)

- Initial Setup Costs One-time investment in software, infrastructure, and staff training.
- Operational Cost Reduction Over time, automation will reduce operational expenses (e.g., fewer manual processes, reduced paperwork, improved resource utilization).

Customer Interaction: (Moderate Impact)

- Improved Self-Service Options Customers can book and manage their tours without human intervention.
- Personalized Experience AI-based recommendations and automated follow-ups for a better experience.

Third Party integration: (High Impact)

- Collaboration with Hotels, Transport, & Guides External vendors must be onboarded to integrate their services into the system.
- Payment & Compliance Integration Secure payment gateways and regulatory compliance checks must be integrated.

Time frame to recover ROI?

According to the Time Fame, the ROI factors like implementation costs, business size, efficiency improvements, and increased revenue from automation. Typically, businesses can expect ROI recovery within 12 to 36 months.

How to identify Stakeholders?

Sr. No	Resource Name	Designation	Details
1.	Mr. Mayur Shiralkar	Business Analyst	Mail Id: ms@gmail.com
			Phone: 8888663523
2.	Mr. Kailash Shankar	Project Manager	Mail Id: <u>ab@gmail.com</u>
			Phone: 7757456332
3.	Mr. Shailesh Kumar	UI/UX Designer	Mail Id: <u>sk@gmail.com</u>
			Phone: 6889874745
4.	Mr. Govind Thakur	Frontend Developer	Mail Id: gt@gmail.com
			Phone: 9966363225
5.	Miss. Shreya Bhide	Backend Developer	Mail Id: <u>sb@gmail.com</u>
			Phone: 7787559596
6.	Mr. Aayush Bankar	Database Administrator	Mail Id: <u>ks@gmail.com</u>
			Phone: 7782633689
7.	Miss Pournima Gokhale	Software Tester	Mail Id: pg@gmail.com
			Phone: 8888585858
8.	Mrs. Gayatri Ondkar	DevOps Engineer	Mail Id: go@gmail.com
			Phone: 7787899694
9.	Mr. Sameer Dongre	Customer Support	Mail Id: sd@gmail.com
			Phone: 9669688485

Document 2: BA Approach Strategy

As a BA, the steps are undertaken and mentioned as below,

There are several Elicitation Technique mentioned below,

- **Brainstorming**: Generating a wide range of idea from individual or group.
- **Document Analysis**: Referencing the existing document for relevant information.
- **<u>Reverse Engineering</u>**: Generally done for the migration project, and to understand what the system does.
- **Focus Group**: Exploring ideas and opinion with facilitated group.
- **Observations:** Providing information of existing process, inputs, and outputs.
- **Workshops**: Defined duration, which is briefly repeated to clarify and obtain further details.
- **JAD**: JAD stands for Joint Application Development, involves the collaboration between the stakeholder and system analyst.
- **Interview**: Understanding the perspective of every stakeholder to gain a better value.
- **<u>Prototyping</u>**: Creating mock-ups or model to validate idea or requirement.
- **<u>Questionaries</u>** (Survey): Structured form or tool to collect input from board audience.

Stakeholder Analysis, RACI Matrix:

R/A/C/I	Resource Name	Designation	Details
Responsible	Mr. Mayur Shiralkar	Business Analyst	Mail Id: ms@gmail.com Phone: 8888663523
Consulted	Mr. Aayush Bankar	Project Manager	Mail Id: <u>ab@gmail.com</u> Phone: 7757456332
	Mr. Shailesh Kumar	UI/UX Designer	Mail Id: <u>sk@gmail.com</u> Phone: 6889874745
	Mr. Govind Thakur	Frontend Developer	Mail Id: <u>gt@gmail.com</u> Phone: 9966363225
Responsible	Miss. Shreya Bhide	Backend Developer	Mail Id: <u>sb@gmail.com</u> Phone: 7787559596
	Mr. Kailash Shankar	Database Administrator	Mail Id: <u>ks@gmail.com</u> Phone: 7782633689
	Miss Pournima Gokhale	Software Tester	Mail Id: pg@gmail.com Phone: 8888585858
	Mrs. Gayatri Ondkar	DevOps Engineer	Mail Id: go@gmail.com Phone: 7787899694
Consulted	Mr. Sameer Dongre	Customer Support	Mail Id: <u>sd@gmail.com</u> Phone: 9669688485

Documents to Write: As a BA Strategy approach, various documents can be,

- <u>BRD</u>: BRD stands for Business Requirement Document, is a high-level business need and objective for a project. Mainly focuses on what business want to achieve describing the problem, goal, and key deliverables.
- **FRD**: FRD stands for Functional Requirement Document, is a detailed functional specification of a system or a solution, focusing on how the system should function to meet the business requirement stated in BRD.
- <u>Use case Document</u>: Describes a specific interaction between a user (or system) & system to achieve a particular goal. It narrates the steps including alternative flows.
- <u>Test Case Document</u>: Specifies individual test scenarios and conditions and expected outcomes to validate the system or application meets the requirements.

Process to follow Sign off Document: Defines the signoff process for the project documents. This process should involve the stakeholder reviewing and approving the documents ensuring their alignments with the business needs and project objectives. Sign off can be taken on the SRS (Software Requirement Specification) Document as this is a primary and important document. Email confirmation is one more method by which Sign off can be done. **Approvals from the Client:** It is a formal process to obtain the approvals from the client at key millstone or stage of the project. This may include conducting review meeting, walkthroughs, and acceptance on written deliverables.

<u>Communication Channels</u>: Establish effective communication channels with stakeholder including regular meetings, status update and progress report. Use tools like email, project management software and collaboration platform to facilitate efficient communication & information sharing.

Handle Change Requests: Process to manage the change request. Include the documenting the change request, accessing their impacts on projects scope, timeline and budget and obtaining appropriate approvals before implementing the changes.

<u>Update of the project</u>: Provide regular project updates to stakeholders, including the project manager, technical team, and committee members. This can be done through status reports dashboards and meeting to ensure the transparency.

Signoff UAT (Client Project Acceptance Form): It is the process for the User Acceptance Testing, where client test the system and provides feedback. This ensures the project meets the Client expectations.

Project Name	Tour Management System
Customer Name	Mr. Krishna Dwarkadish
Project Version	TMS_PV1.01
Project Sponsor	Mr. Krishna Dwarkadish
Project Manager	Mr. Kailash Shankar
Project Initiation Date	1.03.2025

Document 3: Functional Specification

Function Requirement Specification:

Requirement Id	Requirement Name	Requirement	Priority
		Description	
FR0001	FR0001 User Registration & Customer, tour		10
	Login	Login operators and admin	
	can register and login to		
		the portal/system.	
FR0002	Tour Package	Admin/Tour Operators	8
	Management	can manage, modify,	
		create, and delete	
		packages.	

FR0003	Booking and Reservation	Customer can book tour	9
	Packages	instantly	
FR0004	Payment and Bill System	Client and Customer	8
		can make payment via	
		available options like	
		Net banking, Credit,	
		Debit, UPI.	
FR0005	Customer Support &	Customer can be able	8
	Communication	to have smooth	
		communications via	
		messages, emails.	
FR0006	Report and Analytics	Customer can view the	7
		reports of the tour and	
		performance metrics	
FR0007	Third Party Integration	Admins/Tour Operators	6
		can collaborate with the	
		third party.	
FR0008	Security & Complience	Customer can actively	8
		implant the security	
		over the packages	
		which they have	
		enclaved with	

Document 4 – Requirement Traceability Matrix

Requirement Id	Requirement Name	Requirement Description	Design	D1	T1	D2	T2	UAT
FR0001	User Registration & Login	Customer, tour operators and admin can register and login to the portal/system.	Yes	Yes	Yes	Yes	Pending	Pending
FR0002	Tour Package Management	Admin/Tour Operators can manage, modify, create, and delete packages.	Yes	No	No	No	Yes	Pending
FR0003	Booking and Reservation Packages	Customer can book tour instantly	Yes	Yes	Yes	Yes	Yes	Pending
FR0004	Payment and Bill System	Client and Customer can make payment via available	Yes	No	No	Pending	Yes	Yes

		options like Net banking, Credit, Debit, UPI.						
FR0005	Customer Support & Communication	Customer can be able to have smooth communications via messages, emails.	Yes	Yes	Yes	Yes	Yes	Yes
FR0006	Report and Analytics	Customer can view the reports of the tour and performance metrics	Yes	Yes	Yes	Yes	Yes	No
FR0007	Third Party Integration	Admins/Tour Operators can collaborate with the third party.	Pending	Yes	Yes	Yes	Yes	Yes
FR0008	Security & Compliance	Customer can actively implant the security over the packages which they have enclaved with	Yes	Yes	Yes	Yes	Yes	Yes

BRD (Business Requirement Document):

Project Name: Tour Management System. Project ID: TMS05. Version ID: TMS_PV1.01 Author: Mayur Shiralkar.

1. Document Revision:

Date	Version Number	Document Changes
01.02.2025	0.1	Initial Draft
02.02.2025	0.2	UAT Test Cases
05.02.2025	0.5	Minutes of Meeting
06.02.2025	0.6	Document Clouser

2. Approvals:

Role	Name	Title	Signature	Date
Project Sponsor	Krishna	Approved	K. D	03.03.2025
	Dwarkadish			
Business Owner	Ganesh	Approved	G. G	03.03.2025
	Godbole			
Project	Kailash Shankar	Approved	K. S	03.03.2025
Manager				
System	Karthik Sonar	Pending	K. S	02.03.2025
Architect				
Development	Isha Gore	Approved	I. G	01.02.2025
Lead				
User Experience	Shreya Gadgil	Pending	S. G	06.03.2025
Lead				
Content Lead	Sameer	Approved	S. D	02.02.2025
	Deshpande			

3. RACI Chart:

Resource Name	Position	*	R	Α	S	С	I
Mr. Mayur Shiralkar	Business Analyst		*				
Mr. Kailash Shankar	Project Manager					*	
Mr. Shailesh Kumar	UI/UX Designer		*				
Mr. Govind Thakur	Frontend Developer		*				
Miss. Shreya Bhide	Backend Developer		*				
Mr. Aayush Bankar	Database		*				
	Administrator						
Miss Pournima Gokhale	Software Tester		*				
Mrs. Gayatri Ondkar	DevOps Engineer		*				
Mr. Sameer Dongre	Customer Support						*

4. Introduction:

4.1 Business Goal:

The tourism industry is highly competitive and relies on efficient operations, seamless customer experiences, and strong vendor coordination. The primary goal of the Tour Management System is to enhance operational efficiency, improve customer satisfaction, and drive business growth.

4.2 Business Objective:

- Automating the booking and payment process to reduce manual workload.
- Enhancing customer satisfaction through a seamless user experience.
- Improving data accuracy and security with a centralized database.
- Enabling business insights through reports and analytics for strategic decisionmaking.

This system will serve as a scalable solution for travel agencies, helping them adapt to evolving customer expectations and market demands. By leveraging technology-driven automation, we aim to foster efficiency, boost revenue, and provide a competitive edge in the travel industry.

4.3 Business Rule:

Business rules define the policies, constraints, and guidelines that govern the functioning of the Tour Management System. These rules ensure smooth operations, compliance, and consistency in managing tour bookings, payments, cancellations, and customer interactions.

- User Management Rule.
- Tour Management Rule.
- Payment and Billing Rule.
- Tour Package Management Rule.
- Customer Support and Communication Rule.

The business rules ensure that the Tour Management System operates efficiently, fairly, and securely while complying with industry standards and customer expectations. These rules help maintain service quality, financial accuracy, and seamless coordination between all stakeholders.

4.4 Background:

In today's fast-paced world, the travel and tourism industry are rapidly growing, and businesses must adopt digital solutions to stay competitive. Many travel agencies still rely on manual booking processes, leading to inefficiencies such as errors, delays, and customer dissatisfaction. Additionally, the lack of a centralized system makes it difficult to track tour availability, manage customer records, and handle payments seamlessly.

4.5 Project Objective:

- Automating the booking and payment process to reduce manual workload.
- Enhancing customer satisfaction through a seamless user experience.
- Improving data accuracy and security with a centralized database.
- Enabling business insights through reports and analytics for strategic decisionmaking.

This system will serve as a scalable solution for travel agencies, helping them adapt to evolving customer expectations and market demands. By leveraging technology-driven automation, we aim to foster efficiency, boost revenue, and provide a competitive edge in the travel industry.

4.6 Project Scope:

The Tour Management System is designed to automate and streamline tour operations, including booking, package management, payment processing, and customer interactions. This system aims to enhance efficiency, improve customer satisfaction, and increase revenue for travel agencies and tour operators.

4.6.1 In Scope Functionality: Includes,

- User Management
- Tour Package Management
- Booking & Reservation System
- Payment & Billing
- Customer Communication
- Reports & Analytics
- Third Party Integration
- Security & Compliance

4.6.2 **Out Scope Functionality**: Includes,

- Offline Booking & Walk in Reservation
- Custom Travel Insurance Policy
- Visa Processing & International Compliance
- Multi Language Support

5. Assumption:

Assumptions are key factors that are considered true for the successful development and deployment of the Tour Management System. These assumptions help set expectations and guide project execution; hence they are mentioned below,

- Technical Assumption
- Business Assumption
- User & Operational Assumption
- Security & Compliance Assumption
- Financial Assumption

6. Constraints:

Constraints define the limitations and restrictions that may impact the development, implementation, and operation of the Tour Management System. These are listed here below,

- Technical Constraints
- Business Constraints
- User & Operational Constraints.

7. <u>Risk</u>:

Risk assessment is crucial for identifying potential challenges that could impact the success of the Tour Management System.

- Avoid: These are risks that can be prevented by making changes in the process or technology.
 - System Downtime Due to Poor Infrastructure

Action: Use cloud-based servers with auto-scaling and backups to ensure uptime.

• Failure to Comply with Data Protection Laws (GDPR, PCI DSS)

Action: Implement strong data encryption, limit data collection, and comply with global travel and payment regulations.

• Inaccurate Pricing & Availability Updates

Action: Enforce automated real-time updates from tour operators before publishing packages.

- <u>Mitigate</u>: These risks cannot be fully avoided, but their effects can be minimized.
 - Cybersecurity Threats (Hacking, Data Breaches, Phishing)

Action: Use firewalls, SSL encryption, multi-factor authentication (MFA), and regular security audits.

• High Cancellation Rates

Action: Introduce non-refundable deposits, flexible rescheduling policies, and encourage travel insurance.

• Low Customer Adoption

Action: Improve UI/UX, provide onboarding tutorials, discounts, and customer loyalty programs.

• Fraudulent Bookings & Chargebacks

Action: Use AI-based fraud detection systems and require identity verification for high-value bookings.

- Transfer: These risks can be outsourced or insured to reduce financial or operational burdens.
 - Financial Loss Due to Chargebacks or Fraudulent Transactions Action: Use a third-party payment processor (e.g., PayPal, Stripe) that provides fraud protection.
 - System Downtime or Technical Failures

Action: Use cloud providers (AWS, Google Cloud) with service-level agreements (SLAs) for uptime guarantees.

- Vendor & Partner Dependency (Hotels, Transport Services, Guides) Action: Establish contract agreements with vendors that include penalty clauses for non-performance.
- Legal Compliance Risks Action: Hire legal consultants to ensure the system meets global and local travel regulations.
- Accept: Some risks cannot be avoided, mitigated, or transferred but must be accepted as part of the business.
 - Market Competition

Why Accept? Competitors will always exist, but the system can differentiate through better service, pricing, and features.

• Seasonal Demand Variability

Why Accept? The tourism industry naturally fluctuates. The system can adapt by offering seasonal discounts and promotions.

• User Resistance to Technology Adoption

Why Accept? Some customers may prefer offline bookings, but over time, more will transition to digital platforms.

Unexpected Global Events (Pandemics, Natural Disasters)

Why Accept? These events cannot be controlled, but offering flexible cancellations and refunds can help retain customers.

Technological Risk:

Technological risks refer to potential technical failures, limitations, or vulnerabilities that may impact the development, implementation, and operation of the Tour Management System. Here are some,

- System Downtime & Performance Issue
- Data Loss or Corruption
- Cybersecurity Threats
- Integration Failure with Third Party Services

Skill Risk:

Skill risk refers to potential challenges related to human expertise, knowledge gaps, and workforce capabilities in successfully developing, implementing, and maintaining the Tour Management System.

- Lack of Technical Expertise
- Inadequate Cybersecurity Awareness
- Resistance to Change & Low User Adoption
- Insufficient Customer Support
- Poor Project Management & Co-ordination
- Lack of Data Analytics & Report Skills
- Failure to keep up with the Emerging Technologies

Political Risk:

Political risks refer to government regulations, policies, international relations, or political instability that may impact the development, operation, or profitability of the Tour Management System.

- Change in Travel Regulation
- Political Instability
- Government Regulations on online Business and Data Regulations
- Taxation and Financial Regulation
- Trade Restriction and Sanctions

Business Risk:

Business risks refer to uncertainties and challenges that can affect the profitability, market position, and sustainability of the Tour Management System. These risks arise from market conditions, competition, operational failures, and financial factors.

- Market Competition & Change Customer Preference
- Low Customer Adoption & User Resistance
- Revenue Instability Due to Seasonal Demand
- High Operational Cost & Financial Constraint
- Failure to secure the Reliable Vendor & Partner Relationship
- Trust & Reputation Risk
- Legal & Compliance Issue
- Economic Downturns & External Crises

Requirement Risk:

Requirement risks arise when project requirements are unclear, incomplete, frequently changing, or misinterpreted. These risks can impact the development timeline, cost, functionality, and overall success of the Tour Management System.

- Unclear or Incomplete Requirement
- Frequent Requirement Changes
- Misalignment between Technical & Business Team
- Poorly Prioritize Requirement
 - 8. Business Process Overview:



The Tour Management System (TMS) is designed to streamline and automate the booking, planning, and execution of tours for travellers and tour operators. It integrates customers, tour agencies, travel guides, and payment providers into a single platform for a seamless travel experience.

- Key Stakeholders
- Core Business Process
- System Benefits

8.1 Legacy System (AS-IS):

- Customer Enquire
- Tour Booking Confirmation
- Payment Processing
- Tour Execution & Technical Support

8.2 Proposed Recommendation (TO-BE):

- Customer Registration & Profile Setup
- Automated Tour Search & Selection
- Online Booking & Instant Selection
- Secure online Payment & Invoicing
- Tour Execution & Realtime Co-ordination
- Customer Support & Assistance
- Feedback & Review Management

9. Business Requirements:

- Customer Registration & Profile Setup
- Automated Tour Search & Selection
- Online Booking & Instant Selection
- Secure online Payment & Invoicing
- Tour Execution & Realtime Co-ordination
- Customer Support & Assistance
- Feedback & Review Management

10. Appendices:

10.1 List of Acronyms:

- TMS: Tour Management System
- CRM: Customer Relationship Management
- ✤ UI: User Interface
- UX: User Experience
- API: Application Programming Interface
- ROI: Return on Investment

10.2 Glossary of Terms:

- Tour Management System: A software solution designed to automate and streamline the process of managing tour packages, bookings, payments, and customer interactions.
- Real Time Availability: The feature that updates and displays the current number of available slots for a tour package.

Payment Gateway: A service that processes online payments securely, supporting various methods such as credit cards, PayPal, and digital wallets.

10.3 Related Documents:

- ✤ Business Documentation
- Functional & Technical Documentation
- Risk & Compliance Documentation
- User & Training Documentation
- Project Management Documents