# Project Design Phase-II
# Solution Requirements (Functional & Non-functional)

| Date | 15 March 2025 |
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| Team ID | PNT2025TMID06851 |
| Project Name | Predicting Plant Growth Stages with Environmental and Management Data Using Power BI |
| Maximum Marks | 4 Marks |

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

| FR No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task) |
|---|---|---|
| FR-1 | user Registration and Authentication | users ( Farner , agronomists admins ) must be able to register and log in srcurely |
| FR-2 | Plant data input | users must be able to input plant type planting date and Growth Observation |
| FR-3 | Environmental Data collection | The system must fetch real-time weather and soil sensor data from APIs |
| FR-4 | Growth stages prediction | The system must predict the current and upcoming growth stages of plants based on enviromental and historical data |
| FR-5 | Management Recommendation | The system should suggest irrigation fertilization and pest control actions based 0n plant ' s growth stages |
| FR-6 | Data storage and Retrieval | LL Input and output data must be stored and retrievable for future analysis |
| FR-7 | User Dashboard | Users should have a Dashboard Displaying plant growth status |

| FR-8 | Notification System | The system must send alerts to users about growth stages changes weather conditions,and management actions |
|---|---|---|
| FR-9 | Admin control panel | Admins should manage plant growth models update environment data sources and oversee system performance |
| FR-10 | Reports Analytis | users should be able to generate reports on plant growth history and enviromental conditions |

| FR No. | Non-Functional Requirement | Description |
|---|---|---|
| NFR-1 | **Performance** | The system should process data and generate predictions within 5 seconds |
| NFR-2 | **Scalability** | The system must support multiple users and large datasets without performance Degradation |
| NFR-3 | **security** | User authentication must use encryption and sensitive data should be securely stored |
| NFR-4 | **Availability** | The system should 99.9 user-friendly with simple navigation and clear instruction |
| NFR-5 | **Usability** | The interface should be user friendly with simple navigation and clear instruction |
| NFR-6 | **Data Accuracy** | Predictions should have at least 85 present accuracy ,improving over time with machine learning |

| NFR-7 | **Interoperability** | The system must integrate with third-party weather APIS and lot soil sensors |
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**Non-functional Requirements:**

Following are the non-functional requirements of the proposed solution.

| NFR-8 | **Maintainability** | Sysstem updates and maintenance should be possible with minimal downtime |
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| NFR-9 | compliance | The system must adhere to agricultural data standards and privacy regulations |