# Capstone Project Weekly Report

## Date: 24 Aug 2025

## Project Details:

1. Sponsor Company: AiSPRY
2. Project Title: Inventory Optimization Replenishment Simulation for Hospital Pharmacy

**Note:** All the fields in the form are required.

## Project Milestones:

Progress made in Current Week:

**1. Finalization of Metadata and Dataset**

- Initially, metadata and dummy data were created to understand the structure and different components of the dataset.
- After review, AiSPRY shared the finalized dataset for use. The team has gone through it and discussed open queries.
- Each team member is currently performing **Exploratory Data Analysis (EDA)** on the dataset.
- Work is also underway to design the **overall data flow architecture**.

**2. Division of Focus Areas**

To ensure streamlined execution, each team member has taken ownership of a specific data point:

- **Anmol** – Sales
- **Divam** – Supply Chain
- **Rahul** – Predicted Quantity
- **Ishika** – Patient
- **Janki** – Inventory

Tasks to finish in Next week:

1. **Conduct Basic EDA**
    - Perform initial exploratory data analysis (EDA) on the datasets to identify key patterns, trends, and potential data quality issues.
2. **Outline the Two-Week Plan**
    - Prepare a structured two-week execution plan, detailing tasks, responsibilities, and expected outcomes for the team.
3. **Draft the Detailed Architecture**
    - Create a comprehensive draft of the overall system architecture, capturing data flow, components, and integration points.

## Updates/MoM from Sponsor and Faculty Mentor:

**Note:** **It is expected that you have at least one weekly connect with the faculty mentor and sponsor.** If you were not able to schedule meetings with the sponsor or faculty mentor in the current week, please mention the reason for your inability to meet with the Sponsor or Faculty Mentor.

Updates/MoM from Sponsor:

**Key Points Discussed**

1. **Dataset & Metadata**
    - Dummy data and metadata were initially created (40–50 records) to understand structure and test scenarios.
    - AiSPRY team will share **data headers** (by 7–8 PM) to validate against current dataset.
    - Decision: Team will verify whether AiSPRY's headers or the curated dataset is more suitable. Based on that, anonymized data may be shared by AiSPRY.
2. **Architecture Planning**
    - High-level architecture discussed:
        - Data lake for storing hospital data.
        - ETL pipelines for cleaning and processing.
        - Creation of dimensions and fact tables.
        - Forecasting model for inventory.
        - Results pushed to tables → visualized in dashboard.
    - Team to document high-level architecture and refine based on dataset.
    - Discussion on infrastructure:
        - Spark recommended due to expected large volumes (up to 400k records/month per hospital).
        - AWS infrastructure (with open-source Apache tools) will be provided; external cloud costs (Azure etc.) should be avoided if possible.

**Next Steps (Milestones for Next Week)**

1. **Conduct Basic EDA**
    - Team to perform initial exploratory data analysis on finalized dataset.
2. **Outline Two-Week Plan**
    - Prepare execution plan covering tasks, ownership, and deliverables for the next two weeks.
3. **Draft Detailed Architecture**
    - Document comprehensive data flow and system architecture, including storage, pipelines, and dashboard mechanics.

Updates/MoM from Faculty Mentor:

**Key Points Discussed**

- The professor expressed satisfaction that the dataset has finally been shared and acknowledged the progress made by the team.

**Next Steps:**

- Develop a structured plan in preparation for the **mid-review**.
- Schedule a follow-up meeting with the professor next week to present and discuss the **initial EDA outcomes**.

## Challenges:

Mention any technical and non-technical challenges that you faced during the current week that hindered your project progress. Enter "NA" if you didn't face any challenges.

Technical Challenges:

NA

Non-Technical Challenges:

NA

Mention any other queries/challenges regarding the project that you want to highlight:

NA