# Introduction

Artificial Intelligence (AI) is a newly emerging area of computer science that involves giving computing machines the ability to mimic human intellectual powers like learning, reasoning, problem-solving, and decision-making, and it is therefore the root of 21st-century technological innovation [1]. In health care, AI has indicated immense ability to rationalize hospital work flow and augment clinical efficiency by automated electronic health records (EHR) documentation and aid to decision procedures, relieving clinician burnout, and aiding quality care to patients [2]. They have been increasingly utilized to aid physicians in faster and more precise diagnosis, allow personalized therapy protocols, and aid patient–physician communication [3]. Studies further describe that AI deployments impact a vast array of hospital operations, from clinical decision support systems, medical image processing, monitoring patients by wearable technologies, to general operation streamlining, and therefore act as an impetus to changing the face of health care [4]. While realizing such advantages, concerns surrounding keeping data confidential, biasing by algorithms, patient safety, and unequal access to AI-based solutions abound, and therefore strict ethics guidelines and regulation become imperative to allow equally secure use of AI in health care facilities [5][6].

Healthcare professionals can use a tremendous array of AI-based tools, applications, and technologies to offer better patient care, more efficient workflows, and clinical decision support. Some of these include Electronic Health Record (EHR) systems with built-in AI that can automatically fill out entries, identify anomalies, and offer predictive analytics on patient outcomes. Artificial Intelligence (AI)-based Clinical Decision Support Systems (CDSS) review patient data and suggest evidence-based therapies in real time. A particularly fast-growing category is AI-based medical imaging software that can analyze X-rays, CT scans, and MRIs to detect subtle anomalies with high accuracy, thereby reducing diagnostic errors and improving the speed of diagnosis. Other applications such as predictive analytics can forecast patient admissions and optimize staffing, while AI-powered algorithms with wearable sensors and remote monitoring technology can track health decline earlier. These imaging-related capabilities are highly transformational, as AI-based imaging applications have been shown not only to accelerate detection but also to improve accuracy in radiology and cardiology specialties [7][8].

Artificial Intelligence is a game-changer because it revolutionizes operational efficiency throughout the healthcare landscape with automated processes, shortening diagnostic times, and enhancing medical decision accuracy. AI-powered image technologies like computer-aided radiology software and machine learning-powered CT scans, MRIs, and X-rays have decreased image interpretation times considerably, enabling clinicians to examine more cases without sacrificing quality. Research has proven that AI-powered imaging solutions can identify anomalies such as cancer growth or fractures earlier than manual tests, decreasing misdiagnoses and accelerating treatment planning. Such solutions also prioritize urgent cases by alerting radiologists to critical findings for early review, ensuring patients with life-threatening conditions are prioritized. Beyond diagnostics, AI maximizes operational efficiency by lowering repeat imaging sessions, reducing human error, and enabling radiologists to focus on complex cases rather than routine analysis. This leads to shorter hospital stays, improved patient flow, and reduced costs. However, despite these advantages, hospitals still face challenges in fully adopting AI technologies efficiently. Barriers include integration with existing hospital information systems, high installation costs, the need for specialized training, and concerns over data privacy and reliability, all of which can discourage or delay adoption [7][9].

# Project Management Plan

## Scope management plan

### Project Requirement

### Project Functional Requirement

* **Image Analysis and Detection**  
  The system should be able to automatically analyze medical images such as X-rays, CT scans, and MRIs, and point out possible problems like fractures, tumors, or bleeding. This will help radiologists focus on the most important areas faster.
* **Access to Patient History**  
  Doctors should be able to quickly pull up a patient’s previous scans and imaging history through the hospital’s PACS and EHR systems.
* **Integration with Existing Systems**  
  The new AI system must work smoothly with the hospital’s current PACS and EHR without disrupting the way doctors already work. It should also support standards like DICOM so that it can work with different types of imaging machines.
* **Reporting and Support**  
  The system should generate clear, easy-to-read reports for doctors and offer suggestions based on clinical evidence to support decision-making.
* **Ease of Use**  
  The system should be simple to use, with role-based access for radiologists, clinicians, and IT staff. It should also support training so that hospital staff can adapt quickly.

### Project Non-Functional Requirement

* **Accuracy and Reliability**  
  The AI should be highly accurate, with at least 90% reliability in detecting abnormalities. Even with AI, final results should always be reviewed by a radiologist to avoid mistakes.
* **Speed and Efficiency**  
  Image processing should be fast, ideally no more than 30–60 seconds per scan, even during peak working hours when the system is under heavy load.
* **Scalability**  
  The system should be able to grow with the hospital, for example by supporting more imaging types like ultrasound or PET scans in the future, without needing a full replacement.
* **Data Security and Privacy**  
  Patient data must be fully protected. This means encrypting the data, controlling access, and following the privacy rules set by the Ministry of Health and international standards.
* **Maintainability and Support**  
  The vendor should provide regular updates, technical support, and troubleshooting. Ideally, the system should also have 24/7 monitoring and assistance.

### Scope Description (What)

|  |  |
| --- | --- |
|  |  |
| In scpoe | **Out Scope** |
| Development and integration of AI-powered image analysis for X-rays, CT scans, and MRIs | Full hospital-wide IT infrastructure upgrade |
| |  | | --- | | Seamless integration with existing PACS and EHR systems to allow easy retrieval of patient history |  |  | | --- | |  | | Development of AI solutions for non-imaging areas |
| Automated reporting and decision support for radiologists, based on AI-driven analysis | Long-term R&D for new imaging techniques or AI models not currently part of the project scope |
| Training of hospital staff (radiologists, clinicians, IT staff) on the AI system's use and integration | |  | | --- | | Creation of a separate AI research unit or lab unrelated to the imaging system |  |  | | --- | |  | |
| Ensuring compliance with healthcare data privacy laws and security standards like HIPAA, Ministry of Health regulations |  |
| Regular updates and ongoing technical support from the vendor, including 24/7 monitoring |  |

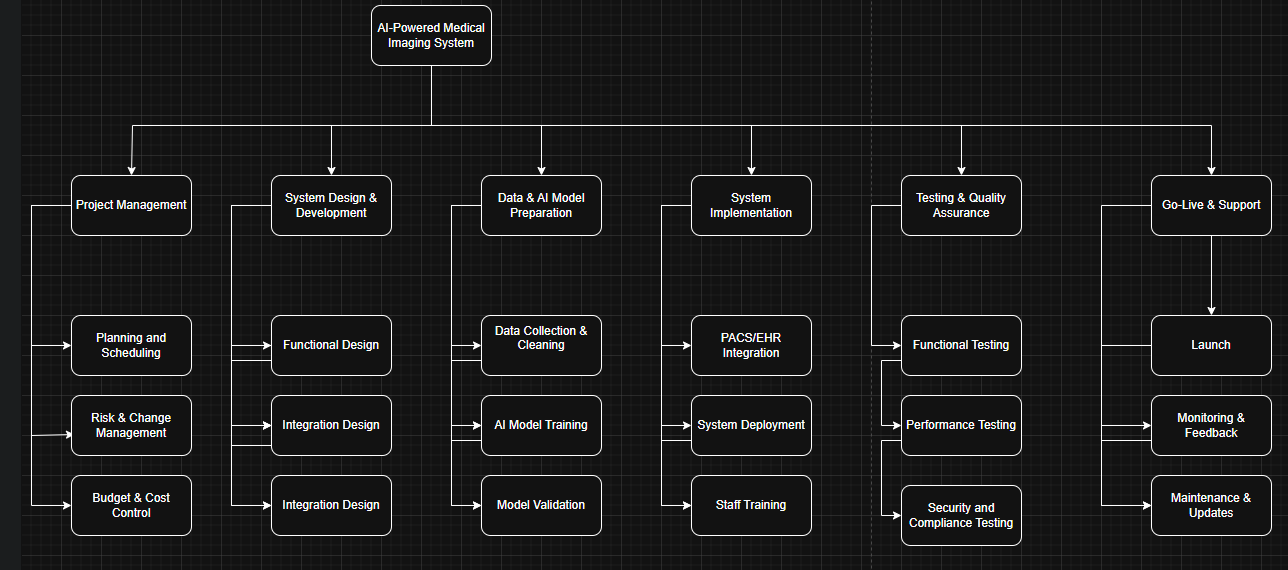
### Project Aim

The aim here is to develop an AI-enabled medical imaging solution for Jamile Altotanji Hospital so doctors are better able to diagnose X-rays, CT scans, and MRIs quickly and accurately. By using automated image analysis, the solution will assist radiologists in spotting issues like fractures or tumors before they would with manual analysis, improving diagnosis and patient treatment overall. The goal is to integrate the AI solution with the current PACS and EHR systems of the hospital so that doctors will have immediate access to the data on patients, with the aim of easing their workflow.

### Objectives (Why)

|  |  |  |
| --- | --- | --- |
|  |  |  |
| project Objective | **project Benefit** | **Success metric** |
| Automate medical image analysis | Reduces manual workload of radiologists and speeds up diagnosis | Average image analysis time reduced by more than 70% |
| Seamless integration with PACS/EHR | Doctors can easily access patient history and past scans | 100% of AI reports linked with PACS/EHR correctly |
| Improve diagnostic accuracy | Minimizes human error and increases confidence in results | More than 90% accuracy in detecting anomalies |
| Enhance staff efficiency | Radiologists and clinicians can focus on critical cases | Increased number of cases reviewed per day by radiologists by more than 30% |
| Ensure data security and compliance | Protects patient privacy and meets regulatory requirements | No data breaches during pilot period, compliance with Ministry of Health standards |

### WBS



### Milestones (When) at least three milestones

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Date | **Milestone** | **Description** |
| 1/9 | Project Kickoff | Finalize project requirements, confirm budget, timeline, and secure approvals from hospital management. |
| 15/9 | Design Approval | Complete AI system functional design, UI design, and integration framework with PACS/EHR. |
| 21/11 | Module Testing | Test AI model on sample X-rays, CT scans, and MRIs; validate anomaly detection and reporting features. |
| 15/12 | System Integration | Integrate AI system fully with PACS/EHR, deploy in radiology department, and conduct staff training. |
| 30/1 | Pilot Testing | Conduct pilot testing with real patient data, collect feedback, and make necessary adjustments. |
| 16/2 | Full Deployment | Complete system deployment, verify functionality, and conduct post-deployment review. |

# Time, Cost, and Resources Management Plan

## Gannt Chart

The Gantt chart serves as the central tool for the Time Management Plan, providing a visual roadmap for the entire AI Medical Imaging System project. It outlines all tasks, their sequence, duration, and assigned resources from the project kickoff on September 1, 2025, to the post-deployment review concluding on February 20, 2026.

The six key milestones from the project scope are integrated into the Gantt chart as zero duration tasks, signifying major achievements and decision points:

* **Project Kickoff (1-Sep-25):** This milestone marks the formal start of th project, folowing the aproval of requirements, budget, and timeline by hospital mnagement.
* **Design Approval (15-Oct-25):** This critcal gate ensurs that the functional design, UI/UX, and integration framework for the PACS/EHR are aproved by stakeholders before any devlopment begins, preventing costly rework.
* **Module Testing (21-Nov-25):** This milestone signifies the completion of all core development work(AI model, integration, reporting module and the readiness to commence formal testing phass.
* **System Integration (16-Dec-25):** This milestone confirms the successful completion of User Acceptance Testing (UAT) and that the system is technically redy to be deployed into the radiology department's live environment for training.
* **Pilot Testing (30-Jan-26):** This milestone marks the end of the controled pilot phase using real patient data. Feedback is collected, which is crucial for making final adjustments before full rolout.
* **Full Deployment (15-Feb-26):** This is the final project milstone, indicating the AI system is fully operational across the radiology department and the project is ready for final review.

1. The Interrelationship Between Time, Cost, and Resources

The Gantt chart is not just a timeline; it is a dynamic model that directly links time, cost, and resource allocation. A change in one inevitably affects the others.

* Time & Resources: The project schedule is built around the availability and productivity of resources. For example, the AI Model Development task (16-30 Oct) is scheduled for 11 days based on the capacity of the AI developers. If a developer is unavailable (e.g., due to illness), the task duration extends, which could delay the start of subsequent tasks like PACS Integration, thereby impacting the project's end date. Conversely, adding more developers to this task (increasing the resource cost) could potentially shorten its duration.
* Time & Cost: The project budget from the Cost Management Plan is directly tied to the timeline. Many costs are time-dependent:
  + Labor Costs: The longer the project runs, the more salary is paid to the project team (Project Manager, Developers, QA Team). The Gantt chart allows us to forecast these costs accurately by mapping resource hours to the timeline.
  + Fixed Costs: Costs like software licenses or vendor support often have a monthly fee. A project delay incurs additional monthly costs.
  + Opportunity Cost: Delays in deployment also delay the realization of the project's benefits, such as reduced diagnostic time and improved patient throughput, which has a financial impact on the hospital.
* Resources & Cost: The single largest cost driver is resources. The Gantt chart specifies *who* is needed and *for how long*. This information is fed directly into the budget. For instance:
  + The Project Manager is allocated from start to finish, representing a fixed cost.
  + AI Developers and Software Developers are heavily utilized during the design and development phases (Oct-Nov), leading to a peak in labor costs during that period.
  + Radiologists and Clinicians are required as resources during UAT and Training, which must be scheduled around their clinical duties to minimize disruption and cost to hospital operations.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

## Critical Path Analysis

You are required to specify the critical path of your project by listing what are the tasks that fall on the critical path and what is the relationship between the critical path and the project deadline. Finally, you should mention what is your procedures to guarantee there will be no delay on any of the critical path tasks.

The Critical Path Method (CPM) is a vital project management technique used to identify the longest sequence of dependent tasks (the critical path) that directly determines the project's minimum duration. Any delay in any task on this path will cause a direct, day-for-day delay to the project's final deadline of February 15, 2026.

* Tasks on the Critical Path

The following table lists every task that lies on the critical path for our AI Medical Imaging System project. These tasks have no flexibility in their scheduling ("zero float").

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| number | Task Name | Start Date | End Date | Duration |
| 1 | Project Kickoff (Milestone) | 01-Sep-25 | 01-Sep-25 | 0 days |
| 2 | Requirement Finalization | 02-Sep-25 | 05-Sep-25 | 4 days |
| 3 | Budget Approval | 08-Sep-25 | 10-Sep-25 | 3 days |
| 4 | Vendor Selection | 11-Sep-25 | 18-Sep-25 | 6 days |
| 5 | System Design | 19-Sep-25 | 30-Sep-25 | 10 days |
| 6 | UI/UX Design | 01-Oct-25 | 10-Oct-25 | 8 days |
| 7 | Integration Framework Design | 11-Oct-25 | 14-Oct-25 | 4 days |
| 8 | Design Approval (Milestone) | 15-Oct-25 | 15-Oct-25 | 0 days |
| 9 | AI Model Development | 16-Oct-25 | 30-Oct-25 | 11 days |
| 10 | PACS/EHR Integration Development | 31-Oct-25 | 10-Nov-25 | 9 days |
| 11 | Reporting Module Development | 11-Nov-25 | 20-Nov-25 | 8 days |
| 12 | Unit Testing | 21-Nov-25 | 25-Nov-25 | 5 days |
| 13 | Integration Testing | 26-Nov-25 | 05-Dec-25 | 8 days |
| 14 | User Acceptance Testing (UAT) | 06-Dec-25 | 15-Dec-25 | 8 days |
| 15 | Staff Training | 17-Dec-25 | 31-Dec-25 | 11 days |
| 16 | Pilot Deployment | 01-Jan-26 | 15-Jan-26 | 11 days |
| 17 | Feedback Collection | 16-Jan-26 | 25-Jan-26 | 8 days |
| 18 | System Adjustments | 26-Jan-26 | 05-Feb-26 | 7 days |
| 19 | Full Deployment | 06-Feb-26 | 14-Feb-26 | 7 days |
| 20 | Full Deployment (Milestone) | 15-Feb-26 | 15-Feb-26 | * 1. days |

How the Critical Path Connects to the Deadline

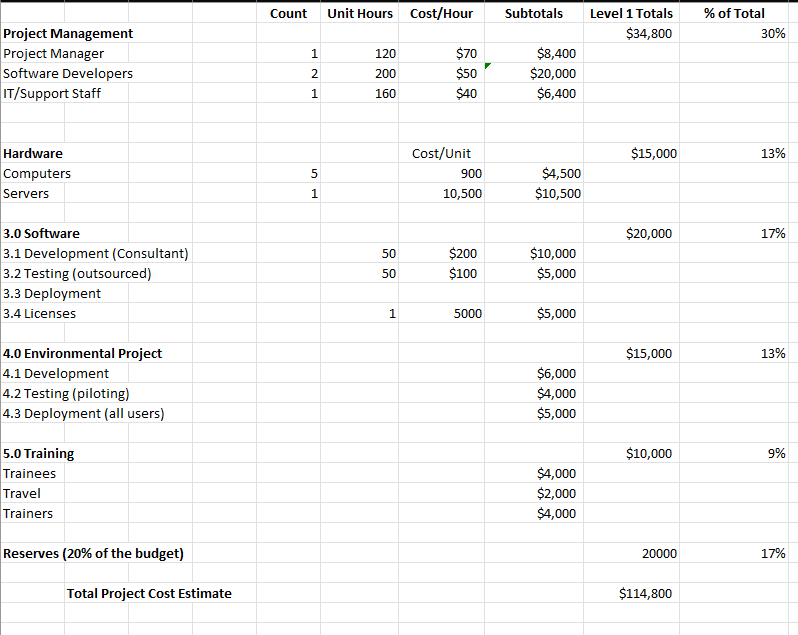
The relationship is simple: the end date is a direct result of adding up all the durations in the table above. Because these tasks are all dependent on each other—like dominoes—a delay in any one of them pushes every subsequent task back. There is no "wiggle room" or slack in this chain. For example, if AI Model Development takes 13 days instead of 11, our entire project will finish two days late. The February 15th deadline is only achievable if this specific path is followed perfectly.

* Our Plan to Prevent Delays

To ensure these critical tasks stay on track, we will implement several key procedures:

1. Daily Check-Ins: The team leads for any active critical path task will give a brief daily update to the project manager. This helps us spot small problems—like a minor bug or a waiting decision—before they become big delays.
2. Shielded Resources: People working on critical tasks will be protected from being pulled onto other, less urgent work. Their focus will remain solely on keeping the main project storyline moving forward.
3. Backup Plans for Key Risks: For high-risk tasks, we'll have a "Plan B" ready. For instance, during Vendor Selection, we will be negotiating with our top two choices simultaneously to avoid getting stuck if talks with the first choice break down.
4. Early and Often Testing: Instead of waiting until the end of a phase to test everything, we will test components as they are built. This means we can find and fix issues during AI Model Development, not after it's supposedly finished.
5. Strict "Change" Rules: Any request to add a new feature or change the plan must go through a formal approval process. If the change would affect the critical path, it will only be approved if it is absolutely essential for the project's core goals.
6. Locked-In Schedules: We will book the time of key stakeholders (like department heads for approvals) and resources (like the training room) weeks in advance for critical milestones like Design Approval and UAT. This prevents waiting for someone to become available.

## Produce A Cost Estimate (Budget)



## Change Management Plan

Discuss the strategy

## Awareness

To inform all individuals at the hospital of what the change entails ahead of time, we'll focus on open and clear communication upfront. The project will be announced through hospital-wide channels including email, posters, and the intranet such that the staff understand what the new AI imaging system is, why it's going in, and what value it provides.

Short awareness sessions will be conducted among radiologists, clinicians, and IT personnel to inform them how the system will integrate into their daily tasks, what to expect by way of change and the general project schedule. Monthly regular bulletins will also be distributed reporting progress and milestones, so individuals can watch the project unfold step by step rather than be overwhelmed by the end-of-project summing-up.

Leadership must be seen by employees to be supportive of this change and department leaders and hospital administration will be included in communications to help engender trust. We'll also be projecting the positives at all times — e.g., less time for diagnosis, less hands-on time by physicians, and improved patient outcomes.

Finally, employees will be provided with a convenient method of submitting questions and suggestions using the feedback forms or email or very short surveys. This allows them to feel heard and not just told.

## Readiness

To help staff feel confident about using the new AI imaging system, we will provide hands-on training and practical support rather than just theory. Radiologists, clinicians, and IT staff will be given tailored sessions that focus on how the system connects with their daily tasks — from pulling up past scans to reviewing AI-generated reports.

We’ll also run trial sessions in a safe test environment, where staff can practice using the system without pressure. This allows them to get comfortable with the tools, make mistakes, and ask questions before the system goes live.

Clear step-by-step user guides and quick reference materials will be provided, so staff always have something to fall back on. In addition, a small support team will be available during the first weeks of use to answer questions and resolve any issues quickly.

By combining training, practice opportunities, and ongoing support, staff will feel ready and confident to use the AI system in real clinical situations.

## Resilience

To ease the transition when the system comes online, we'll establish robust support to ensure staff don't feel abandoned. A specialized help desk and in-venue support team will be in place during the implementation phase to react swiftly to the onset of any technical or process-related problems. This quick response will limit frustration and help keep the mood upbeat.

We will also offer refresher training sessions to those who still require further support and develop small clusters of "super users" (early adopters) within each department. The super users will be local champions who can automatically assist people in the department.

We will gauge how the transition is going by conducting frequent surveys to gather feedback, monitoring system usage logs, and tracking measures of performance such as report turnaround time and error rate. The department heads will be regularly checked to be sure that if there are any concerns, they are flagged early and the support plan may be adjusted if needed.

By incorporating effective technical support, frequent training, and clear performance tracking, the hospital personnel will be motivated and the new AI system can be added to their regular work flow without major disruption.

## Risk Management Plan

### Risk Types (at least three risks)

|  |  |  |  |
| --- | --- | --- | --- |
| Risk Type | Risk name | Scenario | Mitigation Plan |
| Technical Risk | Integration Failure | AI system may not integrate smoothly with PACS/EHR, causing workflow disruption. | Conduct early integration testing, work closely with vendors, and have IT backup systems in place. |
| Operational Risk | Staff Resistance | Radiologists and staff may resist using the new AI tool, fearing job loss or complexity. | Run awareness workshops, provide hands-on training, and assign “super users” to support adoption. |
| Data Risk | Patient Data Breach | Sensitive imaging and patient records may be exposed due to weak security. | Apply encryption, strict access controls, comply with HIPAA/GDPR, and perform regular audits. |
| Compliance Risk | Regulatory Delay | Ministry of Health may delay approval of the AI system for medical use. | Start approval process early, prepare required documentation, and work with certified vendors. |
| Performance Risk | Low AI Accuracy | AI system may generate false positives/negatives, leading to misdiagnosis. | Use high-quality training datasets, conduct pilot testing, and keep human oversight in all decisions. |

### Probability chart:

|  |  |  |  |
| --- | --- | --- | --- |
| **Probability** | **Description** | | |
|  | **Risk name** | **Qualitative** | **Quantitative (if measurable)** |
| **Low** | Integration Failure | Low chance since vendor-tested PACS/EHR integration is standard, but still possible if system versions mismatch. | Around 20% that could happen |
| Regulatory Delay | Rare, as Ministry approvals are usually straightforward if documentation is correct. | Around 10% that could happen |
|  |  |  |
| **Medium** | Staff Resistance | Some staff may hesitate to adopt AI, especially older radiologists. | This could happen around 40% of the time |
| Low AI Accuracy | Medium chance if datasets are not well-trained or if rare cases appear. | Could be a 35% chance |
|  |  |  |
| **High** | Patient Data Breach | High probability because healthcare data is a frequent cyberattack target. | 60% that could happen |
|  |  |  |
|  |  |  |

### Impact chart:

|  |  |  |
| --- | --- | --- |
| **Impact** | | |
|  | **Risk name** | **Impact Description** |
| **Low** | Integration Failure | Causes short delays in connecting with PACS/EHR, but can be fixed with vendor support and testing. |
|  |  |
|  |  |
| **Medium** | Staff Resistance | Slows adoption, requiring extra training and support. Could reduce short-term efficiency but not stop the project. |
| Low AI Accuracy | May reduce trust in the system and require more human oversight until accuracy improves. |
| Regulatory Delay | Slight postponement of project timeline, but hospital operations continue as normal. |
| **High** | Patient Data Breach | Serious risk to patient privacy, potential legal issues, reputational damage, and loss of trust in hospital systems. |
|  |  |
|  |  |

### Probability and Impact Matrix:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Probability/Impact Matrix** | | | | |
|  | | **Impact** | | |
| **Low** | **Medium** | **High** |
| **Probability** | **High** |  |  | Patient Data Breach |
| **Medium** |  | Staff Resistance, Low AI Accuracy |  |
| **Low** | Integration Failure | Regulatory Delay |  |

## Software development methodology

For this project, the Waterfall methodology will be utilized because it provides a clear step-by-step method that integrates well in the hospital context. The various stages must be finished and signed off prior to the initiation of the other.

How it will be used:

Requirements Gathering: Gather all the non-functional and functional requirements from the management, IT professionals, and the radiologists.

System Design: Develop architecture, AIworkflow, and integration plan for PACS/EHR.

Development: Train and develop the AI model, implement modules, and integrate the system through available infrastructure.

Testing: Perform module testing, integration testing, and user acceptance testing for correctness and robustness.

Deployment: Start by launching a pilot phase and then rollout the entire system once the feedback has been resolved.

Maintenance: Provide vendor support, IT assistance, and compliance validations after the go-live.

Waterfall is applicable in this case since hospitals require very structured processes where each step must be signed and approved before proceeding. This helps minimize risk, ensures health care protocols are adhered to, and provides stakeholders with the assurance that the system will be safe, reliable, and effective prior to implementation in actual patient care.

# Project Recommendations and Justifications

## Methods and mediums to communicate with the stakeholders

Explore the techniques and channels employed for effective communication with diverse stakeholders. Your discussion should include a minimum of two internal and two external stakeholders, encompassing both technical and non-technical individuals. Examples of methods and mediums include written documents, reports, online meetings, in-person meetings, or presentations. Explain how project research and the intended audience will influence the method and medium. Note: To respond to this section, please complete the provided table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| Stakeholder name/title | **Stakeholder role** | **Stakeholder type** | **Methods or mediums** | **Frequency** | **Justification** |
| Head of Radiology Department | Oversees imaging operations and ensures diagnostic accuracy | Internal – Technical | In-person meetings, detailed reports | Bi-weekly | Direct input is needed to validate AI results and confirm the system supports radiologists’ workflow. |
| IT Systems Manager | Manages PACS/EHR integration and hospital IT infrastructure | Internal – Technical | Online meetings, technical reports | Weekly | Critical for ensuring secure integration of the AI system into existing hospital IT systems. |
| Medical Equipment Supplier | Provides AI imaging software, hardware, and vendor support | External – Technical | Online meetings, email updates | Monthly | Needed to ensure hardware/software compatibility and timely vendor support during rollout. |
| Ministry of Health | Approves system compliance with healthcare standards | External – Non technical | Formal reports, official documentation, presentations | At key milestones(approval phases) | Their approval is required before deployment; clear communication ensures compliance and avoids delays. |

## Arguments of Planning decisions

The choices made during the planning stage were shaped by the hospital’s main priorities: improving the speed and accuracy of diagnosis, keeping patient data secure, and staying within the budget that management had approved.

When it came to the **budget**, we worked within the hospital’s set range of $80,000–$120,000. The final estimate, around $100,000, gives enough room to cover the essentials — staff training, software licensing, AI development, and vendor support — without putting unnecessary pressure on resources. A small reserve was also kept aside to deal with unexpected costs, which is common in healthcare projects.

The **deliverables** were chosen to make sure the hospital gets practical results. These include a fully working AI imaging system linked with PACS/EHR, proper training sessions for staff, and a final deployment supported by vendor maintenance. Each deliverable was tied back to a real hospital need, so nothing in the plan was added just for the sake of it.

For **success metrics**, the focus was on results that matter to both staff and patients. Faster turnaround time for imaging reports, more accurate diagnostics, smooth system integration, and positive staff feedback are the main measures. These will show whether the system is actually helping doctors and improving patient care.

In terms of **impact**, risks and benefits were weighed carefully. Patient data security was placed at the top because any breach would have serious legal and ethical consequences. Training and change management were also emphasized, since resistance from staff can slow down adoption of new technology. Finally, a phased rollout — starting with a pilot, gathering feedback, then moving to full deployment — was chosen to minimize disruption and build confidence step by step.

Overall, the decisions were made to strike a balance between cost, safety, and usability, while making sure the project delivers real improvements for the hospital and its patients.

## Project recommendations

The recommendations I put together for this project are really focused on what the hospital needs most — faster imaging results, more accurate diagnosis, and a plan that doesn’t stretch the budget too far.

For the **budget**, I aimed at around $100,000. That sits right in the middle of the hospital’s approved range of $80,000–$120,000. The idea was to keep it safe and realistic, not too low that things get left out, and not so high that it becomes a problem for finance. This amount should cover the main costs like software licensing, staff training, development, and vendor support. I also left a small reserve, because in real projects something unexpected almost always comes up.

The **timeline** is set at six months. That feels like enough time to train staff properly, connect the AI with PACS/EHR, and sort out regulatory approvals. It’s not too long either, so the hospital can start seeing benefits without waiting a whole year. I also suggested rolling it out in phases — start with a pilot, gather feedback, then go for the full deployment. It’s slower at the start, but safer in the long run.

When it comes to **risks**, the biggest concern is patient data security. A breach would cause serious damage, both legally and to the hospital’s reputation. Staff resistance is another one, since not everyone likes switching to new systems, especially when AI is involved. Low AI accuracy was also listed, because if the system makes mistakes, staff will lose trust in it quickly. These risks were given priority so the hospital can be ready to deal with them early.

On the **resources** side, I think the balance is good. Internal staff — like the radiology department and IT — will keep control of the project, while external partners like the vendor and the Ministry of Health make sure the system is compliant and technically sound. That way, the hospital isn’t relying too heavily on outsiders, but still gets the support it needs.

Finally, the **change management plan** is about making staff feel confident, not just informed. Awareness sessions, workshops, and post-launch support are all included so that people don’t feel left behind. It’s one thing to install a system, but it’s another to actually have people use it comfortably in their daily work.

In the end, the recommendations are not overcomplicated. They’re practical, realistic, and made to actually work in the hospital’s environment. If followed, they should bring real improvements to both patient care and the day-to-day workflow.

# Performance Review

## Accuracy and reliability of the Research Methodology

In this project, I relied on both **primary research** and **secondary research** to understand how an AI imaging system could be introduced in the hospital. Using both methods made the findings stronger and more reliable, since they gave two different types of insight.

**Primary Research**  
For the primary research, I used surveys and short interviews with hospital staff including radiologists, IT technicians, and managers. The aim was to learn how they currently handle imaging, what problems they face, and what they expect from an AI system. The feedback highlighted issues like delays in generating reports, heavy workloads on radiologists, and concerns about data security. At the same time, many staff were positive about AI if proper training and support were provided.

**Secondary Research**  
Secondary research involved reviewing academic papers, industry reports, and case studies about AI in healthcare, especially in radiology. These studies showed that AI models are already being used successfully to support diagnosis, detect anomalies in scans, and integrate with hospital record systems. They also confirmed that staff acceptance and strong data security are among the biggest challenges in adoption.

**Connection Between the Two**  
The two research approaches supported each other. The surveys gave a direct picture of what this hospital needs right now, while the papers and reports provided proof that the same issues are common worldwide and that solutions already exist. For example, radiologists in the survey asked for faster turnaround times, and the literature showed that AI systems in other hospitals reduced reporting time significantly.

**Accuracy and Reliability**  
The primary research is reliable because it came from the very people who will use the system, but it was limited to a small sample of staff. The secondary research is broader and backed by large studies, but it may not reflect the exact local situation. By combining both, the project results are more accurate — specific to the hospital, but also supported by wider evidence.

**How the Findings Helped the Project**  
The combined research directly influenced planning decisions. Training was given a clear budget because staff emphasized it as a key need. Data security was prioritized in the risk plan, since both primary and secondary sources highlighted it as critical. Finally, a phased rollout was recommended because research showed that gradual adoption reduces resistance and improves trust in AI systems.

**Summary**  
Overall, the research methodology was accurate and reliable because it balanced first-hand evidence from hospital staff with external knowledge from published studies. This mix ensured the project plan is both practical for the hospital and consistent with proven practices in the healthcare sector.

## Project Evaluation

The planning recommendations made for this project were designed to fit the hospital’s needs as closely as possible, and overall they align well with both the organization’s goals and the evidence gathered through research.

**Budget**  
The final budget of around $115,000 stays within the approved hospital range of $80,000–$120,000. It was balanced across project management, hardware, software, training, and reserves. This distribution reflects the hospital’s priorities: most funding was directed to staff costs, training, and system development, which are the areas that staff themselves highlighted in the surveys. The presence of a reserve fund also increases the hospital’s financial readiness for unexpected challenges.

**Timeline**  
The six-month timeline allows for system development, staff training, testing, and phased deployment. Research findings supported this decision — both staff and external sources stressed that rushed implementation increases risks of errors and resistance. By planning a pilot phase before full deployment, the hospital can limit disruption to daily operations.

**Risks**  
The risk management plan addressed the main challenges: integration issues, staff resistance, patient data security, and system accuracy. These risks came directly from the feedback of radiologists and IT staff in the primary research, and they were also confirmed by secondary research in healthcare AI literature. The fact that both sources pointed to the same risks makes the plan more reliable.

**Resources**  
The project makes good use of both internal and external resources. Internal staff (radiologists, IT, and managers) provide local knowledge and ensure adoption, while external vendors and regulators add technical expertise and compliance support. This balance means the hospital will not be overdependent on outside help but will still benefit from external input where it is necessary.

**Change Management**  
The awareness, readiness, and resilience plan matches the hospital’s needs by making sure staff are informed, trained, and supported. Primary research showed that staff confidence was just as important as technical performance. Secondary research confirmed that hospitals adopting AI systems often face resistance unless proper training and communication are in place. This justified the strong emphasis on change management.

**Accuracy and Reliability of Research**  
The combination of primary and secondary research made the planning more accurate. Primary research ensured that hospital staff voices shaped the plan, while secondary research validated these findings with proven industry practices. The sample size of the survey was relatively small, which limits generalization, but the consistency between survey responses and published studies improved overall reliability.

**Final Reflection**  
The planning decisions were not made in isolation — they were built on real evidence from staff and supported by external research. This helped to avoid guesswork and ensured the plan is practical, realistic, and aligned with hospital priorities. While the research could be strengthened in future by including a larger and more diverse sample, the results were reliable enough to guide key decisions.

In conclusion, the project plan meets both the operational and strategic needs of the hospital. It balances cost, time, risks, and change management, while ensuring that the decisions are backed by accurate and reliable research findings.

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# Appendices