# Agricultural Eco-system Management:

The Agricultural Eco-system Management is a comprehensive solution designed to revolutionize the agricultural sector by integrating four enterprises—Farms, Distribution, Analytics, and Marts—alongside six key organizations and diverse roles. At its core, the system optimizes agricultural operations through data-driven insights and efficient coordination. The Data Analyst extracts valuable information to inform decision-making, while the Crop Planner strategically aligns crop planting with market demands. Warehouse Coordinators manage inventory and facilitate seamless deliveries, and Delivery Drivers ensure timely transportation. Sales Associates promote products, and Harvest Technicians implement cultivation techniques. Together, these roles create a cohesive framework, enhancing the overall efficiency, sustainability, and success of modern agricultural practices.

It has 4 Enterprises:

* Farms Enterprise
* Distribution Enterprise
* Analytics Enterprise
* Marts Enterprise

It has 6 Organizations:

* Crop Planning Organization
* Harvest Operation Organization
* Regional Distribution Organization
* Data Analytics and Farm Management Organization
* Logistics Organization
* Customer Relation Organization

It has 6 Roles:

* Crop Planner
* Harvest Technician
* Warehouse Manager
* Data Analyst
* Delivery Driver
* Sales Associates

Data Analyst Documentation:

1. Introduction:

The role of the Data Analyst within the Agricultural Management System is pivotal in leveraging data-driven insights to inform decision-making processes. This documentation outlines the various responsibilities, processes, and collaborative efforts undertaken by the Data Analyst to contribute to the overall success of the agricultural operations.

1. Responsibilities of the Data Analyst:
2. Analyzing Crop Classes and Recommending Best Crops:

* In this capacity, the Data Analyst is tasked with gathering data on different crop classes and utilizing market trends to recommend the best crops. This involves a comprehensive analysis of historical data to identify patterns and forecast demand for specific crops.

1. Generating Reports on Crop Data, Characteristics, and Type:

* The Data Analyst is responsible for collecting detailed information on crop characteristics and creating comprehensive reports on various crop types. This includes providing insights into the suitability of different crops for specific regions based on their attributes.

1. Seasonal Analysis of Crop Data:

* A crucial aspect of the role involves compiling seasonal data on crop yield and sales. By identifying patterns and trends across different seasons, the Data Analyst contributes to strategic planning, helping stakeholders understand and prepare for seasonal variations in crop performance.

1. Utilizing Sales Data for Market Insights:

* The Data Analyst extracts and processes sales data from Sales Associates, conducting in-depth analyses of sales patterns and customer preferences. This information is used to provide valuable insights that optimize sales strategies and improve inventory management.

1. Collaborating with the Warehouse Coordinator for Store-Specific Requirements:

* Effective communication and collaboration with the Warehouse Coordinator are essential. The Data Analyst works closely to understand store-specific needs, integrating this information into the analytical process to ensure that recommendations align with warehouse planning and overall operational requirements.

Crop Planner Documentation:

1.Introduction:

The Crop Planner role encompasses two primary work models:

a. Analyze and Forecast

b. Crop Planting Schedule

* Analyze and Forecast Functionality:

1. Top 5 Crops by Market Demand:
   * + Crop planners can view the top 5­ crops based on market demand, filtered and sorted by sales quantity.
2. Top 5 Crops by Seasons:
   * + The system provides insights into the top 5 crops for each season, helping crop planners understand the seasonal demand for various crops.
3. Forecast Data:
   * + Crop planners have access to forecast data for future periods, aiding them in strategic planning.
4. Decision-Making for Future Demand:
   * + Crop planners can make informed decisions regarding crops expected to be in high demand in the future.
5. Categorization of Forecasted Data:
   * + The forecasted data can be viewed in two categories: By market demand and by seasons, providing a nuanced understanding of future trends.
6. Data Origin:
   * + The forecast data is sourced from the Data Analyst, ensuring accuracy and reliability.
7. Schedule Creation:
   * + Armed with current market and forecasted data, crop planners can efficiently create Crop-Planting schedules which will be sent to Harvest Technicians for crop production
8. Strategic Crop Selection:
   * + The data empowers crop planners to select crops strategically, aligning planting schedules with anticipated market demand and seasonal variations.

* Crop Planting Schedule functionality

1. Add crop Scheule for each available crop:

* Crop planners can start creating schedules for each crop by assigning days and timings for each crop.

1. Add techniques to each crop:

* They can add techniques for each crop and assign the specific technique to crop.
* They can create multiple schedules and assign a crop planting technique to each crop.

1. Finalize the schedule.

* They can verify the overall created schedule for each crop and publish the data to the Harvest Technician Org to coordinate and plan the crop harvesting further on.

1. Publish the finalized schedule to Data Analyst Org.

* They can then publish the finalized schedule to Data Analyst Org to keep the organizations informed.

Warehouse Coordinator:

1. Introduction:

A Warehouse Coordinator within the Agricultural Management System is responsible for inventory management across the organizations and is responsible for looking at the

Product requirements for each store and making sure to dispatch and schedule shipments for each store. He gets the harvested crop quantities from several Harvest Technicians and updates the current inventory stock numbers. He also constantly communicates with the Delivery organization and keeps the inventory and the conditions in check, ensuring the supply and demands are met accordingly. They maintain the records for updated inventory and communicate the same info to a Data Analyst.

1. Responsibilities of the Warehouse Coordinator:
2. Get Store wise requirement:

* The Warehouse Coordinator gets store wise crop requirement from Data Analytics organization.

1. Get Current Inventory metrics for each crop harvested from Harvest Technician Org.:

* They later plot the crop requirement of each store against the current inventory which is received from all the Harvest Technicians.

1. Understand the per crop requirement for a given store:

* The Warehouse Coordinator keeps in check the quantities of net crop requirement and the net produced, making sure the inventory does not run out of stock while making sure a surplus chunk of requirement is supplied to each store.

1. Create delivery shipments and update the inventory accordingly:

* The Warehouse Coordinator starts creating shipments of crops for several stores by understanding an efficient way of mapping so that the delivery shipment will most efficiently reach several stores at a time.

1. Assign a specific delivery driver for each shipment created and update the shipment status:

* The Warehouse Coordinator assigns the above created shipments to an available delivery driver and updates the shipment status accordingly.

Delivery Driver:

1. Introduction:

In the agricultural ecosystem, a delivery driver's role is to transport harvested products.

2. Responsibilities:

1. Timeliness:
   * Ensure on-time deliveries to farms, processing facilities, distribution centers, or consumers.
2. Vehicle Maintenance:
   * Regularly maintain your delivery vehicle to prevent breakdowns and ensure reliability.
3. Communication:
   * Communicate effectively with farmers, suppliers, and other stakeholders about delivery schedules and updates.
4. Safety Measures:
   * Prioritize safety during transportation, including securing loads properly.

Sales Associate:

1. Introduction:

Sales Associate role involves promoting and selling agricultural products.

2. Responsibilities:

1. Product Knowledge:
   * Develop a comprehensive understanding of the agricultural products or equipment you are selling, including their features, benefits, and applications.
2. Customer Relationship Building:
   * Build strong relationships with farmers, agricultural businesses, and other stakeholders. Understand their needs and provide tailored solutions.
3. Market Research:
   * Stay informed about market trends, competitor products, and industry developments. This knowledge will help you position your products effectively.

Harvest Technician Role Description

1.Introduction:

The Harvest Technician plays a crucial role in the agricultural production process. Their primary responsibility is to determine and apply suitable techniques for the cultivation of various crops, based on the information and schedules provided by Data Analysts.

2. Responsibilities:

1. Receiving Crop Data: The Harvest Technician starts by receiving a detailed list of crops that need to be produced, along with their production schedules. This data is provided by Data Analysts.
2. Selecting a Crop Planner: They are responsible for selecting an appropriate Crop Planner. This involves choosing a planner that has developed a list of crops tailored to specific agricultural needs and schedules.
3. Retrieving and Reviewing Crop Plans: Once a Crop Planner is selected, the Harvest Technician retrieves the list of planned crops. They then need to review and select a specific plan from this list for implementation.
4. Technique Assignment and Status Update: The next step involves assigning the most suitable cultivation technique to each crop in the selected plan. Additionally, the Harvest Technician is required to update the status of each crop's production process. The status options include:
   * + Not-Planned
     + In-Progress
     + Completed
5. Recording Production Quantities: If the status of a crop is set to ‘Completed’, the Harvest Technician must record the quantity of the crop produced using the selected technique.
6. Finalizing and Sharing the Plan: After finalizing the plan and recording all necessary details, the Harvest Technician sends this updated data back to the Data Analyst. This information is subsequently accessed by the Warehouse Coordinator for further processing and logistical planning.

Validations list:

* A user assigned to a specific role cannot access the portals of other roles.
* Portal will not allow the user to login if the input credentials are not valid.

1. Sales Associate:

* Sales Associate cannot add duplicate crop requirement per store and location once the requirement is published to the Data Analyst Org.

1. Warehouse Coordinator:

* The warehouse coordinator cannot create a delivery schedule if the overall crop requirement is more than the inventory quantity for a given crop.

1. Crop planner validations:

* When adding the crops to the list, if crop is already added, the user will get a notification that the crop is already added to schedule.
* Crop Planner will only be able to forecast future data and not for previous years data in the Forecast Panel
* Crop Planner cannot finalize the schedule until all the crop plans have been added.

1. Harvest Technician:

* Only when the Status of the crop plan is updated to ‘completed’ , user will be able to add the Quantity of the crop produced.