

Tunitech Manufacturing S.A.	Development of an AI-Based Supplier & Distribution Selection Application	October, 2025/2026
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1. Overview of the Report

This report presents a project undertaken at Tunitech Manufacturing S.A., applying the nine Project Management Knowledge Areas (PMKAs) to the development of an AI-Based Supplier & Distribution Selection Application. The objective is to demonstrate how Project Integration Management ensures the effective coordination of all knowledge areas to achieve project success. The report includes an overview of the company, problem identification, the proposed solution, and its key features before diving into detailed planning for each PMKA.

2. Tunitech Manufacturing S.A

Tunitech Manufacturing S.A. is a leading industrial equipment and consumer electronics manufacturer based in Sousse, Tunisia, with additional branches in Tunis, Sfax, and export offices in Morocco and Italy. Founded in 2005, the company employs approximately 2,000 staff and operates in a competitive, fast-evolving market, making efficient supply chain management and data-driven decision-making critical to its success.

3. Problem Identification & Solution

At **Tunitech Manufacturing S.A.**, the selection of suppliers and distributors remains **partly manual and highly subjective**, even though extensive historical performance data is available. Decision-makers often rely on personal judgment or fragmented reports, which limits the company's ability to make fully informed, data-driven choices.

This situation results in several critical challenges:

- **Inconsistent evaluations:** Supplier and distributor assessments vary across departments, leading to non-uniform standards.
- **Inefficient decision-making:** Manual processes and delays in consolidating information slow down approvals and procurement cycles.
- **Higher operational costs:** Suboptimal partner selection increases costs due to quality issues, missed discounts, or inefficient logistics.
- **Supply chain vulnerabilities:** Poorly informed choices may cause delays, stock shortages, or reliance on unreliable partners.
- **Underutilization of historical data:** Existing performance records are not systematically analyzed to predict supplier reliability or optimize future decisions

To address these challenges, **Tunitech Manufacturing S.A.** decided to design and implement an AI-based internal application that uses historical supplier and

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distributor data to predict reliability, assess risks, and recommend optimal partners based on predefined criteria.

This solution aims to create a faster, data-driven, and more objective decision-making process, reducing inefficiencies and improving supply chain outcomes.

Solution Features:

- Predictive Analysis: Estimate future supplier reliability and performance trends.
- Automated Evaluation & Ranking: Score and rank suppliers using data-driven insights.
- Recommendation System: Suggest optimal suppliers and distributors based on historical outcomes and predefined business criteria.

4. Project Management Methodology

4.1 Method Selection

The project will adopt an **Agile project management approach**, emphasizing iterative development, stakeholder feedback, and adaptability.

This methodology is particularly suited for innovation-driven projects like the development of an AI-based supplier evaluation system, where requirements may evolve as the model learns from data and user testing. The Agile framework ensures that the project remains flexible and continuously aligned with the company's goal of digitalizing supply chain decision-making.

4.2 Method Implementation

The implementation of Agile will be organized into **four Sprints**, each lasting approximately 3 weeks.

Sprint 1: Data integration and preprocessing — collecting, cleaning, and preparing supplier datasets.

Sprint 2: Predictive modeling — developing and training the AI model to evaluate suppliers based on predefined performance metrics.

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Sprint 3: Dashboard and reporting module — designing a user interface that visualizes supplier insights, performance, and risk levels.

Sprint 4: System testing and refinement — validating the system through pilot testing and incorporating stakeholder feedback for optimization.

Each sprint will conclude with a review meeting involving both the development team and key stakeholders (to mention). Feedback gathered in these sessions will guide *subsequent iterations*, ensuring continuous improvement and functional relevance.

The Agile principle of incremental delivery allows usable project components to be deployed progressively, rather than waiting for a single final release.

5. Stakeholder Analysis

5.1 Stakeholder Identification

Stakeholder Identification		
1	Stakeholder	Role / Responsibility
2	Supply Chain Management	Approves supplier recommendations and oversees implementation.
3	Project Manager	Oversees coordination, integration, and reporting.
4	Procurement Department	Uses the platform to assess and rank suppliers.
5	Finance Department	Provides cost-related data and criteria.
6	Operations & Production Teams	Provide delivery and performance metrics.
7	Legal & Administrative Department	Ensures regulatory compliance and data governance.
8	IT/Development Team	Designs, codes, and maintains the AI system.

5.2 Influence/interest Matrix

Influence	<i>Keep Satisfied</i> Legal Dep	<i>Manage Closely</i> - Procurement Dep - Finance Dep - IT/Development Team - Project Manager - Supply Chain Management
	<i>Monitor</i>	<i>Keep Informed</i> Operations Team
Interest		

6. Project Charter

Here is the link to the Project Charter, which outlines the project’s objectives, scope, and key stakeholders, while aligning with the nine Project Management Knowledge Areas: [Link](#)

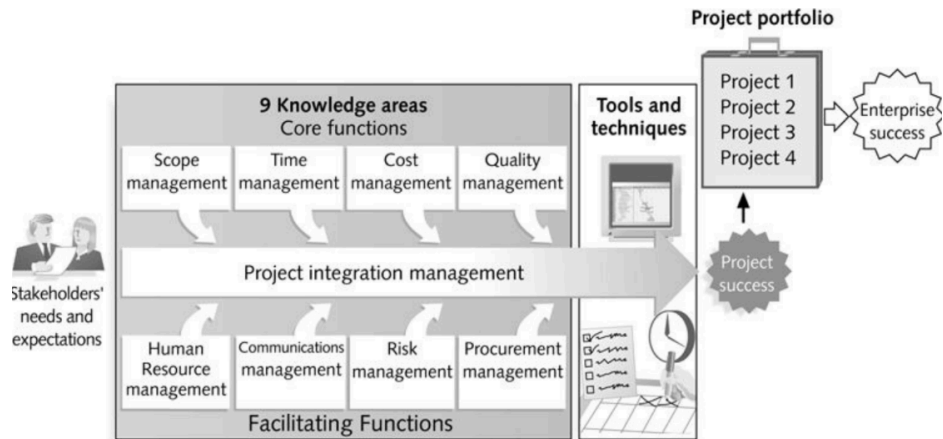
7. Project Management Plan

7.1 Overview

The Project Management Plan serves as the central framework that integrates all project components, ensuring coordination among scope, schedule, cost, quality, human resources, communication, risk, procurement, and stakeholder engagement.

It provides a unified roadmap that guides the project’s execution, monitoring, and closure phases.

In this part, our goal is to maintain coherence between all 8 functional areas and ensure that all deliverables align with the company’s strategic objective — digitalizing supplier & distribution evaluation through AI-driven decision-making.



7.2 Integration Mechanisms

Project progress will be tracked through a centralized Agile dashboard, which will display:

- Sprint progress and task ownership (who is responsible for what)
- Completion status (completed, in progress, pending)
- Burndown charts indicating task completion over time
- Performance indicators, such as sprint velocity and issue resolution rate

Trello will be used as a tool to maintain the dashboard.

Microsoft Excel will also be used to design the Agile Sprint Plan and Progress Monitoring Chart

Project_tasks									
Tr	Task	Priority	Owner	Status	Start date	End date	Tr	Milestone	Deliverable
Task	P0	Name	Not started	dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task	P1	Name	In progress	dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task	P2	Name	Blocked	dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task	P3	Name	Completed	dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task		Name		dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task		Name		dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task		Name		dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
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Task		Name		dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task		Name		dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
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Task		Name		dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task		Name		dd/mm/yyyy	dd/mm/yyyy	Milestone		File	
Task		Name		dd/mm/yyyy	dd/mm/yyyy	Milestone		File	

Agile Sprint Plan

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8. Core and Facilitating Knowledge Areas

8.1 Scope Management

8.1.1 Project Scope Statement

Description:

This project aims to design, develop, and deploy an AI-based internal application that predicts supplier and distributor reliability, assess risks, automates supplier scoring, and recommends optimal partners based on predefined criteria.

A/In Scope:

- Collect supplier data from Procurement, Finance, and Operations departments.
- Collaborate with Procurement, Finance, Legal, and Operations to define supplier evaluation metric
- AI model for supplier and distributor reliability prediction
- Develop interactive dashboard for Procurement and Management teams to visualize supplier rankings and insights.
- Conduct system testing (functional, integration, user acceptance).

To protect the team from going beyond agreed goals, It's also important to clarify what is not included in this project

B/ Out of Scope:

- Managing actual supplier contracts or negotiations
- integration with external supplier platforms or third-party marketplaces.
- Predictive financial models, cost simulations, or budget optimization beyond supplier scoring.
- Employee-Wide Training: Only key Procurement, Finance, and Management staff will be trained; company-wide training is excluded

8.1.2 Work breakdown structure

A Work Breakdown Structure (WBS) is a hierarchical decomposition of a project into smaller components. It begins with the overall project goal at the top and then breaks the work down into smaller, more efficient sections.

There are different types of WBS, and given the specificities of our project, we will adopt the Phase-based WBS. This type organizes a project by its phases or stages

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along the project timeline, which are then broken down into smaller tasks and activities.

<[WBS sheet](#)>

8.1.3 Acceptance Criteria

Deliverable	Acceptance criteria	Approval Authority
Centralized Supplier Database	-All supplier data from Procurement, Finance, and Operations has been successfully merged into one repository. - Data quality \geq 95% accuracy (no duplicates or missing key fields)	Procurement Head
Evaluation Criteria Framework	- Final list of metrics (cost, quality, reliability, risk, compliance) validated by all relevant departments.	Procurement & Finance Managers
AI Predictive Model	Predictive accuracy \geq 90% compared to historical supplier performance -Ranks suppliers correctly based on the predefined weighted criteria.	AI/IT Team Lead / Project Manager
Interactive Dashboard	- Displays key metrics (reliability score, ranking, risk level). - User-friendly, responsive, and accessible to authorized	Management & IT Department

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	staff. - Provides exportable reports and visualizations.	
Final Deployment	-Fully functional web-based internal system. -User training completed with positive feedback.	Project manager

8.1.4 Requirements Analysis

This section breaks down the functional, non-functional, and technical requirements our system must meet

A. Functional Requirements

ID	Requirement	Description
FR1	Data Integration	The system must consolidate supplier data from Procurement, Finance, and Operations into one database.
FR2	Supplier Evaluation	The system must calculate scores based on criteria (cost, quality, reliability, risk
FR3	AI Prediction Engine	The model must predict supplier reliability using historical data and patterns.
FR4	Ranking Algorithm	The platform must automatically rank suppliers according to

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		weighted criteria.
FR5	User Access Control	Only authorized departments (Procurement, Management) can access the system.
FR6	Export & Reporting	Export & Reporting

B. Non-Functional Requirements

ID	Requirement	Description
NFR1	Performance	Dashboard and AI model must respond within 3 seconds of a user query
NFR2	Usability	The interface must be intuitive, requiring minimal training.
NFR3	Reliability	System uptime must be $\geq 99\%$ after deployment
NFR4	Scalability	The system should support additional data sources in the future.
NFR5	Maintainability	The system should allow easy updates to criteria or model weights.

C. Technical Requirements

ID	Requirement	Description
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TR1	Data Storage	Use cloud-based database for centralized data management.
TR2	AI Framework	Use Python (scikit-learn, pandas) for model development
TR3	Version Control	Use GitHub or internal repository for development tracking

D. Stakeholder Requirements

Stakeholder	Primary need
Procurement	Reliable supplier rankings, risk assessment, and decision insights.
Finance	Cost and payment history integrated into supplier evaluation
Operations	Visibility into delivery performance and reliability.
IT Team	Secure, maintainable, and easily deployable application.
Management	Executive dashboard summarizing supplier performance trends.

8.1.5 Scope Verification Techniques

Scope verification is the formal process of reviewing deliverables with stakeholders to confirm that the project outcomes meet the defined scope, requirements, and acceptance criteria.

Technique	Purpose & Application	Verification Output
Deliverable Review & Inspection	Each deliverable (database, AI model, dashboard) is reviewed against acceptance criteria for completeness, accuracy, and usability.	Review checklist, inspection report
User Acceptance Testing (UAT)	Procurement and Management teams test the system to confirm it performs as intended and meets user needs.	UAT report and approval form
Requirement Traceability Matrix (RTM)	Ensures every requirement is linked to a verified deliverable, confirming full scope coverage.	RTM document
Walkthroughs & Demonstrations	Project team demonstrates the system’s functionality (AI predictions, rankings, dashboard insights) to stakeholders.	Demo feedback log
Checklists & Quality Audits	Internal quality checks validate that all scope items meet organizational and technical standards.	Phase completion checklist
Stakeholder Sign-Off	Formal confirmation from department heads and management that deliverables meet expectations.	Signed acceptance sheet

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8.1.6 Scope Change Control Techniques

Scope change control ensures that all modifications to the project's scope are systematically evaluated, approved, documented, and communicated to maintain project alignment and prevent scope creep.

-Formal Change Request Process

Any team member or stakeholder proposing a change—such as integrating a new supplier metric or dashboard feature—must submit a formal Change Request Form. This document outlines the reason, expected benefit, and potential schedule, cost, and quality impact.

-Change Control Board (CCB) Review

A dedicated Change Control Board, composed of the Project Manager, IT Lead, Procurement Representative, and Management Sponsor, will evaluate each request. The CCB decides whether to approve, reject, or defer the change based on organizational priorities and resource availability.

-Impact Analysis

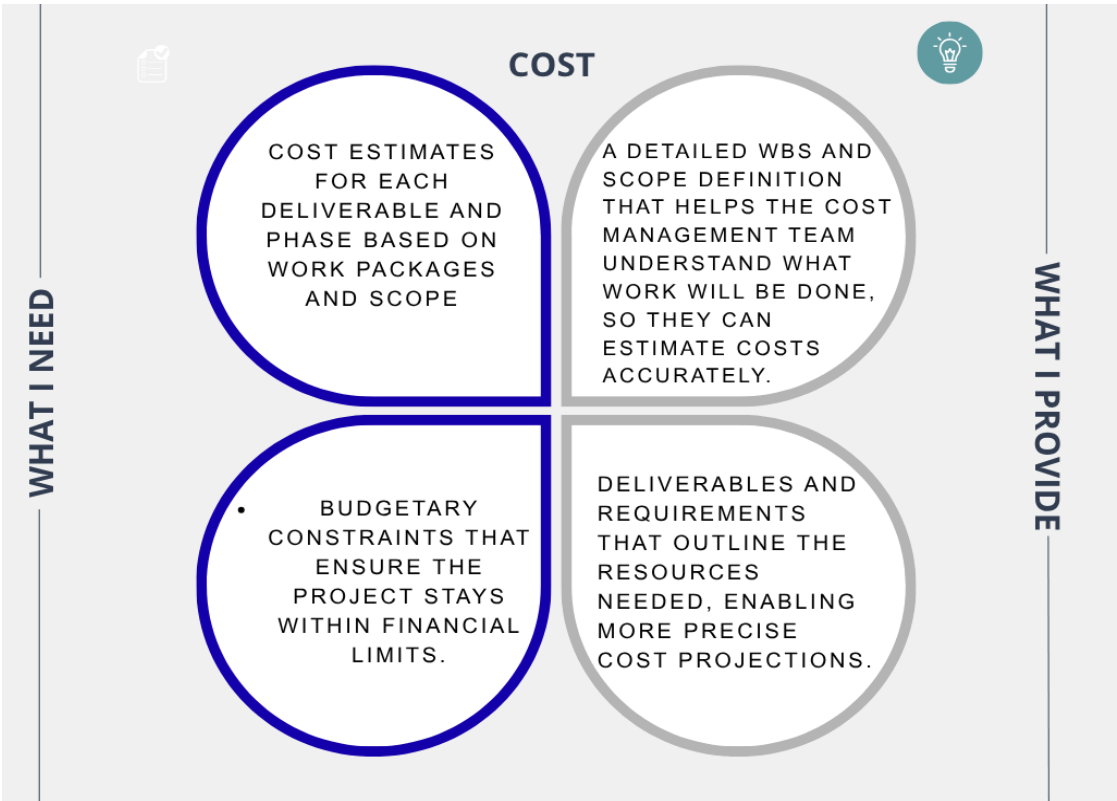
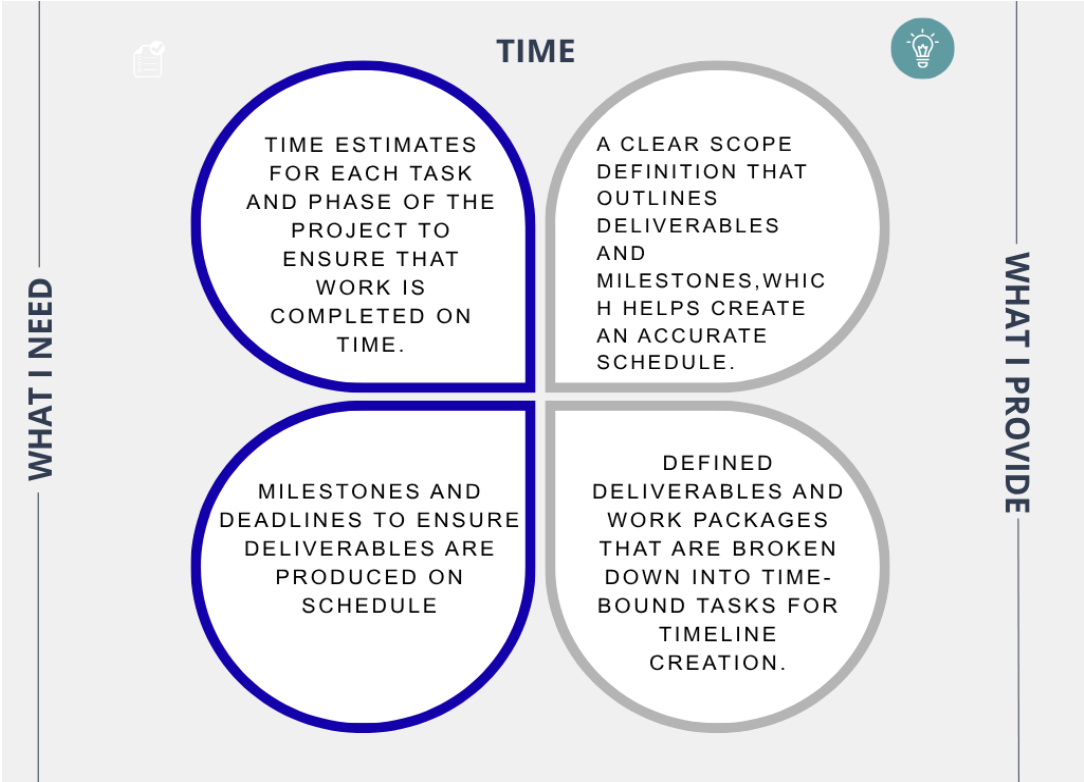
Before any change is approved, a detailed impact analysis will be performed to assess its effect on project time, budget, quality, and risk. Only changes that add value without compromising major constraints will be considered for implementation.

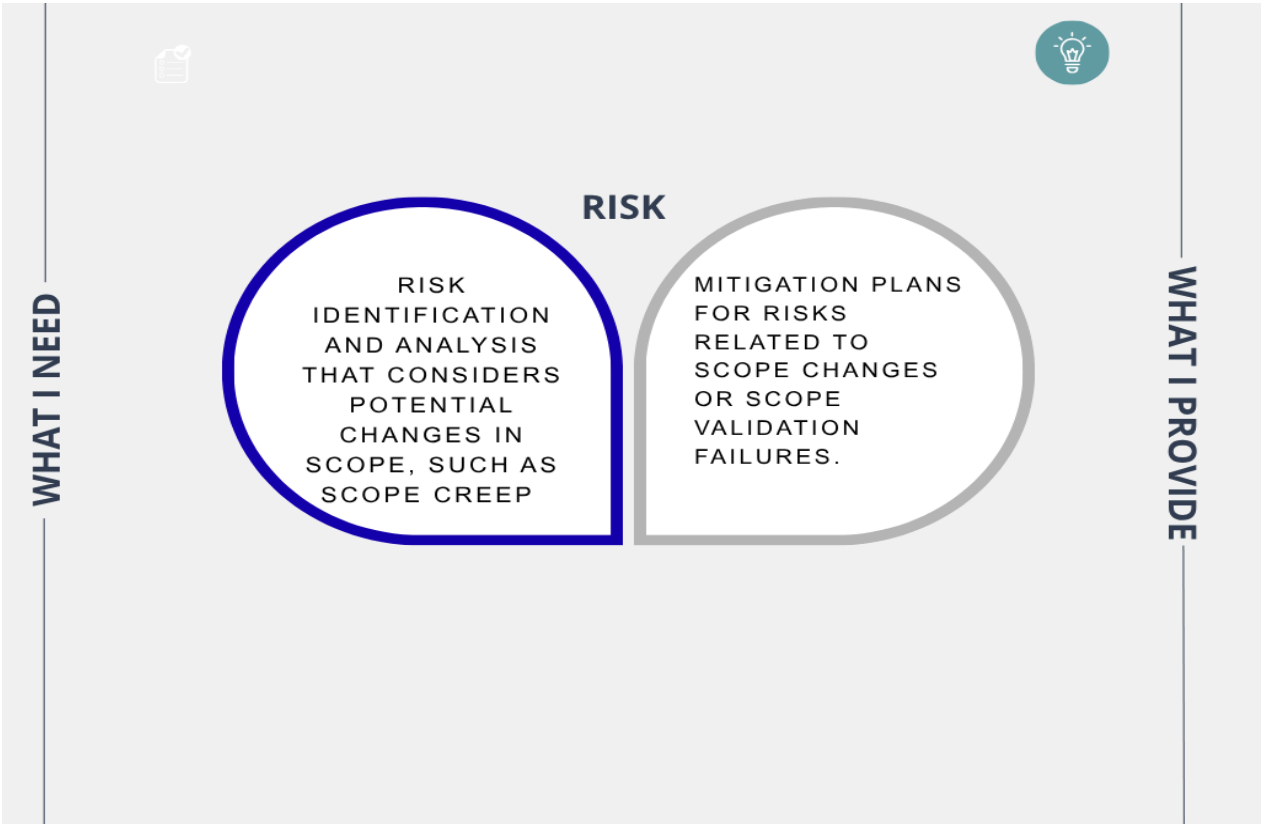
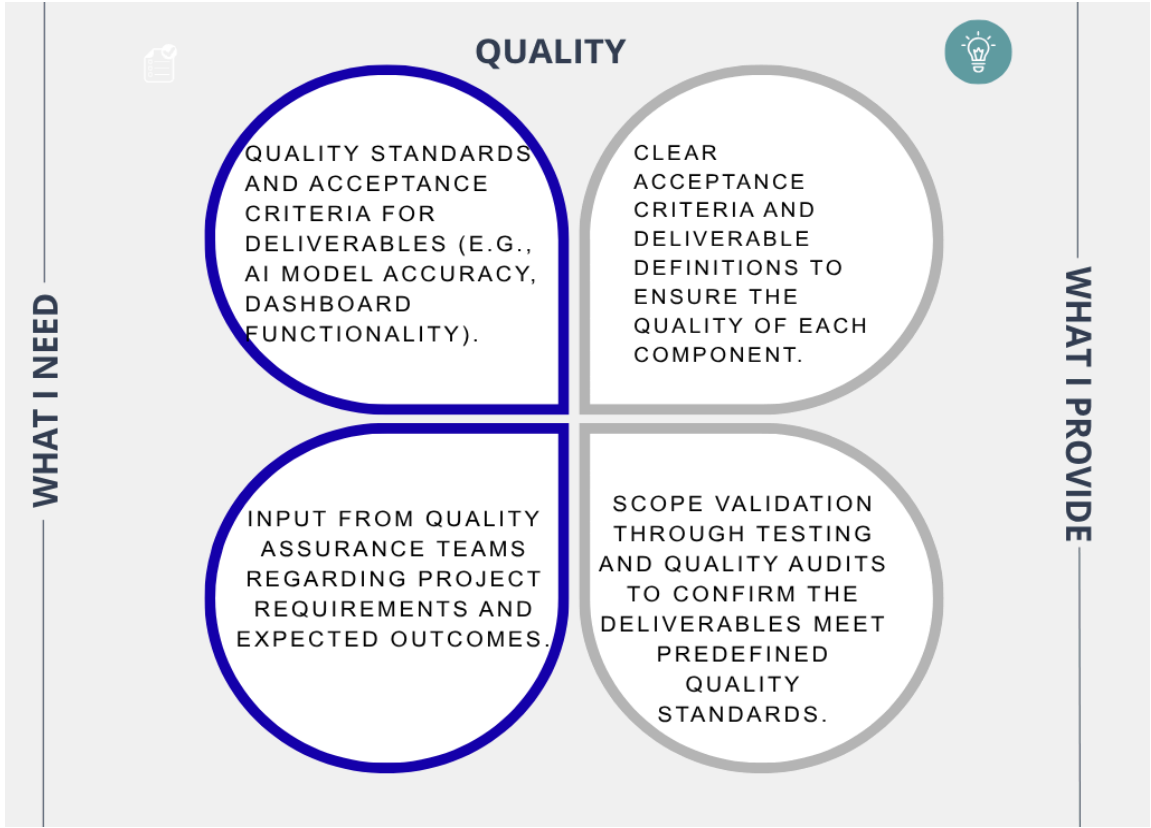
-Change Log Maintenance

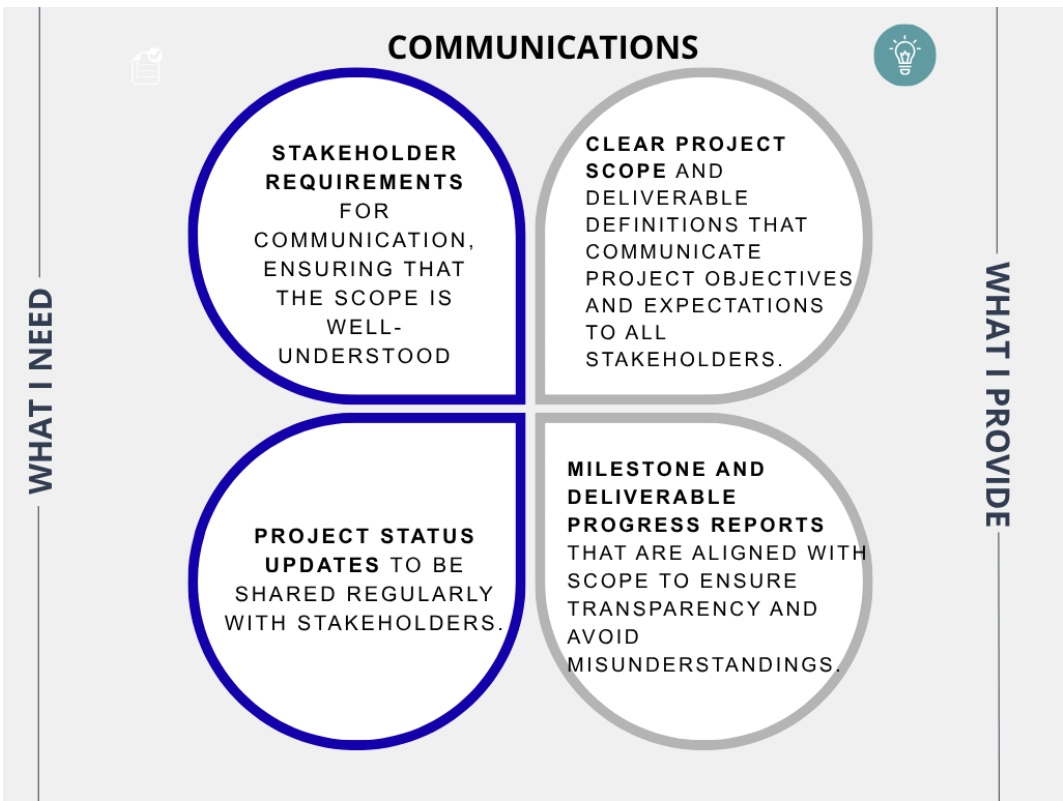
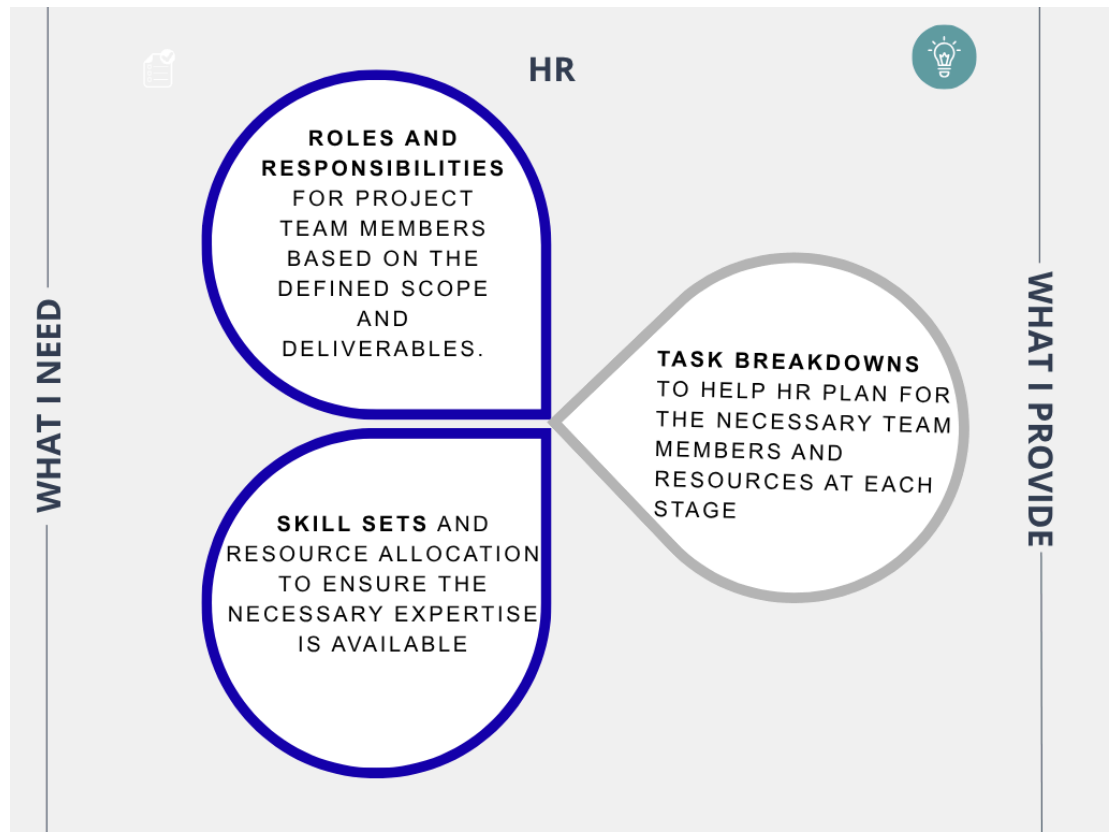
All approved and rejected changes will be recorded in a Change Log, which will be updated regularly to maintain transparency and serve as an official record of project scope evolution.

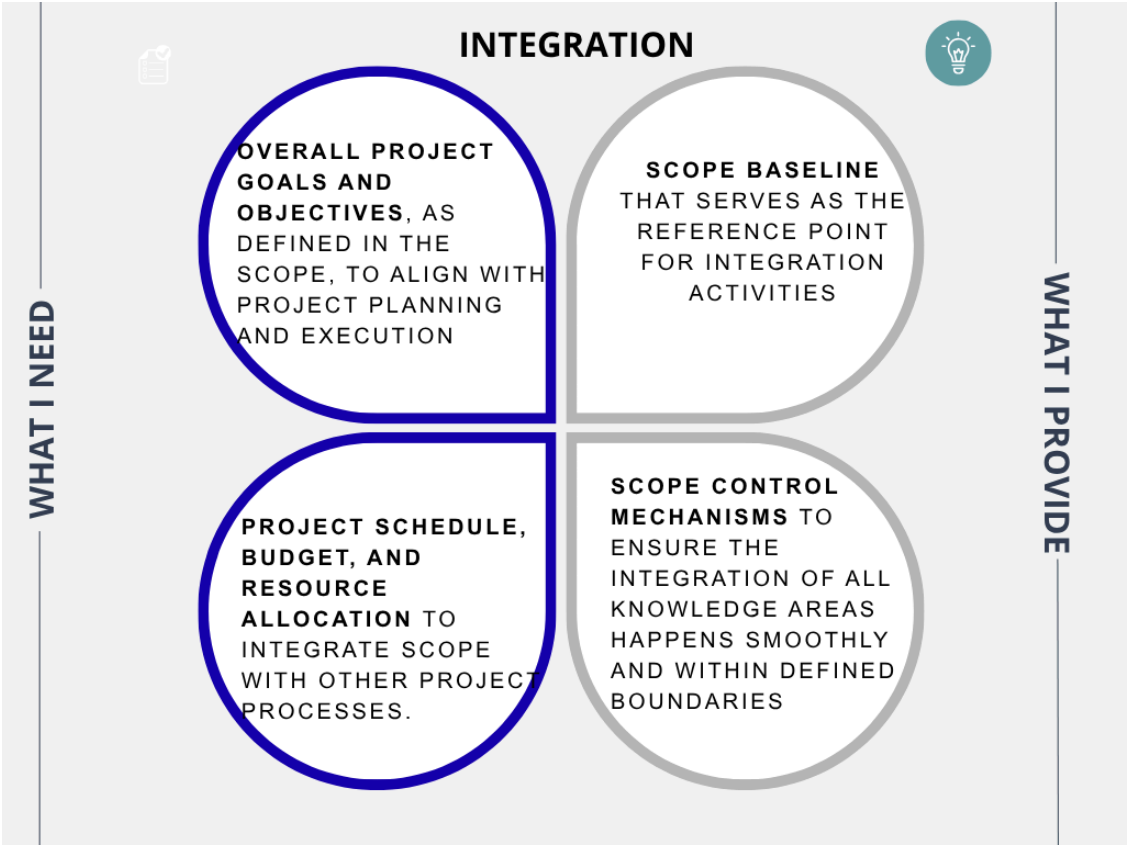
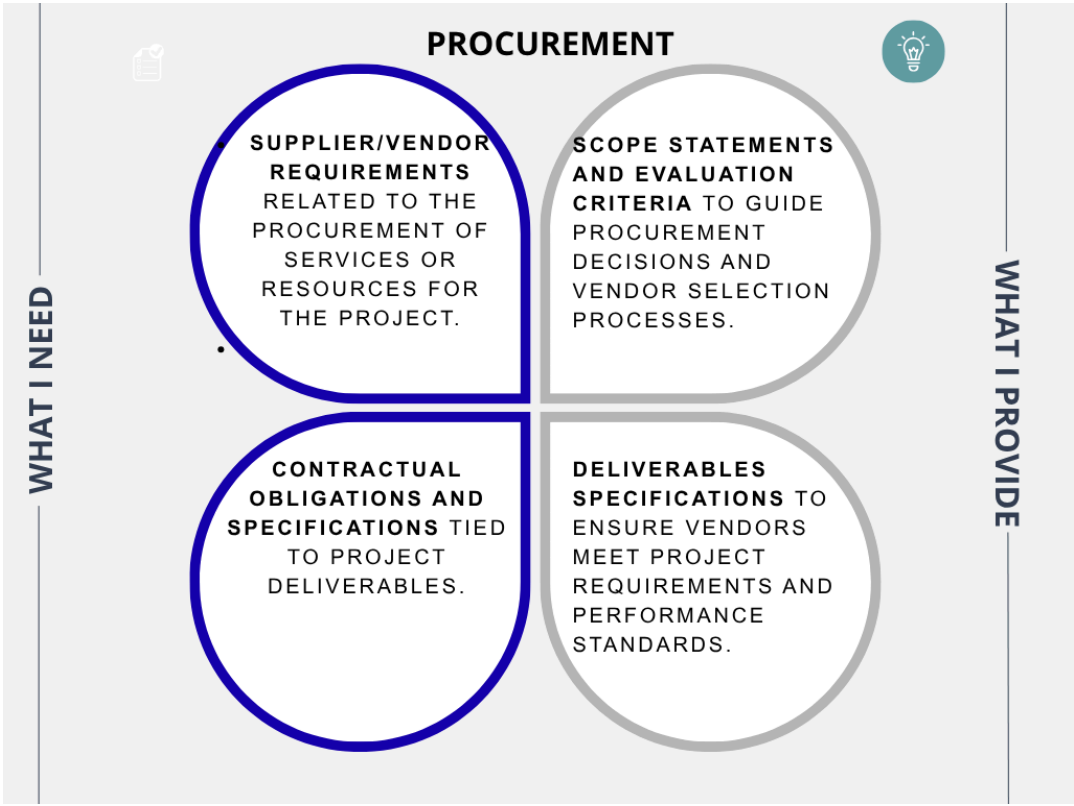
8.1.7 Integration with Other Project Management Knowledge Areas

The Scope Management knowledge area doesn’t function in isolation , it interacts and integrates with the other 8 PMKAs to deliver a cohesive and successful project. Here’s how Scope Management supports and is supported by the other areas:









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8.2 Schedule Management

8.2.1 Objective

Establish and operate a predictable, data-driven delivery cadence (Sprints and Releases) that sequences work, exposes dependencies early, and provides objective visibility (burndown/Cumulative Flow) so the project manager can integrate outputs from all PMKAs to achieve the project's target completion date.

Schedule success criteria

- Deliver a production-ready internal application with the three core features (Predictive Analysis, Ranking, Recommendations) and training rolled out by the agreed release date.
- Hit each sprint review with a measurable progress toward scope (story points completed within $\pm 15\%$ of plan over the final three sprints).

8.2.2 Project Application — Agile Scheduling Tools & Techniques

8.2.2.1 Cadence & Ceremonies

- **Framework:** Scrum-style **3-week cycles, 4 cycles total** (≈ 12 weeks).
- **Ceremonies (time-boxed):**
 - **Cycle Planning: 6–8 hours** on Day 1 (capacity, forecast, risks, dependency plan).
 - **Daily Scrum: 15 minutes.**
 - **Cycle Review: 2 hours** (demo to stakeholders; accept/reject).
 - **Retrospective: 1–1.5 hours** (improvement actions enter backlog).
 - **Backlog Refinement: ~10% of team time** (≈ 1.5 –2 hours/week).
- **Definition of Done (schedule acceptance):** Code merged; tests passing; security checks clean; documentation updated; **feature toggled and demoed in Review**; tagged build in repo.

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8.2.2.2 Agile Scheduling Artifacts

- **Product Roadmap (quarters → releases).**
- **Release Plan (4 sprints / release).**
- **Sprint Plan** with capacity, forecast velocity, and story commitments.
- **Burndown Chart** (per sprint) and **Cumulative Flow Diagram** (per release).
- **Dependency Board** (internal/external), maintained alongside the Sprint Backlog.
- **Lightweight Network View (Precedence List)** for critical cross-team work .

8.2.2.3 Epics and Scheduling Buckets

- **E1 Data Integration & Preprocessing** — (source connectivity, ingestion pipelines, schema standardization, data-quality checks, lineage/audit fields).
- **E2 Predictive Modeling** — (feature engineering & feature store v1, model selection/training/validation, calibration & drift metrics, scoring).
- **E3 Dashboard & Reporting** — (manager input form, supplier ranking & risk indicators, filters/trends, PDF/CSV export, role-based access, audit log).
- **E4 System Testing & Release Readiness** — (pilot, performance & security testing, monitoring & alerts/MLOps, documentation & training, rollout to production).

8.2.2.4 Lightweight Network / Precedence

- **E1.1 Obtain data access approvals (Legal/IT) → E1.2 Ingest historical data → E1.3 Clean/standardize → E3.1 Feature engineering → E3.2 Train baseline model → E3.3 Scoring → E4.2 Dashboard integrates scoring → Release.**

8.2.3 High-Level Schedule & Milestones (4 × 3-week work cycles)

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Timeframe	Cycle Goal	Key Deliverables (DoD)	External Inputs/Dependencies	Demo / Exit Criteria
Wk 1-3 — Cycle 1	Data integration & preprocessing	Connected top data sources; ingestion pipelines; standardized schema; data-quality report v1	Legal/IT data approvals; departmental system access	Milestone A: Data foundation ready; reproducible pipeline runs
Wk 4-6 — Cycle 2	Predictive modeling	Feature store v1; baseline model trained; scoring endpoint with unit tests	Compute/GPU; labeled outcomes/ground truth	Milestone B: Reliability score v0.1 on historicals; API contract stable
Wk 7-9 — Cycle 3	Dashboard & reporting module	Manager input form; ranked list & risk indicators; export/reporting; audit log	Risk taxonomy from Legal/Ops; design approvals	Milestone C (MVP): Feature-complete dashboard integrated with scoring
Wk 10-12 — Cycle 4	System testing & refinement	Pilot/UAT, performance & security tests, training materials; release candidate	Pilot user availability; change window approval	Release/Go-Live: UAT ≥80% pass; runbook ready; production deploy completed

8.2.4 Monitoring & Control

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- **Sprint Burndown:** Remaining story points vs. days. Alert if >20% behind plan by Day 6.
- **Cumulative Flow Diagram (CFD):** Watch “In-Progress” band for widening (WIP overload).
- **Predictive velocity trend:** 3-sprint rolling average; use Monte Carlo (lightweight) for P50/P85 release date forecasts.
- **Schedule Performance Index (Agile proxy):** $SPI^* = \text{Earned Story Points} / \text{Planned Story Points}$. Keep SPI^* in 0.85–1.15.
- **Dependency SLA:** % of blocking dependencies delivered on or before the date promised (target $\geq 90\%$).

8.2.5 Risks that affect time & mitigations

- **Late data-access approvals** → Front-load approvals in Sprint 0; maintain alt synthetic dataset to keep model work moving.
- **Unstable historical data quality** → Add data-quality gates; time-box cleaning; escalate outliers weekly.

8.2.6 Integration with other project management knowledge areas

Inputs needed from other PMKAs

- **Scope Management:** Approved MVP scope, epic/story acceptance criteria, change control rules.
- **Cost Management:** Team capacity budget, any overtime/contractor constraints that cap velocity.
- **Quality Management:** DoD, test coverage targets, non-functional requirements that add schedule tasks.

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- **Human Resource Management:** Skill matrix, vacations, hiring/onboarding dates affecting capacity.
- **Communications Management:** Stakeholder calendar and reporting cadence for Reviews/UAT.
- **Risk Management:** Top schedule threats, contingency strategies, risk triggers.
- **Procurement Management:** Lead times for tools, data subscriptions, and any external services.
- **Project Integration Management (PM):** Baseline dates, change approvals, cross-area trade-offs.

Outputs I provide to Integration & others

- **Roadmap, Release Plan, Sprint Plans** with dates and committed stories.
- **Milestone chart** (Milestones A & B, Go-Live) and dependency register with owners/due dates.
- **Weekly schedule health pack:** Burndown, CFD snapshot, SPI*, velocity forecast, risk/issue log.
- **Impact assessments** for any scope/cost/risk change requests (date deltas, options).

These outputs are what the Project Manager uses to “ensure the outputs from all other areas flow correctly” into a single integrated path to success, per the assignment brief.

You can find here the [Tracking sheets](#) as well as the [Gantt chart](#) .

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8.3 Cost Management

8.3.1 Objective

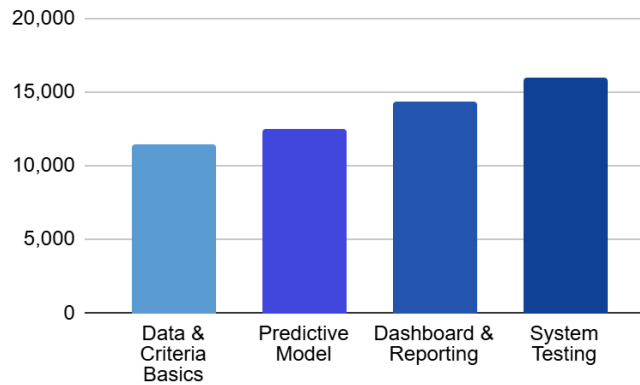
The objective of the Cost Management Knowledge Area (PMKA) is to ensure that the project is completed within its approved budget while maintaining financial transparency and accountability. Cost Management establishes processes to plan, estimate, allocate, and control costs so that the project can be delivered efficiently without exceeding financial constraints. It provides the framework for decision-making throughout all four sprints of the AI-Driven Procurement System project, covering both human resources and non-labor components.

8.3.2 Project Application

For this project, the [Cost Estimation](#) and [Cost Baseline](#) tool was applied to calculate the total cost per sprint, followed by the establishment of a final approved budget. I used salary-based estimations for human resources and allocated non-labor costs based on development needs per phase. The Cost Baseline integrates these estimations and includes contingency and management reserves for risk management purposes.

Phase	HR Cost (TND)	Non-Labor Cost (TND)	Total per Phase (TND)
Sprint 1: Data & Criteria Basics	9,000	2,500	11,500
Sprint 2: Predictive Model	9,000	3,500	12,500
Sprint 3: Dashboard & Reporting	11,400	3,000	14,400
Sprint 4: System Testing & Refinement	13,500	2,500	16,000
Total	42,900	11,500	54,400

The total estimated project cost is **54,400 TND**, including human resources and non-labor components. A **contingency reserve of 10%** and a **management reserve of 5%** were added to cover potential uncertainties, leading to a final approved budget of approximately **62,560 TND**.



8.3.3 References

[Glassdoor\(2025\)](#) : Data Engineer Salaries in Tunisia
[Paylab \(2025\)](#): Information Technology Salaries in Tunisia.
[Levels.fyi \(2025\)](#) : Software Engineer Salaries – Tunisia.
[The Knowledge Academy \(2025\)](#): Management Training & Costing Courses – Tunis.
[Microsoft Azure \(2025\)](#) : Cloud Pricing
[Cost Management Sheet](#): the Cost Estimation and Cost Baseline tool

8.3.4 Cost Control

Cost control ensures the project remains within its baseline budget and that expenditures align with planned progress.

Tools and Techniques:

- **Earned Value Management (EVM):**

Indicator	Formula	Purpose
Cost Variance (CV)	$CV = EV - AC$	Determines if the project is under or over budget
Cost Performance Index (CPI)	$CPI = EV / AC$	Measures cost efficiency
Estimate at Completion (EAC)	$EAC = BAC / CPI$	Forecasts the final project cost

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- **Variance Analysis:** Identifies early deviations from planned costs.
- **Change Control:** No expense beyond baseline without Project Manager approval.
- **Reporting Frequency:** Monthly reviews of actual vs. planned expenditure.

8.3.5 Integration with other project management knowledge areas

The Cost Management process integrates closely with other Project Management Knowledge Areas to maintain consistency and coordination throughout the project lifecycle. From **Scope Management:** Cost estimation depends on the scope definition and Work Breakdown Structure to identify deliverables and corresponding costs. From **Schedule Management:** Time allocation per sprint influences labor costs and helps establish the cost baseline. From **Human Resource Management:** Salary structures and workload distribution directly impact HR cost estimation. From **Procurement Management:** Non-labor expenses, such as datasets, cloud services, and licenses, are coordinated through procurement planning. **Outputs to Integration Management:** The final approved project budget, cost baseline, and variance analysis reports are provided to Integration Management for overall project control and decision-making.

Conclusion: Cost Management ensures that financial resources are used efficiently, enabling informed decision-making and supporting project success through proactive cost control and transparency.

8.4 Quality Management

8.4.1 Overview

The objective of quality management in this project is to ensure that the AI-based supplier and distributor selection model meets the required standards of accuracy, consistency, interpretability, and reliability throughout its lifecycle — from design to deployment.

This aligns with ISO 9001:2015 principles of process-based quality management and continuous improvement, as well as ISO/IEC 25010 standards for software product quality (International Organization for Standardization, 2015; 2011).

8.4.2 Quality Management Objectives

Objective	Description
Model Accuracy	Maintain a high level of predictive precision when evaluating supplier reliability and performance.
Reliability & Stability	Ensure the model consistently performs across datasets and time periods.
Explainability	Guarantee that decision-makers can interpret how the AI produces its recommendations.
Ethical & Data Compliance	Ensure fairness, transparency, and compliance with data protection regulations.
Continuous Improvement	Regularly retrain and audit the AI model to enhance predictive quality.

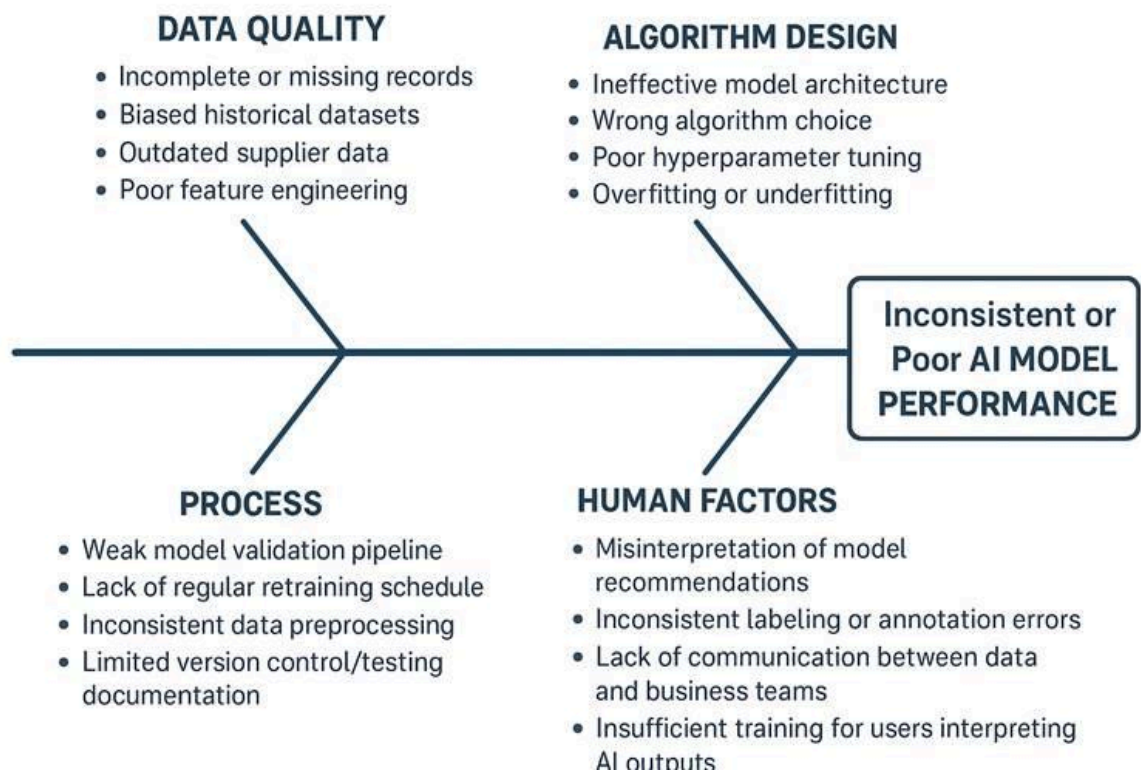
8.4.3 Conceptual Quality Tools and Applications

Within the scope of this AI-based project, the quality team identified and implemented two quality management tools considered most effective for enhancing model accuracy and process consistency.

A. Fishbone Diagram (Ishikawa Cause–Effect Analysis)

Purpose:

To identify potential causes of poor AI model performance or inaccuracy during testing phases.



Outcome:

This analysis supports corrective action planning — for instance, improving data preprocessing protocols or adjusting algorithm parameters to stabilize accuracy.

B. Quality Metrics Framework (Model Performance & Reliability Metrics)

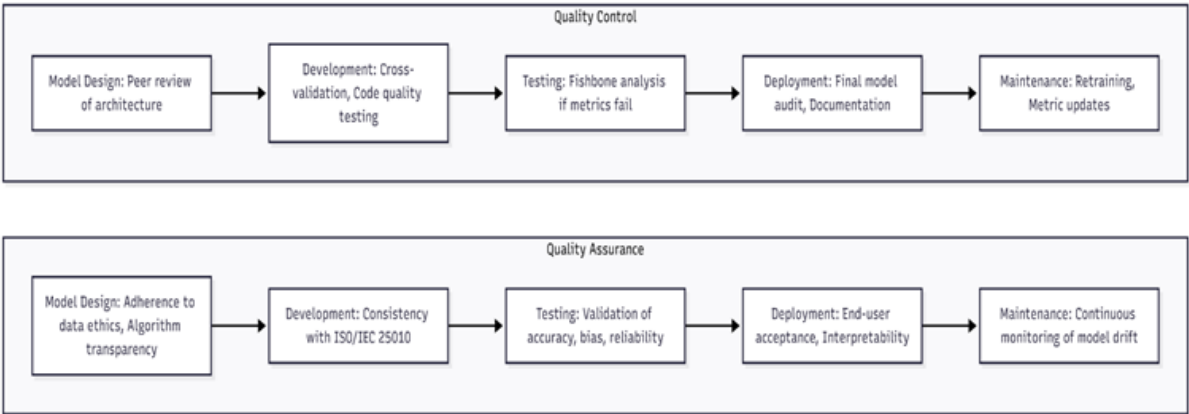
Purpose:

To measure and monitor the AI model’s predictive performance, robustness, and bias.

Model Performance and Reliability Metrics			
Metric	Description	Quality Target	Frequency
Accuracy	Proportion of correct predictions vs. actual outcomes.	≥ 90%	Monthly
AUC-ROC Score	Measures classification ability across thresholds.	≥ 0.85	Monthly
Model Drift	Measures change in data distribution or prediction behavior over time.	≤ 10% drft	Quarterly
Bias Detection	Tests fairness across supplier categories or regions.	≤ 5% bias gap	Quarterly
Explainability Index	Evaluates clarity of model reasoning (e.g., SHAP or LIME)	High interpretability	Ongoing

Outcome:
Maintaining and tracking these metrics ensures the AI system remains reliable, unbiased, and explainable over its lifecycle.

8.4.4 Quality Assurance & Control Activities

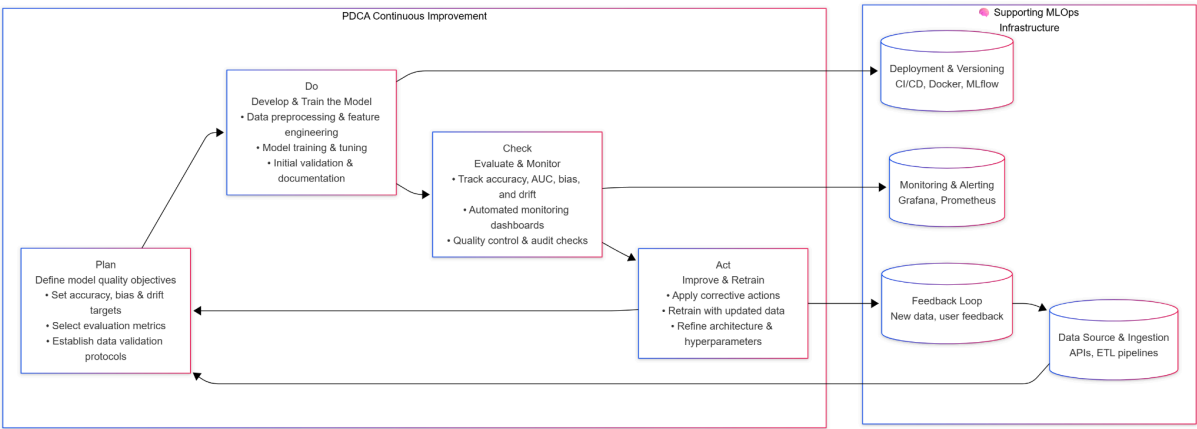


The diagram illustrates the dual-track quality management process applied throughout the AI-based project lifecycle. It is divided into two swim lanes — the upper lane represents **Quality Assurance (QA)**, focusing on preventive measures

to ensure process integrity and compliance, while the lower lane represents **Quality Control (QC)**, emphasizing evaluation, testing, and verification of outcomes.

8.4.5 Continuous Improvement Approach

Following **PDCA (Plan-Do-Check-Act)** principles from ISO 9001:



8.4.6 Contribution of Quality Management to Other PM Knowledge Areas

- **Integration:** Ensures AI development, data engineering, and stakeholder alignment follow unified quality standards.
- **Scope:** Prevents scope creep by defining clear quality objectives for model performance and platform features.
- **Time:** Reduces rework through proactive quality control and ensures testing and validation milestones are met.
- **Cost:** Helps avoid extra expenses from errors, failed deployments, or low stakeholder adoption.
- **Risk:** Identifies and mitigates AI prediction risks, bias, and data issues early.
- **Procurement:** Provides criteria for evaluating third-party tools or data sources used in model development.

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- **Human Resource:** Ensures skilled personnel and tools meet quality standards, reducing errors from untrained staff.
- **Communications:** Supports transparent reporting of AI performance, limitations, and recommendations to stakeholders.

8.4.7 Integration with other project management knowledge areas

- **Integration:** Ensures QA processes are aligned with project plan.
- **Scope:** Clearly defines what is included in quality assessment.
- **Time & Cost:** Quality metrics inform schedule buffers and budget allocation for testing.
- **Risk:** Risk identification drives quality checks and validation steps.
- **Procurement:** Quality standards guide external software, data, or consultancy acquisition.
- **Human Resource:** Human expertise and tool readiness support high-quality outputs.
- **Communications:** Stakeholder reporting provides feedback loops for model refinement.

8.4.8 Applicable Quality Standards

- **ISO 9001:2015 – Quality Management Systems:** Emphasizes process control, continual improvement, and customer focus.
- **ISO/IEC 25010:2011 – Software Product Quality Model:** Focuses on functional suitability, reliability, usability, and maintainability.
- **PMBOK 7th Edition (PMI, 2021) :** Provides guidelines for quality planning, assurance, and control within project environments.

8.4.9 References

- International Organization for Standardization. (2015). *ISO 9001:2015 – Quality Management Systems – Requirements*.

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- International Organization for Standardization. (2011). *ISO/IEC 25010:2011 – Systems and Software Engineering – Systems and Software Quality Requirements and Evaluation (SQuaRE)*.
- Project Management Institute. (2021). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition*.

8.4.10 Conclusion

The Quality Management plan for the AI-based Supplier & Distribution Selection Application ensures that the platform delivers **accurate, reliable, and unbiased** supplier recommendations. By applying conceptual tools, the project proactively identifies potential issues and establishes clear standards for **model performance** and **stakeholder satisfaction**. Integrating quality management with other PM knowledge areas ensures that the AI solution not only meets technical objectives but also supports **efficient decision-making, risk mitigation, and overall project success**.

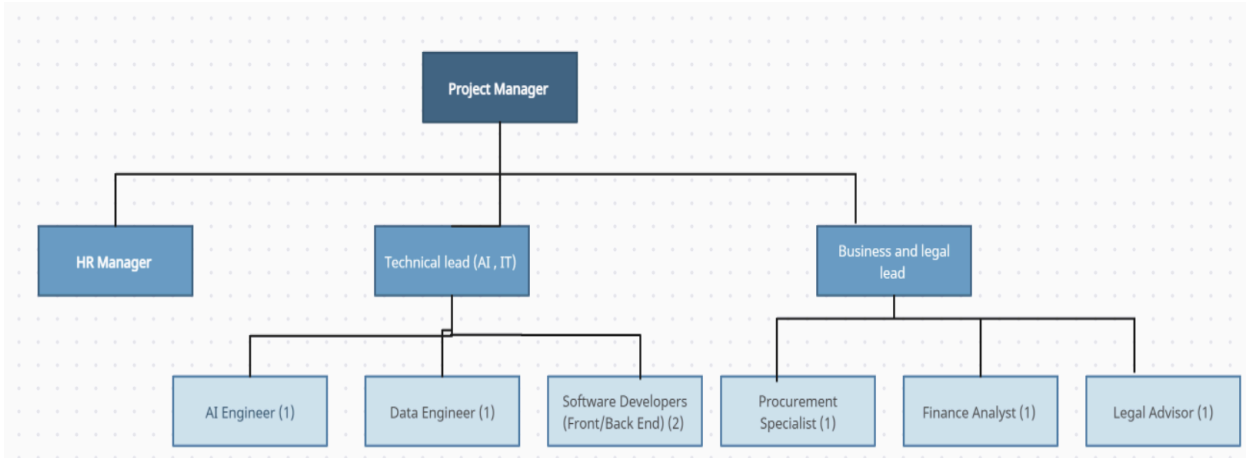
8.5 HR Management

8.5.1 HR Management objectives

- Define roles and responsibilities for everyone involved.
- Plan team acquisition and development.
- Keep the project team motivated, cohesive, and productive.
- Ensure clear communication, accountability, and collaboration.

8.5.2 Organizational Structure

Our organization is structured into three main departments: Human Resources (HR), Business, and Information Technology (IT). The HR Department is led by the HR Manager. The Business Department is managed by the Business and Legal Lead and is composed of roles such as a finance analyst, procurement specialist, and legal support employee. The IT Department is directed by the Technical Lead and consists of one AI engineer, one Data engineer, and two developers. This structure ensures a clear division of responsibilities, efficient coordination between departments, and comprehensive coverage of all key organizational areas.



8.5.3 Responsibilities assignment

Position	Main responsibilities
Project Manager	<ul style="list-style-type: none"> - Define the project timeline, milestones, and deliverables -Coordinate the work of all departments to ensure objectives are met efficiently. - Act as the main link between management, procurement, finance, and technical teams to align expectations and progress.
HR Manager	<ul style="list-style-type: none"> - Allocates roles based on skill sets. - Oversees team performance and motivation. - Ensures internal communication and conflict resolution. - Designs training and capacity-building programs.
Technical Lead	<ul style="list-style-type: none"> - Leads the technical development of the AI model. - Defines system architecture and integration flow. - Supervises data engineers and software developers. - Ensures adherence to technical standards and data security. - Reports technical progress to the Project Manager.

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Data Engineer	<ul style="list-style-type: none"> - Gather and centralize data from procurement, finance, and operations departments. - Clean and preprocess data. - Build and automate ETL pipelines for continuous data integration. - Design and maintain the database architecture for supplier/distributor information. - Ensure data quality, consistency, and accessibility for modeling
AI Engineer	<ul style="list-style-type: none"> - Select and implement suitable algorithms for supplier performance prediction and risk analysis. - Conduct model training, testing, and optimization using historical data. - Evaluate model accuracy and tune hyperparameters.
Software Developer	<ul style="list-style-type: none"> - Builds the user interface and integrates AI outputs into the system. - Ensures system usability and reliability. - Supports testing and debugging
Business & Legal Lead	<ul style="list-style-type: none"> - Coordinates procurement, finance, and legal teams. - Aligns business objectives with technical outcomes. - Ensures compliance with contractual and ethical standards. - Prepares business feasibility and risk assessment reports.
Procurement Specialist	<ul style="list-style-type: none"> - Identifies and evaluates potential suppliers. - Analyzes supplier performance and selection criteria. - Works with the AI team to validate the system's recommendations.
Finance Analyst	<ul style="list-style-type: none"> - Estimates project costs and monitors expenditures. - Performs cost-benefit and ROI analysis. - Ensures alignment with the allocated budget.
Legal and administrative advisor	<ul style="list-style-type: none"> - Reviews supplier contracts and compliance documents. - Ensures adherence to local and international trade laws. - Provides legal guidance on data privacy and intellectual

	property
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8.5.4 Responsibility assignment matrix

Task	Poject manager	HR manager	development	Finance	Procurment	Legal
Problem analysis	A	C	I	C	R	I
Data collection	C	I	R	R	R	I
model development	C	I	R	I	I	I
Criteria Definition	C	I	I	C	A	C
Design	C	I	R	I	I	I
Testing & Feedback	C	I	R	I	C	I
Training Sessions	C	A	C	C	C	C
Final Evaluation	A	C	I	R	R	R

R Responsible

A Accountable

C Consulted

I Informed

8.5.5 Resource histogram

Phase	Duration	Estimated human resources
Sprint 1 : Data and Criteria Basics	3 weeks	PM , Procurement , HR , Data Engineer
Sprint 2 : Predictive Model	3 weeks	PM, AI engineers development engineers, finance analyst
Sprint 3: Dashboard and Reporting	3 weeks	PM, AI engineers , development engineers, legal advisor
Sprint 4: System Testing and Refinement	3 weeks	all departments

8.5.6 Motivation techniques : To maintain high morale and productivity

- **Goal alignment:** Clearly communicate to each team member how their individual role and responsibilities directly contribute to the overall success

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of the AI tool. By connecting daily tasks to the larger organizational mission, employees understand the value of their work, which increases engagement **and motivation**

- **Recognition:**Implementing regular acknowledgment of team members’ achievements, such as public shout-outs in team communication channels to highlight individual contributions, and organizing small celebrations, like a “Data Phase Complete” event, to collectively recognize the team’s progress
- **Empowerment:** Give developers and analysts the autonomy to propose improvements and take ownership of their work. Empowering team members to make meaningful decisions fosters creativity, accountability, and a sense of personal investment in the project’s success.
- **Gamification:** Introduce elements of friendly competition and incentives, such as small rewards, badges, or leaderboards highlighting top contributions. Gamification can increase motivation, engagement, and collaboration by making tasks more interactive and rewarding.
- **Feedback Sessions:** Conduct bi-weekly meetings focused on empathic listening to gather insights on employee concerns, suggestions, and overall experience. These sessions demonstrate that leadership values team input, helps address issues proactively, and strengthens trust between team members and management.

8.5.7 Empathic Listening & Communication Plan

Weekly Team Meetings:

- Review project progress, milestones, and challenges.
- Encourage every team member to share ideas, updates, or concerns.
- Promote active listening, ensuring all voices are heard and respected.

Anonymous Feedback Channels:

- Use digital forms or suggestion boxes for confidential input.

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- Provide a safe space for employees to share honest opinions about workloads, team dynamics, or leadership practices.
- Helps identify issues that might not surface in open discussions.

Small Discussion Circles:

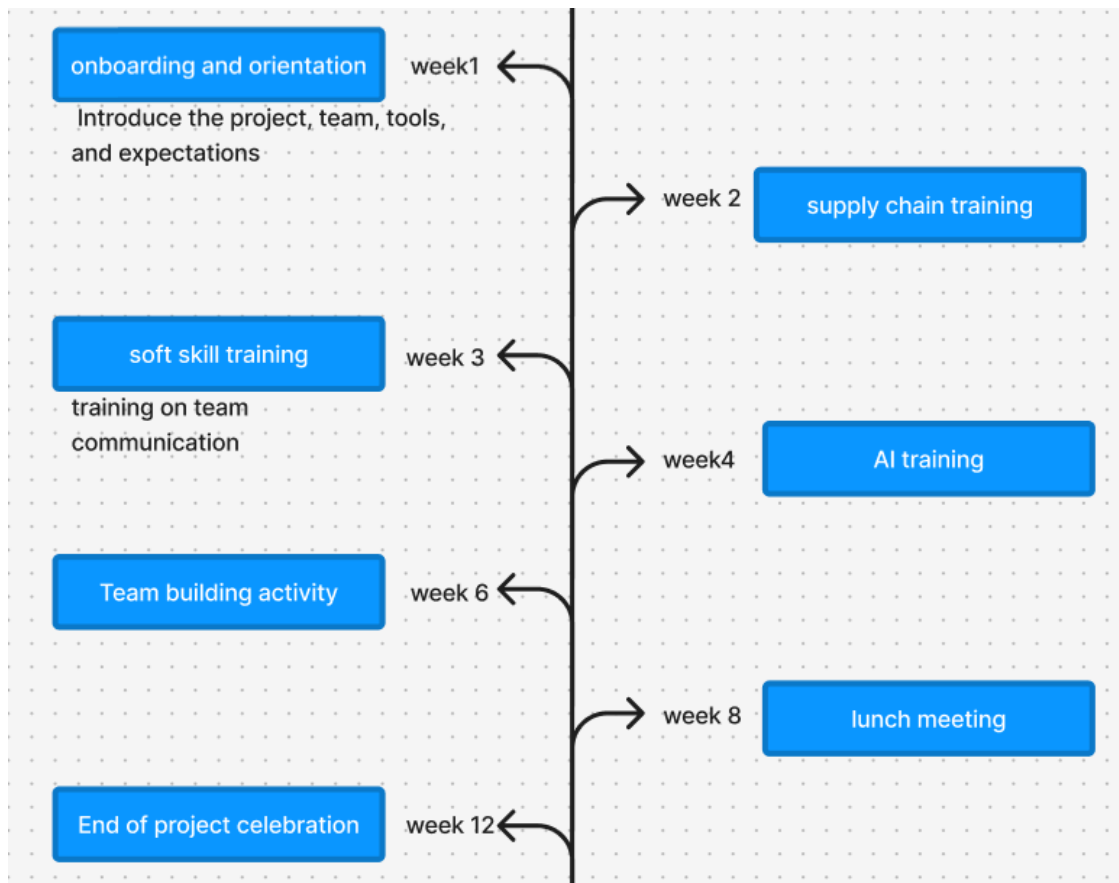
- Organize informal discussions to reflect on team collaboration and suggest improvements.
- Promotes open dialogue and problem-solving in a relaxed environment

Cross-Department Social Interactions:

- Arrange coffee chats, virtual hangouts, or lunch meetings.
- Strengthens relationships beyond immediate project teams and improves informal communication channels.

8.5.8 Training and Development Plan

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8.5.9 Performance monitoring

Effective performance monitoring is essential to ensure that team members remain engaged, productive, and aligned with project goals

Key Performance Indicators (KPIs):

Establish measurable indicators to track efficiency and collaboration throughout the project lifecycle. Examples include:

- **Task Completion Rate:** Measures how efficiently employees complete assigned tasks within deadlines.
- **Delay Rate:** Identifies bottlenecks and recurring issues that may affect project timelines.
- **Engagement Level:** Assessed through participation in meetings, responsiveness, and initiative in proposing solutions.
- **Collaboration Quality:** Evaluated through peer feedback, teamwork in

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cross-functional tasks, and the ability to communicate effectively.

Performance Tracking Tools:

a mix of digital tools to visualize and analyze performance data:

- **Gantt Charts:** To monitor project progress, deadlines, and task interdependencies.
- **Performance Dashboards:** To centralize real-time KPIs, allowing HR and project managers to track progress visually.
- **Employee Surveys and 360° Feedback Forms:** To gather qualitative insights from team members about leadership effectiveness, workload, and communication quality.

Performance tracking documents links :

[Team and performance Tracking](#)

[Engagement and motivation tracking](#)

[Training and development tracking](#)

8.5.10 Integration with other knowledge areas

Knowledge area	Information needed by HR	what will HR provide
scope management	Detailed description of project activities and deliverables,	Resource allocation and availability schedule.
Time management	Milestones, task dependencies, and deadlines.	Resource allocation and availability schedule.
Cost management	Budget allocation for HR activities (recruitment and trainings	HR cost estimates (salaries, training, performance rewards).
Quality management	Quality standards and performance criteria.	Employee performance metrics and training

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		outcomes
Communication Management	Communication plan and stakeholder reporting frequency	Team communication chart and meeting plan.
Risk Management	Identified human-related risks skill shortages, turnover, burnout etc	Identified HR-related risks such as understaffing, skill and dependency.
Procurement Management	Expertise from the procurement domain expert about supplier evaluation logic.	Staffing support and coordination with domain experts.
Integration management	Updated project documentation and change requests	Updated Human Resource Management Plan team structure, roles, reporting lines.

8.6 Communication Management

8.6.1 Communications Management Overview

In an AI-based supplier and distribution selection project, communications management ensures that all stakeholders — developers, suppliers, managers, and clients — receive the right information, at the right time, through the right channels.

Its goal is to facilitate understanding, coordination, and decision-making across technical and managerial teams.

8.6.2 Communication Management Plan

The Communication Management Plan defines how project information will be collected, stored, distributed, and updated.

It includes:

- Stakeholder Communication Requirements: Identifying who needs what information and when.
- Methods and Channels: e.g., email, project management software, dashboards, virtual meetings.

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- Frequency: Weekly progress reports, monthly stakeholder updates.
- Responsibilities: Who prepares, approves, and delivers each communication.
- Feedback Mechanisms: Two-way channels to collect stakeholder input and ensure clarity.

8.6.3 Tools and Techniques

Key tools and techniques used include:

- Project Management Software (e.g., Jira, Trello, Asana) – to share updates and track progress.
- AI Dashboards – automated reporting tools to visualize supplier data and project KPIs.
- Meetings & Workshops – for alignment and decision-making.
- Communication Technologies – Slack, Teams, or Zoom for real-time collaboration.
- Stakeholder Analysis Tools – to tailor messages based on influence and interest.
- Feedback Surveys & Forms – to evaluate communication effectiveness.

8.6.4 Kickoff Meetings

Kickoff meetings mark the official start of the project.

They serve to:

- Introduce team members and roles.
 - Clarify project objectives, scope, and deliverables.
 - Establish communication channels and reporting schedules.
 - Set expectations for collaboration and timelines.
- This meeting builds a shared understanding and commitment across all participants.

8.6.5 Conflict Management

Conflicts may arise between technical teams, suppliers, or management.

Effective conflict management includes:

- Early identification of communication breakdowns.
- Active listening and negotiation.
- Clear documentation of agreements.

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- Use of a conflict resolution plan, defining escalation procedures and decision authority.
Open, transparent communication helps resolve issues quickly before they affect project outcomes.

8.6.6 Status and Progress Reports

Regular status reports keep everyone informed about:

- Task completion and schedule adherence.
- Identified risks or issues.
- Resource usage and costs.
- Performance indicators of the AI system (accuracy, speed, supplier matching rate).

These reports ensure accountability and enable timely corrective actions.

8.6.7 Virtual Communication

Given the distributed nature of AI and supplier networks, virtual communication is essential.

It uses:

- Video conferencing, chat platforms, and shared drives.
 - Cloud-based tools for documentation and code sharing.
 - Digital dashboards for real-time visibility.
- Advantages include cost savings, flexibility, and faster feedback cycles.

8.6.8 Templates

Standardized communication templates promote consistency and clarity, such as:

- Project status report templates
 - Meeting agenda and minutes templates
 - Issue and risk log templates
 - Change request forms
- These help streamline communication and maintain uniformity in reporting.

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8.6.9 Integration with other project management knowledge areas

Contribution of Communications Management to Other Knowledge Areas

Communications management supports:

- Integration Management – ensuring coordination among all project components.
- Stakeholder Management – maintaining engagement through clear, timely updates.
- Risk Management – sharing risk information to prevent misunderstandings.
- Quality Management – enabling feedback loops for process improvement.

Contribution of Other Knowledge Areas to Communications Management

Other areas also strengthen communication:

- Human Resource Management – defines team roles, improving information flow.
- Scope and Schedule Management – provide content and timing for communications.
- Procurement Management – ensures transparency with suppliers and distributors.
- Risk and Cost Management – contribute essential data to reports and stakeholder updates.

In summary:

Effective communication management in an AI-based supplier and distribution selection project ensures that complex data and decisions are clearly understood by all stakeholders. It enhances collaboration, reduces misunderstandings, and directly contributes to project success across all knowledge areas.

8.7 Risk Management

8.7.1 Tools and Techniques Used

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8.7.1.1 Risk Management Plan

Risks will be identified, analyzed, ranked, and monitored throughout the project lifecycle.

For this project, the plan includes:

- **Weekly Risk Meetings:** Review and update the risk register, focusing on top-ranked risks .
- **Early Warning Indicators:** Track metrics like missed deadlines, rising costs, or user complaints.
- **Contingency Plans:** Backup strategies include temporary manual supplier reviews, emergency IT support, or extending the testing phase.
- **Post-Implementation Review:** Assess actual vs. expected risks and update the company's best practices for future AI initiatives.

8.7.1.2 Risk Register

The risk register is used to record all identified risks, their causes, impacts, owners, and mitigation strategies. It will be updated after each project phase (Data Collection → AI Development → Testing → Deployment).

8.7.1.3 Risk Ranking

After analysis, risks are prioritized in descending order of their score to allocate resources effectively.

R1 – Data quality

Risk Description: Poor or incomplete supplier data may lead to inaccurate AI predictions.

Probability (1–5): 5 **Impact** (1–5): 5 **Score:** 25 (Critical) **Rank:** 1

Solution / Mitigation Strategy: Conduct a data cleaning and validation phase; assign data owners in each department; establish data accuracy KPIs and periodic audits.

R2 – Change resistance

Risk Description: Employees may resist using or trusting the AI system.

Probability (1–5): 4 **Impact** (1–5): 4 **Score:** 16 (High) **Rank:** 2

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Solution / Mitigation Strategy: Implement a change management plan — organize awareness workshops, live demos, and user training to build trust and familiarity.

R3 – Integration

Risk Description: Difficulty integrating the new system with existing ERP/procurement tools.

Probability (1–5): 4 **Impact (1–5):** 4 **Score:** 16 (High) **Rank:** 3

Solution / Mitigation Strategy: Engage IT and procurement teams early; use middleware or APIs for smooth integration; test the system on a pilot scale before full rollout.

R4 – Data security

Risk Description: Unauthorized access or data leaks during centralization or model training.

Probability (1–5): 3 **Impact (1–5):** 5 **Score:** 15 (High) **Rank:** 4

Solution / Mitigation Strategy: Implement data encryption, access control, and secure servers; involve the cybersecurity unit for regular vulnerability testing.

R5 – Algorithm Bias

Risk Description: The AI produces biased or unreliable supplier recommendations.

Probability (1–5): 3 **Impact (1–5):** 5 **Score:** 15 (High) **Rank:** 5

Solution / Mitigation Strategy: Use diverse and representative datasets; perform cross-validation; require final human approval before supplier selection.

R6 – Schedule delays

Risk Description: Data collection or model development takes longer than planned.

Probability (1–5): 3 **Impact (1–5):** 4 **Score:** 12 (Medium) **Rank:** 6

Solution / Mitigation Strategy: Create a detailed Gantt chart, apply agile sprints, and assign clear deadlines for each phase with weekly progress tracking.

R7 – Budget overrun

Risk Description: Costs exceed initial estimates during development or testing.

Probability (1–5): 3 **Impact (1–5):** 4 **Score:** 12 (Medium) **Rank:** 7

Solution / Mitigation Strategy: Include a 15% contingency fund in the budget; track spending via cost control tools (we need to require manager approval for extra costs.)

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R8 – Legal / Compliance

Risk Description: Mishandling supplier data violates company or national data protection laws.

Probability (1–5): 2 **Impact (1–5):** 5 **Score:** 10 (Medium) **Rank:** 8

Solution / Mitigation Strategy: Consult the Legal Department during data collection; ensure compliance with national data protection and GDPR-like standards.

R9 – Maintenance

Risk Description: The system becomes outdated without periodic model retraining.

Probability (1–5): 2 **Impact (1–5):** 4 **Score:** 8 (Medium) **Rank:** 9

Solution / Mitigation Strategy: Schedule bi-annual AI retraining cycles and appoint an internal AI maintenance team for updates and bug fixes.

R10 – Operational fit

Risk Description: AI recommendations overlook practical supply or logistics constraints.

Probability (1–5): 2 **Impact (1–5):** 3 **Score:** 6 (Low) **Rank:** 10

Solution / Mitigation Strategy: Include manual review by procurement officers before final decisions; adjust the AI model based on real-world feedback.

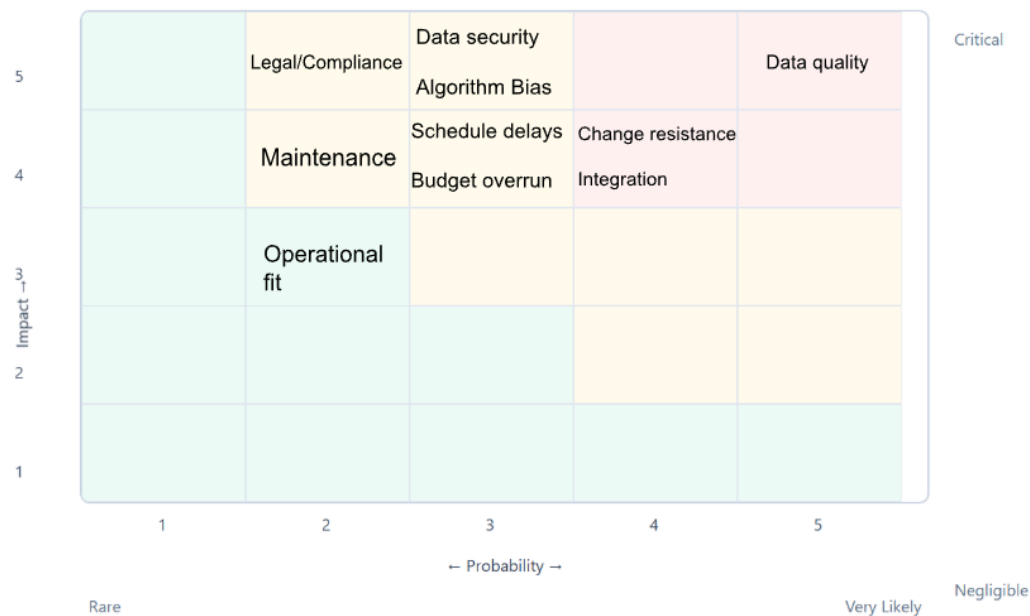
8.7.1.4 Probability / Impact Matrix

Each risk is evaluated on a 1–5 scale for both probability (likelihood of occurring) and impact (potential damage to cost, time, or quality).

The overall Risk Score = Probability × Impact, used to rank risks as:

- High (16–25) — Immediate attention required,
- Medium (8–15) — Monitored closely,
- Low (1–7) — Acceptable with minimal monitoring.

→ visual representation of **the probability/impact matrix:**



8.7.2 Integration with other project management knowledge areas

- Scope management
 - *Information needed:* Defined project scope, system functionalities, and deliverables (e.g., AI model, data dashboard, ERP integration).
 - *Output from risk management:*
 - Identifies scope-related risks such as unclear requirements or scope creep.
 - Example: Incomplete data scope leading to inaccurate supplier analysis (R1).
- Time management
 - *Information needed:* Project milestones, data collection and testing timelines.
 - *Output from risk management:*
 - Provides a risk-adjusted schedule with added time buffers.

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- Helps anticipate integration delays or data preparation issues (R3).
- Cost management
 - *Information needed:* Budget baseline for AI development, tools, and training.
 - *Output from risk management:*
 - Suggests contingency reserves to cover unplanned expenses.
 - Addresses possible budget increases from integration or security measures (R3, R4).
- Quality management
 - *Information Needed:* Quality standards for data accuracy and model performance.
 - *Output from risk management:*
 - Develops a risk-based quality assurance plan.
 - Includes data validation, performance testing, and bias detection (R1, R5).
- Human resource management
 - *Information Needed:* Team structure, skill sets, and assigned responsibilities.
 - *Output from risk management:*
 - Identifies risks related to employee resistance or skill shortages.
 - Suggests training and change management initiatives (R2).
- Procurement management
 - *Information needed:* Supplier data sources, vendor contracts, and external AI tool partnerships.
 - *Output from risk management:*
 - Highlights risks related to supplier data reliability or compliance (R1, R8).
 - Encourages vendor audits and adherence to data protection laws.
- Communication management

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- *Information Needed:* Communication plan, frequency, and stakeholder feedback channels.
- *Output from risk management:*
 - Creates a risk communication matrix for reporting and monitoring.
 - Ensures transparency in managing issues like data breaches (R4).
- Integration management (Project manager)
 - *Information needed:* Coordination between IT, Procurement, HR, and Legal departments.
 - *Output from risk management:*
 - Provides consolidated risk reports for overall decision-making.
 - Ensures alignment across all teams to achieve project success (R1–R10).

8.8 Procurement Management

8.8.1 Purpose

The purpose of the Procurement Management process in this project is to ensure that all goods and services required from external sources are identified, acquired, and managed effectively to support the successful development of the *AI-Based Supplier & Distribution Selection Application*. Effective procurement management will guarantee that all external acquisitions are delivered on time, within budget, and in accordance with the defined quality standards.

8.8.2 Procurement Management Plan

This phase defines the procurement strategy and outlines the items and services that will be obtained from external providers. The objective is to establish clear guidelines regarding what will be developed internally and what will be sourced externally.

8.8.2.1 Procurement Needs

a) Analysis of Model Development Options

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Option	Description	Advantages	Disadvantages
1. Internal Development (IT Department only)	The model is entirely developed by the internal IT team using existing resources and tools.	<ul style="list-style-type: none"> -Cost-efficient since no external parties are involved. -Full control over development and intellectual property. -Builds internal capacity and experience. 	<ul style="list-style-type: none"> -Limited expertise in AI development. -Longer development timeline. -Higher risk of technical errors or inefficiency.
2. Outsourcing to a Specialized AI Agency	The entire model development is outsourced to an external agency specialized in AI solutions.	<ul style="list-style-type: none"> -Highly time-efficient. -Access to advanced expertise and technology. -High-quality, professional deliverables. 	<ul style="list-style-type: none"> -Expensive. -Less control over the process. -Possible issues with intellectual property and confidentiality.

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3. Hybrid Approach (Internal development + Consulting Agency)	The internal IT team develops the model with guidance and technical assistance from a specialized consulting agency.	-Balanced cost and time efficiency. -Ensures quality through expert guidance. -Builds internal expertise while maintaining control. -Reduces risk of technical failure.	-Requires coordination between teams. -Potential for minor communication challenges.
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b) Conclusion

After evaluating all three options, the hybrid approach is the optimal choice. It ensures cost efficiency, timely delivery, and high-quality output by combining internal development capacity with external expertise. This option also strengthens the organization's internal capabilities for future projects while minimizing risks related to lack of experience or excessive outsourcing costs.

c) Summary of Procurement Needs

Procurement Item	Description	Purpose / Role in Project	Procurement Method	Selection Criteria
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Software Tools and Licenses	Includes AI development and data analysis tools , project management platforms , and cloud computing services..	To support model development, data storage, and collaboration between internal teams and the consulting agency.	Direct purchase or subscription under annual/project-based licensing agreements.	Cost-effectiveness, compatibility, technical support availability, data security, and reliability.
Consulting Agency	External IT consulting agency specialized in model design, optimization, and performance evaluation.	To provide technical expertise and ongoing guidance throughout the model development process.	Competitive selection through Request for Proposal (RFP) and evaluation of submitted bids.	Technical expertise, prior experience, reputation, cost proposal, and timeline feasibility.
Additional Data Sources	External datasets and supplier-provided information purchased from business partners + regional B2B data vendors.	To enrich the training data used by the AI model, improve prediction accuracy, and enhance supplier performance analysis.	-Direct purchase -Data-sharing agreements.	-Data accuracy and reliability -Relevance to Supply Chain context -Data volume and coverage -Vendor reputation -Cost-benefit balance

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8.8.2.2 Potential Suppliers

Procurement Item	Potential Suppliers / Vendors
Software Tools and Licenses	<ul style="list-style-type: none"> • ASBIS Tunisia: distributor of software platforms and cloud solutions in Tunisia. • Microsoft Azure / AWS: global cloud computing and AI infrastructure providers (through local partners). • Local software vendors: smaller Tunisian IT firms offering project-based AI tool licensing.
Consulting Agency (AI & Model Development Support)	<ul style="list-style-type: none"> • IT SERV: consulting and software engineering services. • Conit: IT consulting and digital transformation. • Inetum Tunisia: part of a multinational group with strong AI expertise.
Additional Data Sources	<ul style="list-style-type: none"> • Aretedata: Tunisian B2B data vendor offering high-quality business datasets. • Existing suppliers/vendors: company's current and past partners with accessible historical data. • International data providers: global data marketplaces offering regional datasets.

8.8.3 Conduct Procurements

This stage involves the selection and contracting of suppliers to provide the required goods and services.

The procurement process will follow the company's standard policy and include the following steps:

8.8.3.1 Requests for Proposals: An Example

Request for Proposal

Project: AI-Based Supplier & Distribution Selection Application

Issued by: Tunitech

RFP Reference: RFP/AI-SUPPLY/2025

Deadline: 20/10/2025

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1. Project Overview

Background:
Tunitech seeks to enhance supply chain efficiency using AI to optimize supplier selection and distribution. We are looking for a consulting agency to provide technical expertise, guidance, and assistance for internal teams.

2. Scope of Work

- Consulting Agency Responsibilities:
- Guide AI model design & architecture
 - Assist in data preprocessing & validation
 - Support model training, optimization & evaluation
 - Conduct internal assistance & knowledge transfer
 - Provide integration support with existing systems
-

3. Deliverables

- AI model architecture & development plan
 - Training & validation reports
 - Performance assessment documentation
 - Integration guidelines
 - Training materials & workshops
-

4. Proposal Requirements

- Company profile & relevant experience
 - Proposed team & qualifications
 - Technical approach & methodology
 - Project timeline & milestones
 - Cost breakdown & payment terms
 - References
-

5. Evaluation Criteria

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Criterion	Weight
Technical expertise & AI/ML experience	30%
Supply chain relevance	20%
Methodology & tools	20%
Cost competitiveness	15%
Knowledge transfer capability	10%
Timeline feasibility	5%

6. Submission Instructions

- Deadline: 20/10/2025
 - Submit to: pm.dep@tunitech.tn
 - Contact: Ala Guesmi, Project Manager, ala.guesmi@tunitech.tn , +2169245612
 - Questions: Submit in writing before 16/10/2025
-

7. Contract Type

Fixed-Price Contract covering all deliverables. Optional post-deployment support can be negotiated separately.

8.8.3.2 Evaluation of Proposals:

Assessing vendor offers based on cost-effectiveness, technical compatibility, service reliability, and compliance with company standards.

8.8.3.3 Contract Negotiation and Awarding:

Negotiating final terms and awarding contracts to vendors that provide the best overall value to the organization.

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Selected Suppliers:

- **ABSI:** ASBIS Tunisia is a leading regional distributor of IT solutions and software licenses. It provides access to essential AI development tools, cloud computing platforms, and analytics software under flexible licensing terms. The company's local presence ensures responsive support and compatibility with internal systems.
- **Inetum Tunisia:** Is part of the international Inetum Group, specializes in digital transformation and AI consulting. It combines local expertise with global technical capabilities, making it ideal for providing guidance and technical assistance during model development. It also offers training and integration support for internal IT teams.
- **AreteData:** Is a Tunisia-based data provider offering high-quality, up-to-date business datasets relevant to B2B operations and supply chain management. Its coverage of regional markets and reliable update frequency make it a strong fit for enriching the AI model's data inputs.

Contract Type:

A **Fixed-Price Contract** will be awarded to the selected consulting agency, covering all deliverables outlined in this RFP. Additional support or post-deployment maintenance may be negotiated under a separate agreement.

8.8.4 Control Procurements

The Control Procurements phase ensures that all contractual obligations are fulfilled and that vendor performance meets project expectations.

8.8.4.1 Performance Monitoring

Vendor performance will be evaluated through:

- **Periodic Progress Reviews:** Regular meetings to assess deliverables, timelines, and quality.
- **Performance Metrics (KPIs):** Uptime percentage, service/ product quality, and adherence to deadlines.
- **Change Control Procedures:** All contract modifications will be documented, justified, and formally approved before implementation.
- **Payment Authorization:** Payments will be processed only after the verification and acceptance of deliverables.

8.8.5 Integration with other project management knowledge areas

Procurement management is closely linked with several other project management knowledge areas:

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- Scope Management:**
 Provided clarity on which components of the AI system were to be outsourced versus developed internally. This information guided the identification of procurement needs such as cloud infrastructure, dataset licensing, and integration services. In return, procurement management supplied specifications to ensure outsourced deliverables aligned with the defined project scope.
- Cost Management:**
 Collaboration with the Cost Management function ensured that all procurement activities remained within the approved budget. Cost baselines and budget allocations are used to provide vendor quotations, comparative cost analyses, and payment schedules to support financial control and forecasting.
- Time Management:**
 Procurement timelines have to align with the overall project schedule to avoid delays in model training or system deployment. We receive milestone deadlines from the project scheduler and provide supplier delivery dates and contract lead times to maintain schedule accuracy.
- Quality Management:**
 The quality criteria defined by the project team (such as minimum data accuracy, uptime thresholds, and model response speed) were essential in drafting vendor requirements and service-level agreements. In turn, we reported on supplier performance and contract compliance to ensure quality consistency.
- Stakeholder Management:**
 Close coordination with both internal departments and external suppliers was necessary to maintain transparency and trust. We received stakeholder expectations and priorities, and provided regular updates on supplier selection, contract progress, and procurement outcomes.

8.9 Integration Plan

The following table outlines how the outputs of each Project Management Knowledge Area are integrated and sequenced to ensure coherence, continuity, and successful execution of the AI-based supplier & distribution selection project.

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Step	Knowledge Area	Key Output	Contribution
1	Project Initiation (Needs & Solution + Stakeholder Analysis)	Project idea validated; key stakeholders and their needs identified.	Provides foundation for defining scope, objectives, and acceptance criteria.
2	Project Integration Management (Management Methodology & Governance Setup)	Defined management methodology (e.g., Agile with iterative sprints), team roles, decision-making flow, and communication hierarchy	Sets the foundation for how the project will be executed, coordinated, and controlled — ensuring consistency across all knowledge areas.
2	Scope Management	Work Breakdown Structure (WBS); in-scope and out-of-scope items defined.	Defines project deliverables and serves as the basis for scheduling, resource planning, and communications
3	Schedule Management	Gantt chart; milestones; task dependencies.	Establishes temporal structure for project phases and helps estimate resource requirements (Cost & HR).
4	Human Resource Management	Roles, responsibilities, team acquisition plan, motivation and training strategies.	Allocates appropriate personnel to scheduled tasks and ensures availability during planned phases. It informs cost planning.
5	Communication Management	Communication plan with meetings, feedback loops, reporting channels.	Ensures smooth coordination among team members and departments throughout execution.
6	Risk Management	Risk register, mitigation strategies, contingency plans.	Identifies potential disruptions that could impact schedule, cost, or quality. & Informs procurement choices, resource allocation, and cost planning to reduce potential project disruptions.
7	Procurement Management	List of vendors, software tools, and outsourced items.	Secures external resources aligned with project scope, schedule, and budget; ensures smooth execution.
8	Cost Management	Budget integrating HR, procurement, and schedule costs; cost control plan.	Provides financial control and ensures the project stays within allocated resources.
9	Quality Management	QA/QC processes, metrics, continuous improvement	Ensures all deliverables—AI model, database, dashboard—meet required

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		plan.	accuracy, reliability, and usability standards.
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9. Change Control

9.1 Change Requests

9.1.1 Overview

Change Request is a formal proposal to modify any aspect of the project baseline — including scope, schedule, cost, quality, or resources. Changes may arise from new stakeholder requirements, risk events, or discoveries during system testing.

For the *AI-Based Supplier & Distribution Selection Application* project, the Project Manager is responsible for ensuring that all change requests are reviewed systematically and integrated into the master plan only after proper evaluation and approval through the Change Control Board (CCB).

9.1.2 Change Request Process

All change requests follow a standardized workflow to maintain control and traceability.

The process consists of the following steps:

Step	Description	Responsibility	Output
1. Identification	A potential change is recognized during development, testing, or stakeholder review (e.g., adding new supplier evaluation criteria).	Team Member / Department Head	Change Request Form
2. Documentation	The requester completes a Change Request Form specifying the reason, scope impact, estimated cost, and schedule implications.	Requester	Completed CR Form
3. Evaluation	The Project Manager assesses the potential impacts on time, cost, quality, and integration with other project areas.	Project Manager	Impact Analysis
4. Review & Decision	The Change Control Board (CCB) reviews the analysis and either approves, rejects, or defers the request.	CCB	Approved/Rejected Request

5. Implementation	Approved changes are incorporated into updated project baselines (schedule, cost, scope).	Project Manager / IT Team	Updated Baseline
6. Communication & Documentation	Stakeholders are informed of approved changes and records are archived for audit purposes.	Project Manager / Communications Officer	Change Log Entry

9.1.3 Change Request Form (Template)

Below is the standardized form that will be used to record and evaluate all change proposals.

Project Change Request Form

1. Change Request Information

Project Name		Change Title	
Requester Name/Dep		Priority (Low, Medium, High)	
Date Submitted		Change ID	

2. Change Request Details

Description

Justification

3. Impact

Cost	
Schedule	
Resources	
Other	

4. Management Approval

Approval Date		Name		Decision	<input type="checkbox"/> Approved <input type="checkbox"/> Not approved
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Comments

Page 1

Link to the Change Request Form template : [Link](#)

9.1.4 Types of Change Requests Expected in this Project

Given the project's technical and cross-departmental nature, the following types of changes are anticipated:

1. Functional Changes
 - Example: Adding a new AI feature or expanding evaluation criteria for suppliers.

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- Triggered by stakeholder feedback or new business needs.
2. Data-Related Changes
 - Example: Integrating new data sources from the Finance Department or adjusting preprocessing standards.
 - Triggered by data quality issues or discovery of missing fields.
 3. Schedule Adjustments
 - Example: Extending the model testing phase due to unexpected algorithmic errors.
 4. Cost Modifications
 - Example: Acquiring additional cloud computing resources for model training.
 5. Compliance or Legal Changes
 - Example: Adapting supplier assessment rules to new company regulations or contractual standards.

9.1.5 Integration with Project Baselines

Once a change is approved, the Project Manager ensures that the Scope, Schedule, and Cost Baselines are immediately updated and communicated to all stakeholders.

This guarantees that every team works with the latest approved version of the plan.

All change records are archived in the project’s documentation repository for transparency and future audits.

9.1.6 Continuous Improvement

Beyond individual changes, the tracking of change requests also helps identify patterns — for example, repeated changes in the same module may reveal underlying planning gaps or communication bottlenecks.

Regular analysis of the Change Log allows the Project Manager to propose preventive measures and improve project execution practices over time.

Below is a standardized form of Change Log to be used in centralizing and archiving all the change records.

Change Log Template - Project Management							
Project Name				Project Manager		Last Updated	
						00/00/0000	
Change ID	Type	Description	Date Requested	Requested By	Change Priority	Implementation Date	
						Target	Actual
#0109	Complaint	Implement security patches to meet last requirements	12/09/2025	Head of IT Team	Low	26/10/2025	20/10/2025
#0110	UI	Remove less used features to simplify UI	17/10/2025	Head of IT Team	High	22/11/2025	20/11/2025
#0210	Data	Integrate third party analytics tool to enhance insights generation	24/10/2025	Operations Team Lead	Medium	23/11/2025	14/11/2025

Link to the Change Log template : [Link](#)

9.2. Change Control Board (CCB)

9.2.1 Purpose

The Change Control Board (CCB) is responsible for reviewing, evaluating, and authorizing change requests to ensure that only necessary and beneficial changes are implemented.

It safeguards the project’s scope, schedule, cost, and quality baselines while maintaining alignment with organizational objectives.

9.2.2 Responsibilities

- The CCB’s key responsibilities include:
- Reviewing submitted change requests for completeness and accuracy
 - Assessing the impact of proposed changes on scope, time, cost, quality, and risk
 - Consulting relevant stakeholders and functional departments when needed
 - Approving, rejecting, or deferring change requests
 - Ensuring that approved changes are properly documented, communicated, and implemented
 - Maintaining the official Change Log for project tracking and audits

9.2.3 Composition

Role	Name	Key Responsibility
Project Sponsor	Hatem Ben Mansour	Final approval authority and funding oversight

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Supply Chain Manager	Anas Belghith	Strategic alignment and resource authorization
Project Manager (Chair)	Ala Guesmi	Coordinates CCB meetings and oversees the change process
IT Team Representative	Yassine Gharbi	Evaluates technical feasibility and system implications
Finance Representative	Imen Kallel	Assesses cost implications and budget alignment
Operations Representative	Anis Jaziri	Evaluates human resource and operational impact
Quality Assurance Officer	Tarek Talbi	Ensures quality and compliance with standards

9.2.4 Decision-Making Process

- Meetings: The CCB convenes as needed, depending on the project's phase and change volume.
- Decision Methods:
 - Unanimous agreement preferred
 - Majority vote acceptable when needed
- Documentation: All CCB decisions must be recorded in the official Change Log, along with justifications, dates, and signatures.

9.2.5 Communications

Once a decision is made:

- The Project Manager updates the Change Log ([Link](#))
- Stakeholders are notified of the decision and its implications
- The revised baselines (scope, cost, schedule) are circulated to all relevant teams

10. Project Review Meetings

Regular tri-weekly review meetings, held at the end of each sprint, ensure coordination between teams. Progress is reviewed, issues are resolved collaboratively, and dependencies are monitored to keep all project knowledge areas aligned.

11. Lessons-Learned Reports

After each sprint and upon project completion, the team documents what worked well (e.g., effective cross-department collaboration) and what needs improvement (e.g., data integration delays). These insights feed into future AI-based system projects.

Below is a standardized form of Lessons Learned Report. For each sprint and after the completion of the project, a new version should be filled out by the team members.

Lessons Learned Report - Project Management

Project Name

Project Manager

Last Updated
00/00/0000

WIN or ISSUE	Date Raised	Description	What Was the Impact?	Conclusion / Lesson Learned	Recommendations for Future Projects	Owner
ISSUE	01/10/2025					
WIN	09/09/2025					
WIN	27/09/2025					

Link to the Lessons-Learned Report template : [Link](#)

12. Project Challenges

Ranim Benamor

- Some team members were absent and the instructions were not posted the day of the lecture, it took the team longer than expected to fully understand what we were required to do.
- A team member did not see the group messages for 2 days, we had to pick an idea and divide the roles on 8 members at first. The team member showed up eventually, updated them, and then each member was assigned a role.
- It took longer than expected to settle on an idea. We came up with multiple good ideas that it was a tough decision.
- Communication could be hard sometimes in larger groups.
- A team member did not adjust their part of the report until minutes before the deadline.

Ala Guesmi

- The late delivery of project guidelines led to postponing the project’s initiation which disrupted the planned timeline of two weeks of work.

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- Some key Project Management Knowledge Areas, such as *Integration Management* and *Procurement Management*, were initially unclear, requiring additional time for individual research and comprehension.
- As a team we were not initially aware of the interconnections between certain knowledge areas, which led to parallel work without proper coordination. Synchronization was achieved later through team discussions.
- Some project management tools and methods were not immediately clear, causing initial confusion in their application.
- Relying mainly on social media for team discussions proved inefficient, as it was difficult to gather all members simultaneously for meaningful exchanges.
- Delayed responses from some members occasionally slowed progress and affected task completion.
- The process of choosing the project idea and distributing roles took time, as the team explored multiple approaches (polls, random selection, and discussions) before reaching consensus.
- My experience of coordinating and integrating certain knowledge areas proved a bit challenging, as it required continuous communication and alignment among team members to ensure consistency across deliverables.

Safa Brahim

- The project guidelines were shared late, delaying the team's ability to start on time.
- Difficulty in dividing roles among members, especially when one or more were temporarily absent or unresponsive
- Communication within a large group was difficult to manage effectively.
- Some Team members had other academic or personal responsibilities, which made it hard to coordinate meetings.
- Multiple good project ideas were shared in the team, and we were inconclusive about the best choice.
- The interconnections between knowledge areas were not immediately understood, leading to uncoordinated work at first.
- Waiting for feedback or responses from inactive members slowed task completion.

Elaa Marco

- The delay in sharing project instructions disrupted the initial planning phase, leaving limited time to organize and execute effectively.

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- Managing a group of nine members was both enriching and complex, as aligning schedules, roles, and working styles required ongoing effort and flexibility.
- Coordinating discussions, especially when some members were unavailable or less responsive, occasionally slowed decision-making.
- Since some key project management areas were new to many of us, additional time was needed for individual understanding and team alignment.
- The absence of clear examples or reference models led to uncertainty in defining deliverables and sequencing tasks.
- Deciding on project ideas, role distribution, and key directions took time, as the team wanted to ensure fairness and collective agreement.
- At the start, the links between certain project management areas were not fully clear, leading to some uncoordinated efforts.
- Progress was occasionally slowed due to waiting for input or feedback from all team members.
- Despite these challenges, the project strengthened our understanding of teamwork, coordination, and adaptability under time and information constraints.

Maysoun Rouached

- The project guidelines were shared late, which delayed the start of cost planning and coordination with other areas.
- Difficulty finding reliable and up-to-date cost data in Tunisia, as salary benchmarks and software prices often fluctuated or were quoted in foreign currencies.
- Adjusting the cost baseline was challenging because changes in other knowledge areas (Scope, Time, and HR) affected cost distribution.
- Communication delays and differing availability among members slowed the validation of financial data and assumptions.
- Estimating non-labor costs, such as software tools or training expenses, required assumptions due to limited access to vendor quotations.

Mariam Hidri

- Some technical issues within messenger that i could not attend the discussion and be updated for 2 days
- Not every one of the team may stay updated leading to confusion or duplicated work as two members choose the same knowledge area to work on it .
- Scheduling meetings or aligning tasks becomes harder as the team grows.
- You may face delays if one member's work depends on another's progress.

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Hadil Aouadi

- Difficulty finding a suitable time to agree on the project's main idea due to the large number of team members.
- Late receipt of instructions, which caused a delayed start in project implementation.
- Work heavily dependent on timelines, creating reliance on outputs from other knowledge areas and resulting in multiple revisions.
- Performing the responsibility assignment matrix was challenging, as I was unfamiliar with it and it required deep analysis of task relationships.
- Coordinating communication across team members, which sometimes led to misunderstandings or duplicated efforts.
- Adapting to unexpected changes in project scope and requirements, requiring quick adjustments to my tasks.
- Managing stress and maintaining motivation during demanding phases of the project, especially when facing tight deadlines.

Chaima Chammaa

- Understanding and correctly applying all nine PM areas conceptually—without using real data—requires strong theoretical coordination to ensure consistency between sections. For example, during project design, we initially worked on both the supplier quality selection framework and the AI-based decision model simultaneously, which added conceptual complexity in aligning project scope, quality objectives, and technical design under a unified management structure.
- It was challenging to set specific quality goals for the AI model—such as acceptable error rates or reliability levels—since the model was not implemented or tested.
- Large teams often take longer to agree on design choices, task assignments, or document structure, which can slow progress in a short timeline.
- Near the deadline, merging all materials, finalizing visuals (charts, diagrams, tools), and preparing a unified presentation can be stressful and time-consuming.
- The delayed release of project guidelines postponed the project's initiation, disrupting the initially planned two-week timeline.

Amina Yaiche

- Managing communication among nine members proved difficult due to differing schedules, varying levels of availability, and delayed response

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times. These factors occasionally led to misunderstandings and slowed progress on collective tasks.

- Reaching consensus on the project concept was a lengthy process. Each member proposed a unique and valuable idea, which led to extended discussions and debates before finalizing the chosen topic. The decision-making phase involved multiple rounds of argumentation and voting, reflecting the team’s diverse interests and perspectives.
- Operating without a designated project manager presented challenges in organizing workflows and making unified decisions. Since all members sought to contribute equally to planning, attempts to coordinate or enforce structure sometimes created tension or were perceived as overly assertive. The absence of hierarchy made leadership fluid but occasionally hindered efficiency.

13. Conflict Resolution

No major conflicts were faced during this project.