**Capstone Project (CPRO306)**

**Assessment 2: Interim SRS Report**

**Project Title:** **Austin Hospital Management System**

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| --- | --- | --- |
| **Team Members** | | |
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# Project Charter

| **General Project Information** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Project Name: | | | Austin Hospital Management System | | | | | |
| Executive Sponsors: | | | Austin Hospital Executive Board | | | | | |
| Department Sponsor: | | | Austin Hospital IT Department | | | | | |
| Impact of project: | | | Improve clinic efficiency in scheduling and notifications. | | | | | |
| **Project Team** | | | | | | | | |
|  | Name | | | Department | | Telephone | E-mail | |
| Project Manager: | Santiago Ortiz | | |  | | 0491 570 006 | k200370@student.kent.edu.au | |
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| **Stakeholders (e.g., those with a significant interest in or who will be significantly affected by this project)** | | | | | | | | |
| * Administration Staff | | | | | | | | |
| * Patients | | | | | | | | |
| * Doctor and Healthcare Practitioners | | | | | | | | |
| * Clinic or Hospital | | | | | | | | |
| * IT team | | | | | | | | |
| **Project Scope Statement** | | | | | | | | |
| Project Purpose / Business Justification *Describe the business need this project addresses* | | | | | | | | |
| Develop and Implement a new mobile application for AHMS stakeholders. | | | | | | | | |
| Objectives (in business terms) *Describe the measurable outcomes of the project, e.g., reduce cost by xxxx or increase quality to yyyy* | | | | | | | | |
| Improve clinic efficiency in scheduling and notifications.  Enable user-friendly interactions through an application.  Implement security and protections with AES encryption to protect data and prevent fraud. | | | | | | | | |
| Deliverables *List the high-level “products” to be created (e.g., improved xxxx process, employee manual on yyyy)* | | | | | | | | |
| Interfaces  Security Features  Documentation  Testing and Quality assurance  Deployment  Training materials | | | | | | | | |
| Scope *List what the project will and will not address (e.g., this project addresses units that report into the Office of Executive Vice President. Units that report into the Provost's Office are not included)* | | | | | | | | |
| Austin Hospital Management System will be developed to help the hospital to automate internal daily activities that will be easily fixed to help both patients and clinic. The outline for this project is to develop a responsive management system where features will be divided by user’s specifications. | | | | | | | | |
| Project Milestones *Propose start and end dates for Project Phases (e.g., Inception, Planning, Construction, Delivery) and other major milestones* | | | | | | | | |
| * Requirements are gathered and analyzed as per the scope and deliverables. * Design components consist of website design which is responsive. * Development includes defining modules for different roles in hospitals. * Testing such as unit testing is done after each module is created and integration testing is done after all components are integrated * Deployment is achieved when the project passes the testing phase. * The go-live milestone is to be accessible by the public. | | | | | | | | |
| Major Known Risks (including significant Assumptions) *Identify obstacles that may cause the project to fail.* | | | | | | | | |
| |  |  | | --- | --- | | Risk | Risk Rating (Hi, Med, Lo) | | Unauthorized access to Sensitive patient Data | High | | Software, hardware & human error to cause data loss | Medium | | Hospital growth affects high data loading & troubleshooting | Low | | | | | | | | | |
| Constraints *List* a*ny conditions that may limit the project team’s options with respect to resources, personnel, or schedule* | | | | | | | | |
| 1. Security Constraints 2. System Integration 3. Usability & Accessibility 4. Technical Limitations 5. Budget | | | | 1. Data Migration 2. User Adoption 3. Data & Privacy Compliance 4. Maintenance & Development | | | | |
| External Dependencies *Will project success depend on coordination of efforts between the project team and one or more other individuals or groups? Has everyone involved agreed to this interaction?* | | | | | | | | |
| 1. Encryption Libraries 2. Database Systems 3. Web & Application Servers 4. Frontend Technology: Frameworks and Library 5. Development Tools | | | | 1. API’s & Gateways 2. Hosting and Cloud Providers 3. Testing Providers and Tools 4. Security Tools 5. Authentication Management | | | | |
| **Communication Strategy** (specify how the project manager will communicate to the Executive Sponsor, Project Team members and Stakeholders | | | | | | | | |
| In order to keep everyone informed, cooperating and working together towards project success , the project manager for AHMS i.e Santiago Ortiz will provide quarterly reports and updates to the executive sponsor, hold weekly meetings and daily team check-ins, and give bi-weekly updates to stakeholders. | | | | | | | | |
| **Sign-off** | | | | | | | | |
|  | | Name | | | Signature | | | Date (MM/DD/YYYY) |
| Executive Sponsor | | Burt Reynolds AHMS Executive Board Member | | |  | | | 30/07/2024 |
| Department Sponsor | | Steve Rocket AHMS CIO | | |  | | | 30/07/2024 |
| Project Manager | | Santiago Ortiz | | |  | | | 30/07/2024 |
| **Notes** | | | | | | | | |
|  | | | | | | | | |

# Project Description

## Business case and the problem to be addressed/resolved by the project

* + 1. Ref: Austin Hospital Management System (AHMS)

## Purpose and objectives

* + 1. Develop and Implement a new mobile application for AHMS stakeholders:
       - Improve clinic efficiency in scheduling and notifications.
       - Enable user-friendly interactions through an application.
       - Implement security and protections with AES encryption to protect data and prevent fraud.

## Stakeholders

* + 1. Administration Staff:
       - Ensure the system's implementation, and user accesses are accurate. Their main role is to ensure the location is compliant with healthcare regulations.
    2. Patients:
       - The principal users of the proposed system to utilise and access their healthcare services, appointments, and medical records.
    3. Doctor and HealthCare Practitioners:
       - Require the system to manage their patient’s appointments, medical records, and communicate directly with patients.
    4. Clinic or Hospital:
       - Allows for efficient resource allocation and monitoring to ensure their services are not overwhelmed.
    5. IT Team:
       - The team tasked with the design, development, and maintenance of the software systems, to enable them to meet functional requirements and operate securely within the IoT.

## Required team

* + 1. For a project like AHMS new system there will be a number of Individuals or Teams that will ensure the project meets its deliverables.

|  |  |
| --- | --- |
| * Project Management * System Analysts * Software Developers * Database Administration * UX/ UI Designers | * Quality Assurance & Testers * Security Specialists * Technical Support * Stakeholders * Implementation Team |

# Scope and Key Deliverables

## Scope

Austin Hospital Management System will be developed to help the hospital to automate internal daily activities that will be easily fixed to help both patients and clinic. The outline for this project is to develop a responsive management system where features will be divided by user’s specifications.

* **Include:** Login, doctor and patient register, complaints, solutions, AES Key sharing, find a doctor by gender or speciality, doctor’s details, financial (bills/expenses).
* **Exclude:** Inventory management for Austin Hospital, advanced patient’s analytics and reports, CRM functionalities.

## Key deliverables

Defining the key deliverables for the project will ensure that the system will meet all stakeholders needs and expectations, guarantee a high standard of security and easy functionality.

**3.2.1 Interfaces:**

* Admin Interface: Will be able to create ID and password.
* Patients Interface: Will be able to register, login, search for doctors by gender or speciality, view profile, post complaint, view details, post AES key sharing.
* Doctors Interface: Will be able to login, view patient complaints, post solutions, clinic register, view AES key sharing.
* Clinic Interface: Will be able to login and update patient details.
* Financial (cashiers) Interface: Will be able to manage all patient’s bills/expenses, login.

**3.2.2 Security Features:**

* Implementation of AES encryption to secure key sharing and data protection.

**3.2.3 Documentation:**

* Detailed documentation of the development of the system, including technical specifications, user guides, and any installation instructions.

**3.2.4 Testing and Quality Assurance**:

* Testing plan and execution, including integration testing and user testing.

**3.2.5 Deployment:**

* Plan to release the system into different platforms.
* Support and maintenance plan.

**3.2.6 Training Materials:**

* End-user training materials and guides for doctors, hospital staff, cashiers and patients.
* Admin training materials for system management.

# Project Milestones:

* + - * Milestones define the checkpoints in the project that determine or track the progress of the AHMS.
      * The pre-defined deliverables are assigned on each milestone that indicates the progress towards objectives.
      * Milestones help to detect the potential issues or risks and measure the progress of the project.

## 4.1 Setting milestones

4.1.1. Requirements Gathering and Analysis Milestone - This milestone involves the documentation of project requirements, specifications, and the scope of the project.

* + 1. Design Milestone - Design milestone includes the creation of system architecture, software design, database design, and user interface design.
    2. Development Milestone - The milestone indicates the completion of the development of the software, database, user interface, and any integrations with other systems.
    3. Testing Milestone - The testing milestone includes conducting and completion of all types of testing, such as unit testing, integration testing, system testing, and user acceptance testing to achieve a smooth system.
    4. Deployment Milestone - The deployment milestone indicates the completion of the deployment phase including the installation and configuration of the system in the production environment.
    5. Go-Live Milestone - This milestone signifies the completion of the project and the system is ready to be used by the end-users. This milestone comprises training or support provided to end-users.

Milestones help to set and keep track of the progress of AHMS. Milestones focuses on the time and budget constraints of the project which manages the risks and ensures communication with stakeholders.

# Major risks, ethical risks in databases and how to be mitigated

## Project Risks & Mitigation

**5.1.1. Risks to Data Security:**

**Risk:** Sensitive patient data, including private health information, may be accessed by unauthorized parties.

**Mitigation**: Use strong authentication techniques, encrypt data while it's being transmitted and stored, and carry out frequent security audits to avoid this. To ensure that only authorized users have access to data, use role-based access restrictions.

**5.1.2. Downtime of the System:**

**Risk:** Hospital operations may be impacted by periods of inactivity brought on by system malfunctions or maintenance.

**Mitigation**: Create a reliable disaster recovery and backup plan. Reduce downtime by implementing failover solutions and adhering to a regular maintenance plan. Establish a thorough plan for dealing with occurrences.

**5.1.3. Data Integrity Issues:**

**Risk**: Errors in software, hardware, or human error could cause data to be lost or corrupted.

**Mitigation**: Implement automated error detection tools and data validation processes as a mitigation strategy. Make sure data can be reliably retrieved by testing the restoration procedure and regularly backing up data.

**5.1.4. Difficulties with Compliance:**

**Risk:** There may be legal repercussions if healthcare regulations like HIPAA or GDPR are broken.

**Mitigation:** Build the system with compliance elements like consent processes and audit logs. Maintain compliance with current regulations by reviewing and updating rules on a regular basis.

**5.1.5. Problems with Scalability:**

**Risk:** As the hospital grows, the system can have trouble handling higher data loads or user expectations.

**Mitigation:** Use scalable cloud technologies and modular components to design the system with scalability in mind. Conduct load and stress testing to identify and address potential performance issues.

**5.1.6. Integration Difficulties:**

**Risk**: It could be difficult to integrate the new system with the hospital's current electronic health records (EHR).

**Mitigation**: Use common data formats and integration protocols as a mitigation strategy. Assist stakeholders in comprehending current systems and making sure the new system fits seamlessly.

## Ethical Risks in Databases

**5.2.1. Privacy Issues:**

**Risk:** Inadequate privacy protocols may leave patient data vulnerable.

**Mitigation:** Use encryption and strict data protection regulations. Prior to collecting or sharing a patient's data, get that consent, and check privacy policies frequently.

**5.2.2. Misuse of Data:**

**Risk:** Without appropriate consent, patient data may be exploited for unforeseen uses like marketing or research.

**Mitigation**: Establish specific patient consent for any use of their data that goes beyond what is required for routine healthcare operations.

**5.2.3. Discrimination and Bias:**

**Risk:** Data analytics may unintentionally produce results that are discriminatory or biased.

**Mitigation:** When conducting analyses, use a variety of representative data sets. Audit algorithms and decision-making procedures frequently to look for biases and fix them.

**5.2.4. Knowledgeable Consent:**

**Risk:** Patients might not give informed consent or might not completely understand how their data will be utilized.

**Mitigation:** Make sure the consent process is transparent and easy to understand, and provide easily available information about how data is used.

**5.2.5 Ownership and Control of Data:**

**Risk:** When data ownership and control are unclear, disputes or misuse may occur.

**Mitigation:** Clearly state in contracts and system documentation who owns what data and how they can access it. Make sure that data is managed and used transparently.

**5.2.6. Data Security in Third-Party Services:**

**Risk:** Third-party services or cloud providers that handle patient data may have security flaws.

**Mitigation:** Select third-party services in accordance with applicable rules and their security requirements. Audit agreements and services provided by third parties on a regular basis.

You can improve your hospital management system's dependability and moral integrity by addressing these issues with the right tactics.

# Feasibility Study

A feasibility study is conducted for projects like AHMS proposed system to assess the project and how viable it would be to the organisation to pursue. The method will help to determine any constraints, resources required and ensure the system aligns with operational requirements.

## 6.1 Technical Feasibility

Will assess the requirements for the projects Software and Hardware and what is available or needed for the proposed system’s needs. The technical feasibility will also evaluate the systems scalability and how efficiently they can scale their needs up or down. The final technical assessment will cover the integration of the new system into the existing health records and systems.

## 6.2 Operational Feasibility

Will evaluate how the stakeholders using the app will adopt the new system and the expectations they have. The organisation will also assess the ongoing support needed for maintaining the system as well as training the necessary users to ensure a smooth transition.

## 6.3 Economic Feasibility

Will assess and estimate the costs associated with developing the proposed system. There are different methodologies to help calculate the economic feasibility of a project, the Return on Investment (ROI) and Cost-Benefit Analysis (CBA) are typically used to help calculate the costs vs returns.

## 6.4 Legal & Ethical Feasibility

Will evaluate whether the proposed system complies with healthcare standards and regulations regarding data protection, security and privacy. Risk assessments help to identify risks and the associated ramifications to the organisation.

## 6.5 Schedule Feasibility

Will appraise the timelines to estimate if the timeframe is reasonable for the amount of work required to ensure the projects deliverables are met with quality.

# References

Martins, J. [May 13th, 2024], Asana. “How to conduct a feasibility study: Templates and examples” [asana.com/resources/feasibility-study](https://asana.com/resources/feasibility-study)

Bridges, J. [Apr 19, 2023], Project Management. “What Is a Feasibility Study? How to Conduct One for Your Project” [www.projectmanager.com/training/how-to-conduct-a-feasibility-study#content](https://www.projectmanager.com/training/how-to-conduct-a-feasibility-study#content)

Mucheleka, M. and Halonen, R. (2015). ERP in Healthcare. Proceedings of the 17th International Conference on Enterprise Information Systems. [online] doi:<https://doi.org/10.5220/0005376801620171>.

Ranavasiya, M. (2014, July 31). Hospital management system [Slide show]. SlideShare. <https://www.slideshare.net/slideshow/hospital-management-system-37542388/37542388>

K.Nishanthan, S.Mathyvathana, R.Priyanthi, A.Thusara, D.I. De Silva, & Cooray, D. (2022). The Hospital Management System. International Journal of Engineering and Management Research, 12(5), 135–149. <https://doi.org/10.31033/ijemr.12.5.17>