Course Title:	COE
Course Number:	692
Semester/Year (e.g.F2016)	W2024

Instructor:	

Assignment/Lab Number:	Lab 2
Assignment/Lab Title:	Requirements Analysis and Specification

Submission Date:	February 28th, 2024
Due Date:	February 28th, 2024

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1.0 OVERVIEW (Option #2):

This stakeholder analysis will revolve around a "Wireless Warehouse Initiative" [PM Solutions (n.d.)] responsible for transforming material management operations and improving delivery speeds by sixty-six percent. This project was chosen for its relevance to operation efficiency and technology integration. This case looks into the implementation of radio frequency automation and SAP integration in a warehouse setting to improve material management operations. This resulted in accelerating delivery speeds by 66% while als achieving this with 18% under budget. This case study is a great example of how technology can transform previous operations to make them more efficient, making it an insightful case for understanding the impact of IT solutions in logistics and supply chain optimization.

2.0 STAKEHOLDER ANALYSIS:

Stakeholder Register:

Category	Title	Interest/Power in Project	Importance
Executive Management (Internal)	Company Leadership	Very high power and interest in the project. Company leaders are responsible for strategic direction, funding and prioritization of the project in general.	Their support is crucial for resource allocation and high-level decision-making.
Project Implementation (Internal)	Project Team and IT	High power and interest in the project; they are responsible for and have high influence over the project direction, analysis and execution	They translate strategic goals into operational plans and ensure technical feasibility.
Technical Partners (External)	Technology and Supply Chain Partners	High power, and moderate interest. They hold high power as they provide essential technology and support, directly influencing product delivery, quality, and ongoing support, thus driving the project's technical success.	Their collaboration is vital for the technical success and sustainability of project outcomes.
Operational Staff (Internal)	Warehouse Staff	Medium power and high interest. They will be responsible for giving feedback and crucial to learn and improve the project, but overall do not hold as much power over the scope of project.	They are the end-users of the new processes, so their input can significantly affect project success.
Compliance and Regulation (External)	Regulatory Bodies	Regulatory bodies hold high power as they are responsible for ensuring that the project is compliant with legal and industry standards. However, they have low interest in the project as they are only concerned with regulations.	Their requirements must be met to avoid legal issues and ensure industry acceptance.

End Users (External)	Customers	Customers hold low power but high interest in the project. They are the end users and their satisfaction is important for the success of the project. Customers hold low power as they are not responsible for decision making affecting project scope.	Their feedback affects the market perception of the company and can influence future business opportunities.

Interest-Power Matrix:
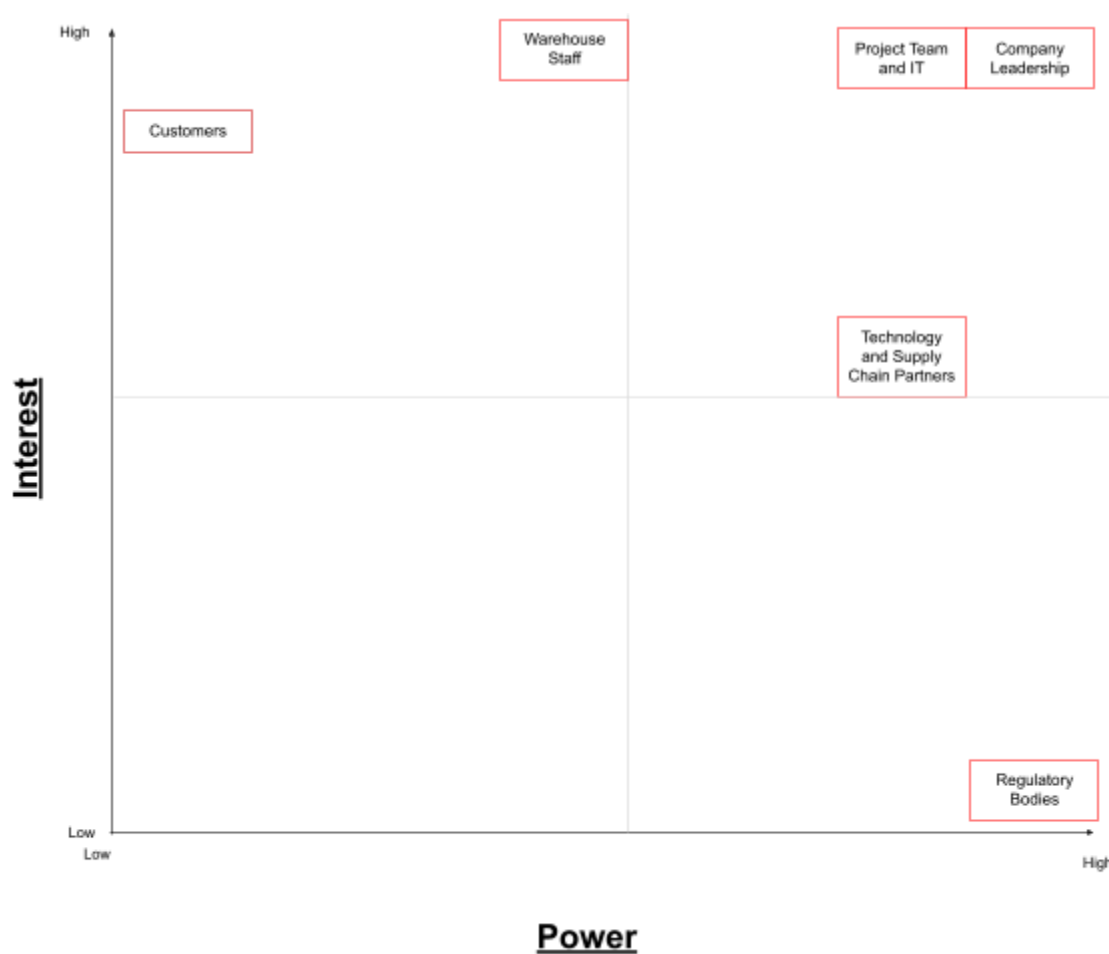
Primary and Secondary Stakeholders:
This list is to distinguish between the primary and secondary stakeholders.

Primary	**Secondary**
● Company Leadership ● Project Team and IT ● Warehouse Staff	● Technology and Supply Chain Partners ● Regulatory Bodies ● Customers

3.0 REQUIREMENT ELICITATION USING QUESTIONNAIRE:

Company Leadership:
General Project Understanding:
- What are your primary objectives for this project? (Open-ended)
- Do you believe the current warehouse system meets efficiency standards? (Yes/No) (Close-ended)
- Can you list the key deliverables you expect from this project? (Open-ended)
- In addition to efficiency standards, how should this project align with our long-term business objectives? (Open-ended)

Specific Questions:
- How important is cost-saving compared to improving delivery speed in the new warehouse system? (Leading)

Project Team and IT:
General Project Understanding:
- What are your primary objectives for this project? (Open-ended)
- Do you believe the current warehouse system meets efficiency standards? (Yes/No) (Close-ended)
- Can you list the key deliverables you expect from this project? (Open-ended)
- On a scale from 1 to 5, (5 being highest level) level of system customization do you anticipate will be necessary to meet various departmental needs? (Closed ended)

Specific Questions:

What are your expectations regarding system maintenance and support?
- How important is cost-saving compared to improving delivery speed in the new warehouse system? (Leading)
- How do you envision the user interaction with the new system? Describe any specific user interfaces or experiences that should be considered. (Open-ended)
- Can you outline any specific data inputs or outputs that the system should manage? (Open-ended)
- What are the key technical requirements for the RF technology/SAP integration, and how do they align with our current IT infrastructure? (Compound)

Technical Aspects:
- Regarding system integration, what existing platforms or systems must be compatible with the new solution? (Probing)
- How should the system approach data privacy and protection, especially concerning sensitive information? (Open-ended)
- Do you foresee any technical constraints that we should consider? (Open-ended)

Risks and Compliance:
- What potential risks do you identify with the project, and how might we mitigate them? (Open-ended)
- Considering the industry and scope of the project, what are the regulatory standards that the project should adhere to? (Leading)

Technology and Supply Chain Partners:

Specific Questions:
- What are the key technical requirements for the RF technology/SAP integration, and how do they align with our current IT infrastructure? (Compound)

Technical Aspects:
- Regarding system integration, what existing platforms or systems must be compatible with the new solution? (Probing)
- Do you foresee any technical constraints that we should consider? (Open-ended)

Risks and Compliance:
- What potential risks do you identify with the project, and how might we mitigate them? (Open-ended)
- Considering the industry and scope of the project, what are the regulatory standards that the project should adhere to? (Leading)

3.0 FUNCTIONAL AND NONFUNCTIONAL REQUIREMENTS:

Elicitation Note: Company Leadership, Project team, and Technology and Supply Chain Partners

Section 1: Functional Requirements:
1. Automated Inventory Management System

a. The primary goal of this project is to increase efficiency, and this is wanting to be achieved through the implementation of a system that is capable of automatic inventory tracking, ensuring real-time updates, and issuing alerts for low stock levels.

2. Enhanced Ordering Process
    a. This can be achieved by reducing manual handling thus, reducing processing time. Thus, a more streamlined system is needed.
3. Customizable User interface
    a. It is requested that there are high levels of user-interface customization. This is to allow for adaptable user interfaces for different departments to meet different needs, enhancing user experience.
4. Data management and reporting
    a. There's an expectation for sophisticated data inputs and outputs management, including the capability for generating actionable reports and analytics to support decision-making.
5. RF technology and SAP integration
    a. This new project calls for the integration of RF and SAP technology. This emphasizes the importance of interoperability with existing IT infrastructure.
6. Security Measures for Sensitive Data
    a. The system must include robust data privacy and protection features, especially for handling sensitive information, as highlighted by all stakeholder groups.

Section 2: Non-Functional Requirements:

1. Cost Effectiveness vs Efficiency
    a. There is a distinct directive to strike a balance between cost-saving initiatives and the aim of enhancing delivery speed, highlighting the need for an efficient yet cost-effective solution.
2. Scalability
    a. The system is required to be able to scale to future growth, aligning with long term learning objectives and the need for system integration with existing future platforms.
3. Maintenance and Support
    a. There is a preference for easy upkeep that can be done using in house resources, or a hybrid model
4. Compliance with Regulatory Requirements
    a. Make sure the project adheres to industry specific standards and is implemented into the new system.
5. Risk Management
    a. Identify potential risks and failures of the system.
    b. Require built-in mitigation strategies, including backup systems, user-training manuals/videos, and encryption.
6. Performance and Reliability

a. The system must have high performance and reliability, particularly during peak hours.

3.0 Quality of Requirements:

<u>Section 1: Functional Requirements:</u>

7. Automated Inventory Management System

    a. Completeness: The completeness rating is high, as it outlines the objective of enhancing efficiency via automatic tracking, real-time updates, and alerts for low stock levels.

    b. Clarity: This requirement demonstrates high clarity by explicitly stating the necessity for an automated system.

    c. Non-Duplication: The non-duplication rating is good since this requirement stands alone and is not duplicated elsewhere.

    d. Consistency: This requirement aligns well with the project's overarching goals of efficiency, indicating good consistency.

    e. Testability: The testability rating is high, as it can be verified through testing the functionality of inventory tracking and alert features.

    f. Relevance: This requirement holds high relevance as it directly corresponds to the project's primary objective.

8. Enhanced Ordering Process
    a. Completeness: The completeness rating is medium as it outlines the goal without providing specific enhancements for the process.
    b. Clarity: This requirement demonstrates medium clarity as it uses general terms without detailing how the process will be improved.
    c. Non-Duplication: The non-duplication rating is good as this aspect is unique and does not overlap with other requirements.
    d. Consistency: This requirement maintains high consistency as it aligns with the overarching goals of improving efficiency.
    e. Testability: The testability rating is medium as it requires more detailed specifications to ensure testability.
    f. Relevance: This requirement holds high relevance as it is critical for the success of the project.
9. Customizable User interface
    a. Completeness: The completeness rating is medium as it suggests a requirement for customization but lacks specificity regarding the extent or methods.
    b. Clarity: This requirement demonstrates high clarity by clearly stating the need for customization.

c. Non-Duplication: The non-duplication rating is good as this requirement stands alone without overlapping with others.

d. Consistency: This requirement maintains high consistency as it aligns with the goal of enhancing the user experience.

e. Testability: The testability rating is medium as specific criteria for customization are necessary for effective testing.

f. Relevance: This requirement holds high relevance as it is essential for ensuring user satisfaction.

10. Data management and reporting
   a. Completeness: The completeness rating is high, as it clearly states the necessity for managing data and generating reports.

   b. Clarity: This requirement demonstrates high clarity as it is well-articulated.

   c. Non-Duplication: The non-duplication rating is good as it introduces a unique aspect of the system.

   d. Consistency: This requirement maintains high consistency as it aligns with the goal of informed decision-making.

   e. Testability: The testability rating is high as reporting and data management features are readily testable.

   f. Relevance: This requirement holds high relevance as it is vital for the operational success of the system.

11. RF technology and SAP integration
   a. Completeness: The completeness rating is high as it specifies the integration needs.

   b. Clarity: This requirement demonstrates high clarity by clearly mentioning the technologies to integrate.

   c. Non-Duplication: The non-duplication rating is good as it addresses a specific technical requirement without overlap.

   d. Consistency: This requirement maintains high consistency as it is necessary for system interoperability.

   e. Testability: The testability rating is high as the success of integration can be directly tested.

   f. Relevance: This requirement holds high relevance as it is crucial for ensuring system functionality.

12. Security Measures for Sensitive Data
   a. Completeness: The completeness rating is medium as it mentions the general need for security without specifying standards or methods.

   b. Clarity: This requirement demonstrates high clarity by clearly indicating the necessity for data security.

   c. Non-Duplication: The non-duplication rating is good as it focuses uniquely on security without overlapping with other aspects.

   d. Consistency: This requirement maintains high consistency as security is universally relevant across systems.

   e. Testability: The testability rating is medium as more detail regarding security standards and methods would improve testability.

   f. Relevance: This requirement holds high relevance as it is critical for compliance and building trust with users.

Section 2: Non-Functional Requirements:

7. Cost Effectiveness vs Efficiency
   a. Completeness: The completeness rating is medium as it mentions the need for balance but lacks specific criteria for achieving this balance.

   b. Clarity: This requirement demonstrates high clarity by clearly stating the need for balance.

   c. Non-Duplication: The non-duplication rating is good as it addresses economic aspects uniquely without overlapping with other requirements.

   d. Consistency: This requirement maintains good consistency as it aligns with the project goals.

   e. Testability: The testability rating is low as it is difficult to test without specific benchmarks or criteria for balance.

   f. Relevance: This requirement holds high relevance as it is essential for ensuring the viability of the project.

8. Scalability
   a. Completeness: The completeness rating is high as it clearly outlines the need for accommodating future growth.

b. Clarity: This requirement demonstrates high clarity by being clearly articulated.

c. Non-Duplication: The non-duplication rating is good as it focuses distinctly on growth without overlapping with other aspects.

d. Consistency: This requirement maintains high consistency as it is necessary for ensuring long-term success.

e. Testability: The testability rating is medium as it requires growth scenarios to be defined for effective testing.

f. Relevance: This requirement holds high relevance as it is critical for future-proofing the system.

9. Maintenance and Support
   a. Completeness: The completeness rating is medium as it mentions a preference for maintenance levels but lacks specifics.

   b. Clarity: This requirement demonstrates high clarity by clearly stating the general requirement.

   c. Non-Duplication: The non-duplication rating is good as it stands alone in operational requirements without repetition.

   d. Consistency: This requirement maintains high consistency as it supports the longevity of the system.

   e. Testability: The testability rating is medium as criteria for "easy upkeep" need to be defined for effective testing.

   f. Relevance: This requirement holds high relevance as it is important for the ongoing operations of the system.

10. Compliance with Regulatory Requirements
    a. Completeness: The completeness rating is high as it clearly requires compliance but lacks specification of relevant regulations.

    b. Clarity: This requirement demonstrates high clarity by clearly stating the necessity for compliance.

    c. Non-Duplication: The non-duplication rating is good as it addresses legal aspects uniquely without repetition.

    d. Consistency: This requirement maintains high consistency as compliance is a universal need.

e. Testability: The testability rating is medium as it depends on the specified regulations for effective testing.

f. Relevance: This requirement holds high relevance as it is critical for legal operation.

11. Risk Management
   a. Completeness: The completeness rating is medium as it identifies the need for risk management but lacks details on specific risks or mitigation strategies.

   b. Clarity: This requirement demonstrates high clarity by clearly stating the need for risk management.

   c. Non-Duplication: The non-duplication rating is good as it addresses risk uniquely without repetition.

   d. Consistency: This requirement maintains high consistency as risk management is integral to project management.

   e. Testability: The testability rating is medium as specifying risks and responses would enhance testability.

   f. Relevance: This requirement holds high relevance as it is essential for the success of the project.

12. Performance and Reliability
   a. Completeness: The completeness rating is high as it specifies the need for high performance and reliability.

   b. Clarity: This requirement demonstrates high clarity by being clearly articulated.

   c. Non-Duplication: The non-duplication rating is good as it focuses uniquely on system operation without repetition.

   d. Consistency: This requirement maintains high consistency as it is core to the success of the system.

   e. Testability: The testability rating is high as performance and reliability are measurable.

   f. Relevance: This requirement holds high relevance as it is critical for user acceptance and system operation.

5.0 References

PM Solutions. (n.d.). Wireless Warehouse Initiative Transforms Materials Management Operations and Improves Delivery Speed by 66%. Retrieved from https://www.pmsolutions.com/case-studies/view/wireless-warehouse-initiative-transforms-materials-management-operations-an