## **CAPSTONE PROJECT -2**

1- <u>AUDIT-</u> An audit is a systematic examination of financial records, processes, or systems to ensure accuracy, compliance, and efficiency. Audits can be conducted internally by an organization's own staff or externally by independent auditors. They typically focus on verifying financial statements, assessing internal controls, and ensuring adherence to regulations and policies.

#### **QUARTER 1**

Stage	Requirement gathering phase -8weeks (week 1 to week 8)
Completed	6 weeks (week 1 to week 6)
Checklist	Elicitation result report
	BRD template
	Grouping of Functionality /Features -client signoff
	Email communication -To ,CC,BC

## QUARTER 2-

Stage	Requirement Analysis Phase -16 weeks (week 7 to week
	24)
Completed	10 weeks
Checklist	UML Diagram
	Client Sign-off documents
	Business to functional requirement mapping
	RTM Document version control
	Email communication - To, CC,BC

## QUARTER 3

Stage	Design Phase -27 weeks (week 23 to week 50)
Completed	20 weeks
Checklist	Utilisation of tool
	Collaboration with stakeholders
	Check for technical feasibility
	Documented evidence on client communication

Stakeholder MOM
Risk Assessment
Email communication - To,CC,BC

### QUARTER 4

Stage	Development Phase -31 weeks (wwek 43 to week 74)
Completed	25 weeks
Checklist	Coding standards compliance
	Fundamental Implementation
	Code Documentation
	Security Consideration
	Performance Optimisation
	Document code changes and Updates

2- <u>BA Approach Strategy</u>: The BA (Business Analyst) approach strategy typically refers to the methods and techniques a business analyst uses to understand business needs and facilitate solutions.

<u>Elicitation Techniques -</u> The different elicitation techniques that can be used are surveys , questionaries ,interviews , focus group , field observation , workshops , prototyping , testing and market analysis.

Elicitation techniques are used to gather and clarify requirements, understand user needs, identify constraints, and ensure that stakeholders' perspectives are captured. They help facilitate communication, promote collaboration, and ensure that the final outcome aligns with user expectations and business goals.

<u>Stakeholder Analysis-</u>Stakeholder analysis is a systematic process for identifying, assessing, and prioritizing individuals or groups who have an interest in or can influence a project. It involves understanding their needs, expectations, and the impact they may have on the project's success.

Different stakeholder analysis are ILS Matrix and RACI Matrix

**ILS Matrix** : The ILS (Integrated Logistics Support) Stakeholder Matrix is a tool used to identify and analyze the various stakeholders involved in a project or system. It helps in understanding their interests, influence, and how they can impact the project's success.

### **Key Components:**

- 1. **Stakeholders**: Individuals or groups affected by or having an influence on the project (e.g., customers, suppliers, project team, management).
- 2. **Interests**: What each stakeholder cares about in relation to the project (e.g., cost, performance, timelines).
- 3. **Influence**: The degree of power or impact each stakeholder has over the project's outcomes.
- 4. **Engagement Strategy**: How to effectively communicate and involve each stakeholder throughout the project lifecycle.

**RACI MATRIX**: A RACI matrix is a tool used to clarify roles and responsibilities within a project or process. "RACI" stands for:

- **Responsible**: The person(s) who actually do the work to complete the task.
- Accountable: The person who is ultimately accountable for the correct and thorough completion of the task. This is often a manager or team leader.
- **Consulted**: The person(s) who provide information and expertise necessary to complete the task. This is a two-way communication.
- **Informed**: The person(s) who need to be kept updated on progress or decisions but are not directly involved in the task.

<u>DOCUMENTATION –</u> The different documents prepared by BA are Business Requirement Document (BRD), Functional Requirement Document (FRD), Use Cases, Business Cases, Process Flow Diagram, Data Flow Diagram, Test Plans, Test Cases, Change Request Document and Process Flow. These documents will capture the requirements and serve as reference for the development team. **Document Sign -off Process -** A document sign-off process is a structured approach to obtaining formal approval for documents, ensuring that all relevant stakeholders have reviewed and agreed to the content before it is finalized.

The different steps followed to get a sign -off are -

- Prepare and finalise the document.
- Review the documents with relevant stakeholders.
- Address any comments or suggestion.
- Share the revised documents.
- Send formal sign-off request and gather the signature from relevant stakeholders.
- Notify all stakeholders that the documents has been officially signed off.

<u>CLIENT APPROVALS</u> :- Client approval is the process where a client reviews and formally accepts a deliverable, project phase, or specific aspect of a project before moving forward. This step is crucial in ensuring that the client's expectations align with the work being done.

# Steps for Client Approval:

- Submission of work to the stakeholder or the client.
- The client examines the work called review period like quality, requirement, and overall satisfaction.
- Feedback from client and revision from BA side.
- Final approval from client after complete satisfaction.
- Keeping the record documents for future needs.

**<u>COMMUNICATION CHANNELS:</u>** Communication by BA is crucial for bridging the gap between stakeholders and project team. The different channels are –

- Interviews and surveys from stakeholders for requirement gathering.
- Facilitating workshops to encourage collaboration.
- Through formal documentation like using techniques of use cases , user stories , visual diagrams etc.
- Providing regular reports and updating the clients.
- Facilitating the meeting minutes to keep everyone informed.
- Regularly updating the feedbacks and any change requests.

- Setting the expectation and clearly outlining the scope of project.
- Engaging the stakeholders through touchpoints and interactive sessions .

**<u>CHANGE REQUEST MANAGEMENT :-</u>** Change request management by a Business Analyst (BA) in a project involves overseeing and facilitating the process of handling requests for changes to project requirements, scope, or deliverables.

#### **Steps in Change Request Management:**

1. Identify Change Requests:

Receive change requests from stakeholders, team members, or clients.Ensure requests are documented clearly, specifying the nature and rationale for the change.

#### 2. Assess Impact:

Analyse the potential impact of the change on project scope, timeline, resources, and costs.Consult with relevant stakeholders (developers, project managers, etc.) to gather insights.

#### 3. Prioritize Changes:

Evaluate the urgency and importance of the change. Prioritize based on project goals, stakeholder needs, and overall impact.

#### 4. Facilitate Discussions:

Organize meetings with stakeholders to discuss the change request.Gather feedback, concerns, and additional insights from all relevant parties.

#### 5. Document Requirements:

Update project documentation to reflect the proposed changes.

Clearly outline the new requirements and any adjustments needed.

#### 6. Obtain Approval:

Present the change request, its impacts, and the updated documentation to decision-makers for approval.Ensure formal approval is captured in writing to maintain a clear record.

### 7. Implement Changes:

Coordinate with the project team to implement the approved changes. Ensure that all team members are informed about the changes and their responsibilities.

### 8. Monitor and Review:

Track the implementation of changes to ensure they are completed as planned. Review the outcomes to assess whether the change met its objectives.

## 9. Communicate Updates:

Keep all stakeholders informed about the status of the change request and any adjustments made.Provide ongoing updates throughout the implementation process.

**PROGRESS UPDATE :-** Updating progress reports to stakeholders is essential for maintaining transparency and ensuring that everyone is aligned on project status.

## **Choose the Right Format:**

• Decide whether to use a written report, presentation, or a verbal update (e.g., in a meeting). Consider the stakeholders' preferences.

## Set a Regular Schedule:

• Establish a routine for updates (e.g., weekly, bi-weekly, or monthly) to keep stakeholders informed consistently.

## Summarize Key Information:

- Project Overview: Briefly restate the project goals and objectives.
- Current Status: Clearly indicate whether the project is on track, ahead, or behind schedule.

## Highlight Accomplishments:

- Detail key milestones achieved since the last update.
- Include any completed tasks, deliverables, or phases.

## Identify Challenges:

• Be transparent about any obstacles encountered. Explain the impact on the project and how you plan to address them.

### **Outline Next Steps**:

• Clearly outline what will happen next, including upcoming tasks, deadlines, and who is responsible for each.

### Use Visuals:

• Incorporate charts, graphs, or dashboards to present data visually. This can make complex information easier to digest.

### **Document Everything:**

• Keep a record of the report and any feedback received. This can be useful for future updates and maintaining accountability.

### Follow Up:

• After the report, send a summary email with key points discussed, decisions made, and any action items. This ensures that everyone is on the same page.

**SIGN-OFF ON THE UAT**:- Obtaining sign-off on User Acceptance Testing (UAT) is a crucial step in the project lifecycle, as it confirms that the product meets user requirements and is ready for deployment

- Clearly defining the acceptance criteria that need to met.
- Organise the UAT sessions with end users with necessary environment for the testing.
- Document all the end results and review it with the stakeholders.
- Prepare the sign-off document that should include overview, summary of test, confirmation criteria, limitations.
- Obtain formal sign-off, communicate this with stakeholders and keep the documents in the archive.
- 3- **<u>3-TIER ARCHITECTURE:-</u>** Three-tier architecture is a software design pattern that organizes applications into three distinct layers or tiers. This

separation of concerns enhances scalability, maintainability, and flexibility. The three tiers are:

**PRESENTATION TIER** - This is the top layer, responsible for the user interface and user experience. It handles all the interactions with the user, presenting data and sending user commands to the application.

Imagine a web application that users interact with via a web browser. This tier displays forms, buttons, and other UI elements, allowing users to input data and view results.

**Application Logic Tier (Business Logic Tier)**: The middle layer, where the application's business logic is processed. It receives requests from the presentation tier, processes the data (often involving calculations, decision-making, and data manipulation), and then sends the results back to the presentation tier.

In an online shopping application, this layer manages operations like adding items to a cart, calculating totals, and applying discounts. It acts as the brain of the application.

**Data Tier**: The bottom layer, which manages data storage and retrieval. It consists of databases or data sources that store application data. The application logic tier interacts with this layer to fetch or store data.

In the shopping application, this could be a relational database where user profiles, product information, and order details are stored. This tier handles queries and updates to the database.



**<u>4:- BA Approach Strategy For Framing Questions :</u>** - Using a Business Analysis (BA) approach to frame questions can significantly enhance clarity and focus in requirements gathering and project management.

# A- 5W1H Framework

The 5W1H framework stands for Who, What, When, Where, Why, and How. This method helps in uncovering detailed information about a project or requirement.

- Who: Who are the stakeholders? Who will use the system?
- What: What are the objectives? What features are needed?
- When: When are the deliverables due? When do stakeholders need updates?

- Where: Where will the application be used? Where will data be stored?
- Why: Why is this project important? Why are these features necessary?
- **How**: How will the solution be implemented? How will success be measured?

### **B- SMART Criteria**

SMART helps in formulating goals that are Specific, Measurable, Achievable, Relevant, and Time-bound. Questions framed using SMART can include:

- Specific: What specific outcomes do we expect from this project?
- Measurable: How will we measure the success of each feature?
- Achievable: Are the proposed goals realistic within our resources?
- **Relevant**: How does this align with our overall business strategy?
- **Time-bound**: What is the timeline for each phase of the project?

### **B- RACI Matrix**

The RACI matrix helps clarify roles and responsibilities. Questions can focus on accountability and communication:

- **Responsible**: Who is responsible for each task?
- Accountable: Who is ultimately accountable for the outcomes?
- **Consulted**: Who should be consulted for input?
- Informed: Who needs to be informed about progress?

## **C** - Three-Tier Architecture Insights

When analyzing the requirements based on the three-tier architecture, questions can be framed around each layer:

- **Presentation Tier**: What user interface elements are necessary for an optimal user experience. How will user feedback be collected to improve the UI?
- **Application Logic Tier**: What business rules must be enforced. How will the application handle error management?
- **Data Tier**: What data needs to be stored, and what is the structure? How will data security and privacy be maintained?

**D** – **Documentation and models :-** BA should leverage various documentation techniques such as use cases , user stories , activity diagram , models , and page design to structure and communicate requirements effectively . Ask questions that help validate and clarify these artifacts that they accurately represents the stakeholder needs.

<u>5:- ELICITATION TECHNIQUES -</u> Elicitation techniques are methods used in business analysis to gather requirements and insights from stakeholders. The goal is to understand their needs, expectations, and the context of a project .

**Brainstorming-** A creative session where participants generate a wide range of ideas without criticism. Purpose is to encourage innovative thinking and explore multiple solutions.

**Document Analysis** :- Reviewing existing documents (e.g., business plans, specifications) to understand current processes and requirements. Purpose is to identify gaps and leverage existing knowledge.

**Requirements Workshops**:- Structured group sessions where stakeholders collaborate to define and prioritize requirements. Purpose is to build consensus and ensure all perspectives are considered.

**Interviews**:- One-on-one conversations with stakeholders to gather detailed insights about their needs and experiences. Purpose is to capture specific, indepth information from individual perspectives.

**Focus Groups**:- Discussions with a small group of stakeholders to gather diverse opinions and insights on specific topics or features. Purpose is to explore attitudes and perceptions in a collaborative setting.

**Observations**:- Watching users in their environment to understand their interactions with systems or processes. Purpose is to identify needs and pain points that may not be verbally expressed.

**Prototyping:-** Creating mock-ups or models of a system to visualize features and gather feedback. Purpose is to facilitate discussion and refine requirements based on stakeholder input.

**Questionnaires and Surveys:-** Structured forms sent to stakeholders to collect quantitative and qualitative data . Purpose is to gather feedback from a larger audience efficiently.

**User Stories**:- Short narratives that describe how users will interact with a system, focusing on their needs. Purpose is to capture functional requirements from the user's perspective.

**Use Cases:-** Detailed descriptions of how users will achieve specific goals using a system, outlining interactions and outcomes. Purpose is to define functional requirements and clarify user interactions with the system.

### 6:- Elicitation techniques and its justification

<u>**Prototyping**</u>:- Creating mock-ups or models of a system to visualize features and gather feedback. Purpose is to facilitate discussion and refine requirements based on stakeholder input\_.

Prototypes provide a tangible representation of the system, helping stakeholders visualize requirements. They allow for iterative testing and feedback, enabling quick adjustments based on user input. Engages users early in the process, fostering collaboration and buy-in. Helps clarify ambiguous requirements by demonstrating how features will work in practice.

**USE Case Specification :-** Use case specifications are detailed descriptions of how a user (or "actor") interacts with a system to achieve a specific goal. They are an essential part of requirements gathering in software development and help clarify functional requirements.

Use cases centre on the interactions between users and the system, making user requirements clear. Provides a structured format for capturing functional requirements, making them easier to understand and analyse. Allows for the exploration of different scenarios, helping identify edge cases and requirements not initially considered. Enhances communication among stakeholders by providing a common language and understanding of system functionalities.

**Document Analysis :-** Reviewing existing documents (e.g., business plans, specifications) to understand current processes and requirements. Purpose is to identify gaps and leverage existing knowledge.

Leverages existing documentation (e.g., business processes, previous project artifacts) to understand current systems and requirements. Helps identify gaps in current processes and requirements by analysing what has been documented. Can save time by utilizing pre-existing resources rather than starting from scratch. Assists in validating current and future requirements against established documentation.

**Brainstorming** :- A creative session where participants generate a wide range of ideas without criticism. Purpose is to encourage innovative thinking and explore multiple solutions.

Encourages creative thinking and the generation of diverse ideas, fostering innovation. Promotes collaboration among team members and stakeholders, enhancing group dynamics and buy-in. Can uncover hidden or unspoken requirements that may not surface through more structured techniques. Facilitates quick generation of ideas, which can then be refined into actionable requirements.

# 7 :- 10 Business Requirement and Assumptions

**BR001** Farmers and manufacturers should be able to create user accounts using their email IDs and secure password.

**BR002** Farmers should be able to log in to the platform using their registered email ID and password to access the features and functionalities.

**BR003** The platform should have a comprehensive catalogue of fertilizers, seeds, and pesticides, including detailed information about each product such as price, quantity, specifications, and manufacturer details.

**BROO4** Farmers should be able to search for specific products based on criteria such as product name, category, manufacturer, or any other relevant parameters.

**BROO5** The platform should provide a shopping cart feature that allows farmers to add products they wish to purchase and manage their selections before proceeding to checkout.

**BR006** The payment gateway should support various payment methods, including cash-on-delivery (COD), credit/debit card payments, and UPI (Unified

Payments Interface) options to provide flexibility to farmers during the checkout process.

**BRO07** Users should receive email notifications confirming their order details, including order number, products purchased, and estimated delivery date. Additionally, a delivery tracking system should be implemented to allow farmers to track the progress and current status of their orders.

**BROO8** Farmers should have the option to provide feedback, reviews, and ratings for the purchased products, enabling them to share their experiences and help other farmers make informed decisions.

**BR009** The platform should ensure the security of farmers personal information, including their payment details, by implementing robust security measures and using encryption protocols.

**BRO10** The online store should be optimized for mobile devices, allowing farmers to access and use the platform seamlessly on smartphones and tablets. It's important to note that these requirements are based on assumptions and can.

# 8:- Different Assumptions Are –

1.-The online agriculture product store will primarily cater to farmers and companies involved in the manufacturing of fertilizers, seeds, and pesticides.

2.- The store will operate as a web and mobile application to provide accessibility to users.

3.- The project will be developed by APT IT SOLUTIONS company, which has the necessary talent pool.

4.- The project duration is 18 months, and it is being carried out as part of a Corporate Social Responsibility (CSR) initiative.

5.- Mr. Karthik is the Delivery Head overseeing the project, and Mr. Vandanam is the assigned Project Manager.

6.- The development team includes Ms. Juhi as a Senior Java Developer, Mr. Teyson, Ms. Lucie, Mr. Tucker, and Mr. Bravo as Java Developers, Mr. Mike Network Admin, and Mr. John as the DB Admin. Mr. Jason and Ms. Alekya the assigned testers. 7.- Peter, Kevin, and Ben are considered key stakeholders in the project as they shared their requirements and are part of the committee helping Mr. Henry.

8.- The store will require a user login system for manufacturers and farmers to access different functionalities.

9.- A product catalogue will be available, featuring detailed information about fertilizers, seeds, and pesticides, including pricing and manufacturer details.

10.-Users will have the ability to search for specific products within the catalogue.

11.-Farmers will need to create an account using their email ID and password to make purchases or add products to a buy-later list. New users can create a new account by providing their email ID and creating a secure password.

12.-The payment gateway will support multiple options, including cash-ondelivery (COD), credit/debit card, and UPI (Unified Payments Interface), for a convenient user experience.

13.-Users will receive email confirmations regarding their order status, providing details about their orders.

14.-The platform will include a delivery tracker feature to allow users to track the progress and location of their orders. These assumptions provide a basis for understanding the requirements and scope of the online agriculture product store project. It's important to validate these assumptions.

## 9 :- PROJECT REQUIREMENT PRIORITY :

<u>REQ_ID</u>	<u>REQ_NAME</u>	REQ DESCRIPTION	<u>PRIORITY</u>
BR001	Farmers search for product	Farmers should be able to search for specific products based on criteria	8
BR002	Farmers can add product to cart	The platform should provide a shopping cart feature that allows farmers to add products they wish to purchase	7
BR003	Platform should have catalogue	The platform should have a comprehensive catalogue of fertilizers, seeds, and pesticides, including detailed information	8
BR004	Farmers can create account	Farmers and manufacturers should be able to create user accounts	9
BR005	Farmers can log into the app	Farmers should be able to log in to the platform using their registered email ID and password	9
BR006	Multiple payment option	The payment gateway should support various payment methods, including cash-on- delivery (COD), credit/debit card payments, and UPI	8

BR007	Farmers sould receive notification	Users should receive email notifications confirming their order details,	6
BR008	Farmers can rate and review	Farmers should have the option to provide feedback, reviews, and ratings	6
BR009	Personal security of user	The platform should ensure the security of farmers personal information, including their payment details	7
BR010	Mobile version should be available	The online store should be optimized for mobile devices, allowing farmers to access and use the platform seamlessly on smartphones and tablets.	6

# 10 :- USE CASE DIAGRAM :



### 11:- Use Case Specifications :

### 1. User Registration

Use Case ID: UC001

Actors : Farmer, Manufacturer , Website and database

Preconditions: The user has the app installed. Postconditions: The user account is created, and the user is logged in. <u>Main Flow:</u>

- 1. User opens the app and selects "Register."
- 2. User enters required information (name, email, password, phone number).
- 3. User agrees to the terms and conditions and privacy policy.
- 4. User submits the registration form.
- 5. The system validates the information.
- 6. A confirmation email/SMS is sent to the user.
- 7. User clicks the confirmation link/SMS and is redirected to the app.
- 8. User is logged in automatically.

## Alternate Flow:

If the email is already in use, an error message is displayed.

User submits the form with invalid input like weak password.

## Exceptional Flow:

OTP is not going to the number.

System error, system may encounter an unexpected error.

System display error message like "Registration failed. Please try again Later"

# 2. User Login

### Use Case ID: UC002

Actors: Farmer, Manufacturer, Website and database Preconditions: The user has an existing account. Postconditions: The user is logged into the app. <u>Main Flow:</u>

- 1. User opens the app and selects "Login."
- 2. User enters registered email and password.
- 3. User selects the "Login" button.
- 4. The system verifies credentials.
- 5. If successful, the user is directed to the home screen.
- 6. If unsuccessful, an error message is displayed, prompting a retry.

#### Alternate Flow:

Password is wrong.

User name is wrong.

#### Exceptional Flow:

System Display error, try after sometime.

Forgot Password option to reset new password.

## 3. Product Order

Use Case ID: UC003 Actors: Farmer , website and Database.

Preconditions: The user is logged in and has access to products. Postconditions: The user successfully places an order. <u>Main Flow:</u>

- 1. User browses the product catalog.
- 2. User selects a product for more details.
- 3. User clicks "Add to Cart."
- 4. User views the cart and selects "Checkout."

- 5. User enters shipping information and payment details.
- 6. User reviews the order summary.
- 7. User confirms the order.
- 8. The system processes the payment and generates an order confirmation.

#### Alternate Flow:

Product out of stock , either choose another product or get notified when available.

Customer reviews cart and may decide to remove the products.

#### Exceptional Flow:

System display payment failure due to insufficient funds.

System Display error due to network problem and dispal try after sometime.

#### 4. Feedback and Review

Use Case ID: UC004

Actors: Farmer, Manufacturer, Website and Database

Preconditions: The user has purchased a product. Postconditions: Feedback is submitted and stored. <u>Main Flow:</u>

- 1. User navigates to "My Orders."
- 2. User selects an order to review.
- 3. User rates the product (1-5 stars).
- 4. User writes a review.
- 5. User submits the feedback.
- 6. The system stores the feedback and displays a confirmation message.

#### Alternate Flow:

System detects any missing field like star rating.

System detects any inappropriate review and that cannot be submitted.

### Exceptional Flow:

System error during submission and it shows Please try after sometime.

System display error due to network connectivity.

### 5. Manufacturer Product Upload

Use Case ID: UC005

Actors: Manufacturer ,Website and Database Preconditions: The manufacturer is registered and logged in. Postconditions: The product is uploaded and available in the catalog. <u>Main Flow</u>:

- 1. Manufacturer navigates to the "Upload Product" section.
- 2. Manufacturer fills out the product details (name, description, price, category).
- 3. Manufacturer uploads product images.
- 4. Manufacturer sets inventory levels and shipping details.
- 5. Manufacturer submits the product for review.
- 6. The system confirms submission and informs the manufacturer of the review process.

## Alternate Flow:

System Display Missing required field and manufacturer corrects then resubmit it.

System detects that the image format is invalid and manufacturer

reuploads corrected image.

## Exceptional Flow:

System Error during upload of product and its details due to network issue.

System Error during upload of image.

### **12:- ACTIVITY DIAGRAM**









