Document 1 – Business case Document for hospital billing system

1. **Why is the projected initiated?**
   HBS Application initiated to create a user-friendly, efficient and problem-solving application. Which gives tremendous benefit.

- **Need for modernization**: Existing billing processes are manual, error-prone, and slow.
- **Compliance pressure**: Regulatory bodies require accurate and timely billing.
- **Revenue leakage**: Missed charges and delayed claims reduce hospital income.
- **Patient experience**: Long billing queues and unclear invoices frustrate patients.

2. What are the current problems?

- **Manual data entry** leads to frequent errors.
- **Lack of integration** with EMR, pharmacy, and lab systems.
- **Delayed insurance claims** due to incomplete documentation.
- **No real-time billing visibility** for patients or finance teams.
- **Limited audit trail** for billing disputes or fraud detection.

3. With this project, how many problems could be solved?

- **Automated billing workflows** reduce manual errors.
- **Integrated system** connects departments for seamless charge capture.
- **Real-time claim generation** improves insurance turnaround.
- **Transparent billing dashboards** enhance patient trust.
- **Audit-ready logs** support compliance and dispute resolution.

4. What are the resources required?

- **Human resources**: Business Analyst, Project Manager, Developers, QA, Trainers.
- **Technical resources**: Cloud infrastructure, database servers, billing software licenses.
- **Financial resources**: Budget for development, testing, training, and rollout.
- **Time**: Estimated 4–6 months for full implementation.

5. How much organizational change is required to adopt this technology?

- **Process reengineering**: Staff must shift from manual to digital workflows.
- **Training programs**: For billing clerks, finance teams, and front-desk staff.
- **Policy updates**: New SOPs for billing, audits, and insurance handling.
- **Stakeholder alignment**: Buy-in from doctors, finance, IT, and admin teams.

6. Time Frame to Recover ROI – Hospital Billing System

Answer:

The hospital billing system aims to automate and streamline billing operations, reduce claim rejections, and improve revenue cycle efficiency. The ROI (Return on Investment) can be recovered within **9 to 12 months**, based on the following factors:

Initial Investment: Includes software development, integration with existing HIS (Hospital Information System), training, and infrastructure upgrades.

- **Cost Savings**:
    - Reduction in manual billing errors
    - Faster claim processing and fewer denials
    - Lower administrative overhead
- **Revenue Gains**:
    - Improved cash flow through real-time billing and insurance verification
    - Enhanced tracking of patient dues and insurance reimbursements
- **Measurement Metrics**:
    - Monthly billing accuracy rate
    - Claim approval turnaround time
    - Reduction in billing cycle duration

Example: If the hospital processes 5,000 claims/month and reduces denial rate by 15%, the financial impact could justify ROI recovery within the first year.

7.How to Identify Stakeholders – Hospital Billing System

Answer:

Stakeholder identification is critical for aligning the billing system with operational and strategic goals. Stakeholders are identified using **RACI analysis**, interviews, and process mapping.

Internal (IT-side) Stakeholders:

- **Project Manager** – Accountable for delivery
- **Business Analyst** – Responsible for requirement gathering
- **Developers & QA Team** – Responsible for system build and testing
- **System Architect** – Consulted for integration and scalability

External (Business-side) Stakeholders:

- **Hospital Finance Team** – Consulted for billing workflows and compliance
- **Billing Clerks** – Responsible for day-to-day operations
- **Insurance Coordinators** – Consulted for payer integration
- **Patients** – Indirect stakeholders affected by billing transparency and accuracy

Identification Methods:

- Conduct stakeholder workshops and interviews
- Review existing billing workflows and pain points

- Use RACI chart to define roles: *Responsible, Accountable, Consulted, Informer.*

Document 2.

BA Approach Strategy – Hospital Billing System

1. Introduction: The purpose of this document is to outline the Business Analyst (BA) Approach Strategy for the **Hospital Billing system** It defines the steps to be followed, stakeholder analysis, elicitation techniques, documentation processes, communication plans, change management, and sign-off procedures.

- **Initiation**: Understand hospital billing pain points (e.g., claim denials, manual errors)
- **Requirement Gathering**: Use elicitation techniques to capture billing workflows
- **Documentation**: Create BRD, Functional Specs, RTM
- **Validation**: Review with stakeholders and get sign-offs
- **Support Development & Testing**: Ensure requirements are traceable and testable
- **UAT & Closure**: Facilitate client acceptance and final sign-off

2. Project Overview:

Project Name: Hospital billing system
Business Analyst: Miss.Dhanshree Adbhaiya
Project Sponsor: Dr. Pathak
Project Manager: Mr. Barbarik

Stakeholder	Roles
Mr. Barbarik	Project manager
Miss. Rose	Senior Java Developer
Miss Priya	Java Developer
Miss Rupa	Network Admin
Mr. Anshu	Database Admin
Mr. Robin	Tester
Miss Dhanshree Adbhaiya	Business Analyst
DR. Pathak	Project sponsor
Miss Tanushree	Financial Head
Mr. Harsh	Project coordinator
Mr. Swayam	Key stakeholder

3. BA Approach Strategy - Step by Step Process: We will be following 4 phases to go through the BA Approach Strategy -

Phase 1: Requirement Elicitation & Stakeholder Analysis

1. **Identify Business Needs & Objectives**
   - Conduct discussions with Project Sponsor & Key Stakeholders.
   - Understand business challenges, goals, and expected outcomes.

2. **Stakeholder Identification & Analysis**
   • Create RACI Matrix (Responsible, Accountable, Consulted, Informed) to define stakeholder roles. • Use ILS (Influence, Legitimacy, and Support) Analysis to prioritize
   stakeholder input
3. **Requirement Elicitation Techniques**
   Stakeholder Interviews – One-on-one discussions with project owners.
   • Workshops & Brainstorming – Engaging with developers & testers.
   • Surveys & Questionnaires – Collecting feedback from end-users.
   • Prototyping – Visualizing key functionalities for validation.
   • Document Analysis – Studying existing e-commerce solutions & competitors.

Phase 2: Documentation & Approval Process

4. **Key Documents to be Created**
   • Business Case Document – Justifies the need for the project.
   • Business Requirement Document (BRD) – Captures high-level business needs.
   • Functional Specification Document (FSD) – Outlines system features & behaviours.
   • Requirement Traceability Matrix (RTM) – Tracks requirements across development phases.
   • Process Flow Diagrams – Visual representation of business processes.
5. **Approval Process** • Document Walkthroughs with Project Manager & Developers.
   • Key Stakeholder Review & Feedback (Swayam).
   • Final Approval from Project Sponsor (Dr. Pathak) & Financial Head (Miss. Tanushree)
   . • Sign-off through Email, Digital Signature, or Approval Form.

Phase 3: Development, Testing & Change Management

6. **Supporting Development & Testing**
   • Collaborate with Senior Developer (Mindy) & QA Team (miss. Rose& Madeline).
   • Validate UI/UX through Prototyping & Mock-ups.
   • Conduct Requirement Reviews with Developers before implementation.
7. **Handling Change Requests**
   • Change Request Submission (CRF - Change Request Form).
   • Impact Analysis on cost, timeline & project scope.
   • Stakeholder Discussion & Approval.

• Development, Testing & Final Sign-Off.

Phase 4: UAT & Project Acceptance

8. User Acceptance Testing (UAT) & Final Sign-Off

• Prepare a UAT Plan outlining key test scenarios.
• Conduct UAT with Key Stakeholders (Swayam).

- Fix reported issues & validate changes.
- Obtain Final Client Sign-Off via Project Acceptance form.

Client Project Acceptance Form

Criteria	Status	Comments
Functional Requirement Met	Done	
No critical defects Found	Done	
Performed Performance Tested &Approved	Done	
Business Approval Received	Done	
UAT sign-off Received	Done	

Communication Channels for Internal Stakeholders:

Stakeholder	Communication Mode	Frequency	Purpose
Project Manager (**Barbarik**)	Emails, Jira, Meetings	Weekly	Project Updates & Risks
BA (Dhanshree Adbhaiya	Jira, Meetings	Daily	Requirement Discussions
Developers (Mindy, Camille, Gabriel)	Jira	Daily	Development Updates
Testers (Robin)	Jira, Reports	Weekly	Bug Reporting & Testing Updates
Project Sponsor (Dr. Pathak)	Reports, Presentations	Monthly	Budget & Milestones
Key Stakeholders (Swayam)	Meetings, Reports	Bi-Weekly	Requirement Review & Feedback

Stakeholder Reporting & Project Progress Updates:

Report Type	Frequency	Audience	Mode of Communication
Weekly Status Report	Weekly	Project Team	Email, Jira
Sprint Review Report	Bi-Weekly	Developers, Testers	Jira, Teams
Financial Report	Monthly	Financial Head, Sponsor	Presentation
Risk & Issue Log	Monthly	Project Sponsor	Confluence

Conclusion

This Business Analyst Approach Strategy ensures structured execution of the "Hospital billing system" project, enabling seamless documentation, stakeholder alignment, and clear communication for successful project completion.

Prepared by: Mr. Dhanshree Adbhaiya (Business Analyst)

Date: 04/09/2025

Reviewed by: Mr. Barbarik (Project Manager)

Approved by: Dr. Pathak (Project Sponsor)

Document 3 - Functional Specifications Document for PAT Application

Project name	Hospital billing system
Patient name	Mr. Lucky
Project Version	1.0
Project Sponsor	Dr. Pathak
Project Manager	Mr. Barbarik
Project Initiation date	07/04/2025

Functional Requirement Specifications

Function Requirement	Description	Priority
Patient Registration	Capture patient demographics, assign unique ID, and link to billing records	High
Service Charge Capture	Automatically record charges for consultations, labs, pharmacy, procedures	High
Invoice Generation	Create itemized bills with taxes, discounts, and payment status	High
Payment Processing	Accept payments (cash, card, UPI), generate receipts, and update balances	High
Insurance Claim Management	Validate coverage, generate claim forms, track status, and reconcile payments	Medium
Refund & Adjustment Handling	Process refunds, apply billing corrections, and maintain audit trail	Medium
Reporting & Analytics	Generate revenue reports, dues, audit logs, and export to Excel/PDF	Medium
Role-Based Access Control	Define user roles (Admin, Clerk, Auditor) and restrict sensitive data access	High
Integration with EMR/EHR	Sync treatment data for accurate billing	Medium
Alerts & Notifications	Notify users of pending payments, claim rejections, or billing errors	Low
Audit Trail	Log all billing edits, payment entries, and user actions for compliance	High
Multi-Language Support	Enable billing in local languages for patient-facing documents	Low

System Constraints & Assumptions

- The platform must be accessible via web and mobile devices.
- Security protocols should be in place to protect user data.
- Scalability to handle peak traffic loads.

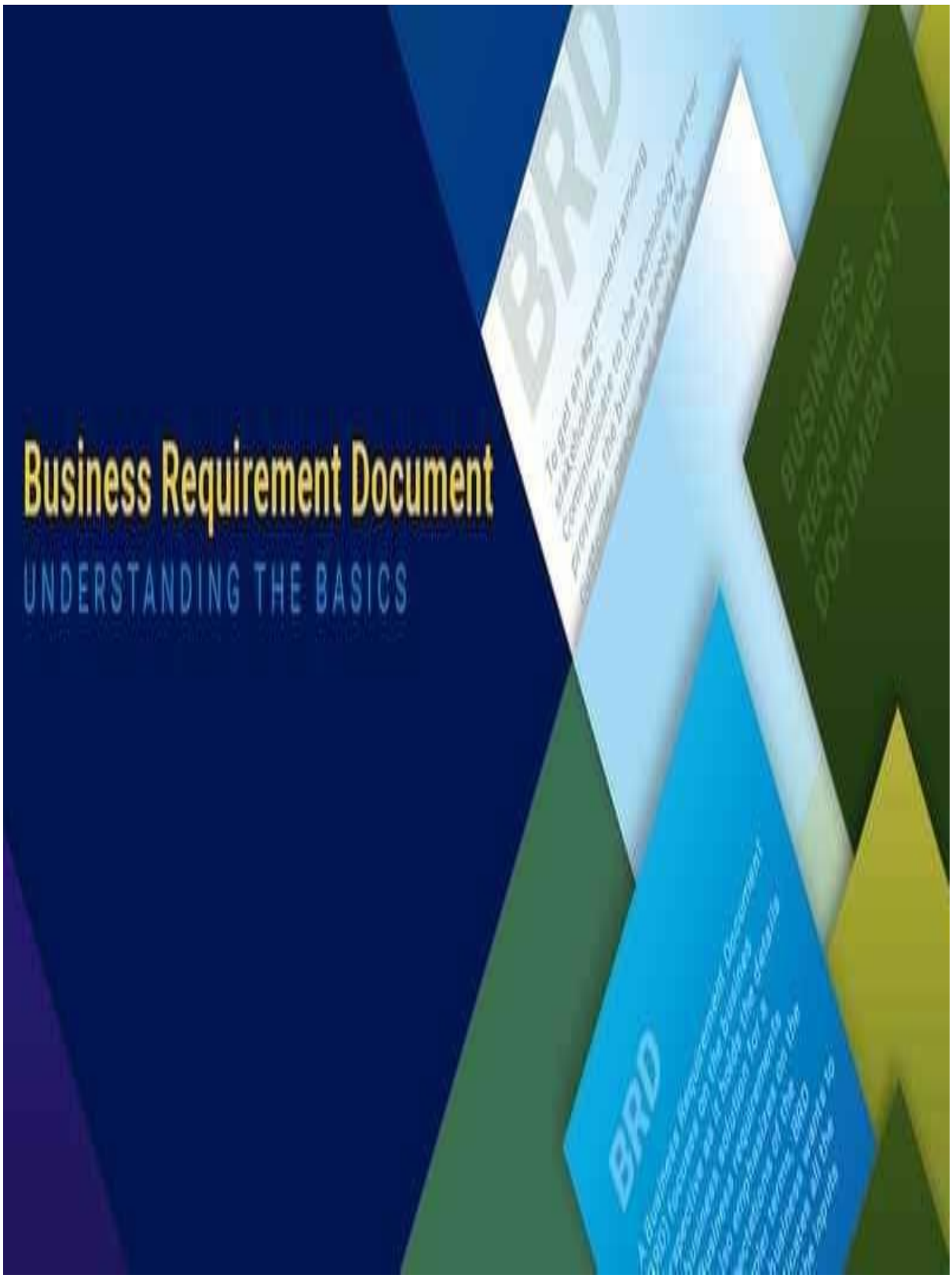
Document 4- Requirement Traceability Matrix for HBS Application.

Requirement Traceability Matrix (RTM) document for the **HBS Application** to help track the project requirements from identification to testing and deployment.

Hospital Billing System – RTM (Waterfall Model)

Req. ID	Requirement Description	SDLC Phase	Design Component	Test Case ID	Stakeholder	Status
RQ001	Patient registration and unique ID generation	Requirements	Registration Module	TC001	Admin, Receptionist	Approved
RQ002	Insurance details capture and verification	Requirements	Insurance Interface	TC002	Billing Clerk	Approved
RQ003	Service-wise billing with itemized breakdown	Design	Billing Engine	TC003	Finance Dept	In Review
RQ004	Real-time billing updates during patient stay	Design	Inpatient Billing Tracker	TC004	Ward Nurse, Admin	In Review
RQ005	Integration with lab and pharmacy systems	Implementation	API Integration Layer	TC005	IT Team	Pending
RQ006	Automated invoice generation and email dispatch	Implementation	Invoice Generator	TC006	Patient, Admin	Pending
RQ007	Audit trail for billing modifications	Testing	Audit Log Module	TC007	Compliance Officer	Pending
RQ008	Role-based access to billing data	Testing	Access Control Layer	TC008	Security Team	Pending
RQ009	Monthly revenue reports and analytics	Deployment	Reporting Dashboard	TC009	Management	Pending
RQ010	Backup and recovery of billing data	Maintenance	Data Recovery Module	TC010	IT Team	Pending

Document 5- BRD Template for PAT Application



Dhanshree Adbhaiya BA

07/04/2025

Contents

1. Document Revisions

Date	Version Number	Document Changes
07/04/2025	1.0	Initial Draft

2.Approvals

Role	Name	Title	Signature	Date
Project Sponsor	Mr. Jack	Executive Stakeholder		
Business Owner	Mr. Amo	Strategic Business Lead		
Project Manager	Mr. Barbarik	Delivery & Operations Manager		
System Architect	Mr. Mario	Technical Architecture Lead		
Development Lead	Mr. Lucky	Software Engineering Manager		
User Experience Lead	Miss. Lucy	UX/UI Design Head		
Quality Lead	Mr. Benoit	QA & Testing Manager		
Content Lead	Mr. Nicolas	Content Strategy Manager		

3.RACI Chart for This Document

Codes Used in RACI Chart

Authorize document.		**Has ultimate signing authority for any changes to the**
R	Responsible	Responsible for creating this document.
A	Accountable	Accountable for accuracy of this document (for example, the project manager)
S	Supports	Provides supporting services in the production of this document.
C	Consulted	Provides input (such as an interviewee).
I	Informed	Must be informed of any changes.

RACI Chart

Name	Position	*	R	A	S	C	I
Mr. Barbarik	Project Manager		*	*			*
Miss Dhanshree Adbhaiya	Business Analyst		*		*	*	*
Miss. Rose	Senior Developer			*	*		*
Dr. Pathak	Sponsor			*			*

4.Introduction

4.1 Business Goals

- Improve billing accuracy and reduce claim rejections

- Accelerate revenue cycle turnaround
- Ensure compliance with healthcare regulations

4.2 Business Objectives

- Automate patient billing workflows
- Integrate with EMR and insurance systems
- Provide real-time billing status dashboards

4.3 Business Rules

- Billing must occur within 24 hours of discharge
- Insurance eligibility must be verified before claim submission
- Co-pay and deductible rules vary by payer

4.4 Background

Legacy billing system is manual, error-prone, and lacks integration with clinical systems.

4.5 Project Objective

Implement a robust, rules-driven billing system that supports inpatient, outpatient, and emergency billing.

4.6 Project Scope

4.6.1 In Scope Functionality

- Patient registration and charge capture
- Insurance verification and claim generation
- Payment posting and denial management

4.6.2 Out Scope Functionality

- Clinical documentation
- Pharmacy inventory management

5. Assumptions

- All departments will provide timely input
- Regulatory requirements remain stable during implementation
- Third-party APIs for insurance verification are available

6. Constraints

- Budget capped at ₹1.2 crore
- Go-live deadline: 6 months from project start

- Limited availability of billing SMEs

7. Risks

Technological Risks

- Integration failures with EMR or payer systems

Skills Risks

- Limited internal expertise in HL7/FHIR standards

Requirements Risks

- Incomplete capture of specialty billing rules

Other Risks

- Resistance to change from billing staff

8. Business Process Overview

8.1 Legacy System (AS-IS)

Manual charge entry, paper-based claims, delayed reimbursements

8.2 Proposed Recommendations (TO-BE)

Automated charge capture, electronic claims, real-time dashboards

9. Business Requirements

- BR001: System shall validate insurance eligibility in real time
- BR002: System shall generate UB-04 and CMS-1500 forms
- BR003: System shall support ICD-10 and CPT coding
- BR004: System shall track claim status and flag denials

10. Appendices

10.1 List of Acronyms

- EMR: Electronic Medical Record
- UB-04: Uniform Billing Form
- CPT: Current Procedural Terminology

10.2 Glossary of Terms

- **Charge Capture**: Recording billable services
- **Denial Management**: Resolving rejected claims

10.3 Related Documents

- Hospital Billing SOP
- HL7 Integration Guide
- Regulatory Compliance Checklist