FAST National University of Computer and Emerging Sciences

Software Project Management (SPM)

Assignment 3

Group Members:

Muneel Haider	21i-0640
Muhammad Abdullah	21i-0643

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Requirements Traceability Matrix:

The main requirements tracked in this matrix include AI-powered diagnostics, an appointment booking system, multi-layered security architecture, a user-friendly mobile and web interface, and comprehensive documentation. Each requirement is mapped to its source (e.g., stakeholders, project charter) and assigned a priority based on its criticality to project success. The current statuses indicate areas where development is complete, ongoing, or pending.

Regular updates to the matrix have enabled the team to identify gaps early, such as the need for additional labeled datasets for training the AI model. These insights have informed task prioritization and resource allocation. Notes accompanying each requirement provide valuable context for future project phases, such as deployment and scaling. The following table summarizes the requirements:

Requirement ID	Requirement Description	Source	Priority	Current Status	Notes
R1	AI-based Diagnostic Report Generation	Stakeholders	High	85% Complete	Model trained on 70% of labeled datasets; refinement underway.
R2	Appointment Booking System	Project Charter	High	Implemented	Tested and deployed; integrated with backend APIs.
R3	Multi-Layered Security Architecture	Risk Register	High	60% Complete	Encryption protocols completed; server-side optimizations pending.

R4	Mobile & Web Application Development	Stakeholders	Medium	75% Complete	UI finalized; backend integration in progress.
R5	User Documentation	Project Scope	Medium	Pending	Awaiting finalized testing results for accurate documentation.

Project Schedule Execution:

The execution phase of the HealthBridge project is closely monitored through a detailed Gantt chart. This chart highlights task timelines, dependencies, and milestones to ensure adherence to the project schedule. Regular updates to the Gantt chart have allowed for real-time tracking of progress, identifying delays, and adjusting timelines accordingly.

Recent changes to the schedule include the extension of AI model training by two weeks to accommodate additional labeled datasets acquired from medical institutions. This change was necessary to ensure the diagnostic model meets accuracy standards. Similarly, backend integration tasks were rescheduled to overlap partially with frontend debugging to optimize resource utilization. These changes, while minor, were justified by the improved efficiency and output quality.

The critical path analysis was updated to reflect these changes. Tasks like AI training, backend integration, and system testing are now prioritized to meet the overall project deadline. The adjustments have also been communicated to stakeholders through weekly progress reports. Below is a summary of the current critical changes:

- **Change 1**: AI model training extended by two weeks to integrate larger datasets.
- **Change 2**: Backend integration tasks rescheduled to overlap partially with frontend debugging.

- **Impact**: Improved task coordination and output quality without affecting overall project deadlines.

Document and Version Control:

Version control is crucial to maintaining a record of all project documents, including updated versions and change logs. For the HealthBridge project, every document from Parts 1 and 2 has been reviewed, updated, and uploaded to the central wiki. This includes the risk register, issue register, and milestone reports. Each updated version highlights the revisions made, accompanied by justifications and notes for future reference.

The final version of the risk register, for example, includes new risks such as delays in acquiring labeled datasets for AI training. Mitigation strategies, such as engaging multiple medical institutions and using alternative datasets, have been added to address these risks. Similarly, the issue register has been updated to reflect resolved issues like API dependency conflicts and frontend navigation bugs.

These updates have been shared with the team and stakeholders through regular email reports. Each document version is labeled with a timestamp and version number to avoid confusion. The older versions remain accessible in the wiki for auditing purposes. This practice ensures transparency, accountability, and consistency across all project documentation.

- **Risk Register Updates**: Added risks related to data acquisition delays and multi-layered architecture issues.
- **Issue Register Updates**: Resolved Chatbot integration errors and UI inconsistencies.
- **Version Management**: Uploaded all final versions to the wiki with change logs.

Risk Register:

The updated risk register captures potential project risks, their impact, probability, and mitigation strategies. The HealthBridge project involves several technical and operational risks, including integration challenges, data security concerns, and delays in AI model development. The final version of the risk register consolidates all previously identified risks and includes new entries based on recent progress.

The highest-impact risks include data security breaches, which could compromise patient information, and delays in acquiring labeled datasets, which could affect the accuracy of AI diagnostics. Mitigation strategies for these risks have been updated. For example, advanced encryption and penetration testing are employed to minimize security vulnerabilities. Similarly, proactive engagement with multiple data sources ensures timely dataset availability.

The updated register also emphasizes risks like API call failures under high concurrency and multi-layered architecture challenges. These are being addressed through scalable architecture and regular code reviews. Weekly progress meetings continue to serve as a platform for discussing emerging risks and mitigation plans.

Risk ID	Description	Impact	Probability	Mitigation Strategy
R1	Data security breaches	High	Low	Advanced encryption and regular penetration testing.
R2	Technical issues with integration	Medium	Low	Weekly progress reviews and debugging sessions.
R3	Delays in AI model development	High	Medium	Regular updates from the research team and weekly supervisor reviews.
R4	Dataset acquisition delays	High	Medium	Engage multiple medical institutes for labeled datasets.

Issue Register:

The issue register documents problems encountered during the project and the actions taken to resolve them. In the final version, issues like dataset availability, chatbot integration errors, and UI inconsistencies have been addressed. Each issue entry includes a description, date raised, impact level, and resolution details.

For example, the delay in acquiring labeled datasets was resolved by engaging additional data sources and reallocating tasks to maintain progress. Similarly, chatbot integration errors caused by outdated dependencies were fixed by updating libraries and debugging API conflicts. UI inconsistencies across platforms were addressed through standardized layouts and responsive design testing.

Issue ID	Description	Date Raised	Impact	Action Taken
I1	Dataset availability	19th September	High	Additional datasets acquired from institutions and online sources.
I2	Chatbot integration error	26th October	Medium	Updated library dependencies and resolved API conflicts.
I3	Cross-platform UI inconsistencies	5th November	Medium	Standardized responsive layouts for mobile and web applications.

Team Meeting Agendas and Minutes

Team meetings have been a crucial part of the HealthBridge project, ensuring alignment among all team members and stakeholders. Weekly meetings have been conducted to discuss progress, address challenges, and finalize action points. Each meeting follows a structured agenda, with detailed minutes documenting discussions and decisions.

Meeting Date: 12th November 2024

- **Agenda**:
    - Review AI diagnostic refinement progress.
    - Evaluate backend integration challenges.
    - Set deadlines for testing and debugging phases.
- **Minutes**:
    - AI diagnostic refinement is 85% complete. The additional labeled datasets acquired have been integrated into the model, and initial accuracy metrics are promising.
    - Backend integration is encountering minor API conflicts. A task force was formed to resolve these conflicts within 3 days.
    - Finalized unit testing timelines for the AI diagnostic feature, which will start next week.

Meeting Date: 19th November 2024

- **Agenda**:
    - Review of completed milestones and upcoming tasks.
    - Address risks identified during integration testing.
    - Incorporate stakeholder feedback into UI enhancements.
- **Minutes**:
    - The project is progressing on track, with milestones achieved as per the revised schedule.
    - Deployment bottlenecks related to server performance were discussed, and a plan for scalability testing was approved.
    - UI adjustments based on stakeholder feedback were incorporated, improving usability for mobile users.

These meetings have ensured that all team members remain informed and that any deviations from the project plan are promptly addressed.

Milestone Report:

The milestone report tracks the progress and status of key project objectives. It provides an updated overview of completed and pending milestones, ensuring transparency and accountability. The final version of the report reflects the revised timelines and justifications for any delays.

The **initial platform setup** was completed successfully, providing a robust foundation for subsequent phases. The **data refining process for the Chatbot** is marked as completed, with all necessary adjustments integrated into the system. The **AI model finalization** is 85% complete, delayed slightly due to dataset challenges, but on track for completion within the extended timeline. **System integration testing** has begun, with a focus on resolving backend compatibility issues.

Milestone	Completion Date	Status	Notes
Initial Platform Setup	12th October 2024	Completed	Backend APIs and user interface successfully integrated.
Data Refinement for Chatbot	10th November 2024	Completed	Debugging and adjustments finalized.
AI Model Finalization	27th November 2024	In Progress	Dataset integration delays; extended by two weeks.
System Integration Testing	5th December 2024	On Track	Critical bugs resolved; final QA pending.
Deployment	5th January 2025	Pending	Final round of testing and stakeholder review required.

This milestone report highlights the overall health of the project and justifies any schedule deviations.

Lessons Learned Report

The lessons learned during the HealthBridge project provide valuable insights for future initiatives. These lessons encompass technical, operational, and strategic aspects, aiming to improve efficiency and effectiveness in subsequent projects.

1. **Dataset Preparation**:
   Early acquisition and preparation of labeled datasets are essential for AI-driven projects. Delays in acquiring these datasets impacted the timeline for AI model training and refinement. Engaging multiple data sources at the planning phase can mitigate such risks.

2. **Cross-Team Collaboration**:
   The initial phases of the project revealed gaps in communication between the backend and frontend teams. Introducing weekly joint team meetings significantly improved task alignment and issue resolution, reducing delays during integration.

3. **Infrastructure Scalability**:
   Scalability issues identified during early testing required mid-project infrastructure upgrades. Planning for higher server loads and testing scalability early in the project lifecycle could have prevented these bottlenecks.

4. **Buffer Time for Testing**:
   Allocating additional time for integration and system testing allowed the team to address critical bugs without impacting deployment schedules. This practice should be institutionalized in future projects.

5. **Stakeholder Feedback Integration**:
   Regular feedback from stakeholders, especially regarding UI/UX, proved invaluable. Early prototypes helped identify usability issues, resulting in a more user-friendly final product.

These lessons underscore the importance of proactive planning, robust communication, and stakeholder engagement in project success.

Wiki

The project's wiki serves as a comprehensive repository for all documentation, ensuring accessibility, transparency, and ease of navigation for all stakeholders. The final version of the wiki is structured, visually appealing, and user-friendly, with a focus on organizing information in a logical and intuitive manner.

- **Structure**:
  - The wiki is divided into clearly defined sections:
    - **Project Overview**: Details the objectives, goals, and scope of the project.
    - **Technical Documentation**: Includes architecture diagrams, API specifications, and system integration details.
    - **Testing Logs**: Consolidates reports from unit, integration, and user acceptance testing.
    - **Lessons Learned**: Summarizes key takeaways and improvements for future projects.
- **Navigation**:
  - A hyperlinked table of contents provides direct access to all major sections.
  - Embedded diagrams and charts enhance understanding of workflows, schedules, and architecture.
  - A search function allows users to locate specific documents or topics quickly.
- **Visual Design**:
  - The wiki uses a clean layout with consistent formatting. Key points are highlighted using bullet points and headings.
  - Responsive design ensures compatibility across devices, including mobile and desktop.

The final wiki aligns with the project's commitment to transparency and collaboration, serving as a valuable resource for stakeholders and team members alike.