

## Project Design Phase-II

### Solution Requirements (Functional & Non-functional)

Date	19 February 2026
Team ID	LTVIP2026TMIDS90138
Project Name	Rainfall Prediction System for Agriculture
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 Input Handling	User enters weather parameters (temperature, humidity, rainfall, pressure, wind speed, etc.) via web form.
FR-2	Data Validation & Preprocessing	System validates inputs and applies scaling, encoding, and missing value imputation.
FR-3	Rainfall Prediction	System uses trained Random Forest model to predict RainTomorrow outcome.
FR-4	Probability Display	System displays rainfall probability percentage to the user.
FR-5	Agricultural Advisory Generation	System dynamically renders advisory recommendations based on prediction result.
FR-6	Model Management (Admin)	Administrator can retrain and update the ML model when new dataset is available

**Non-functional Requirements:**

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

<b>FR No.</b>	<b>Non-Functional Requirement</b>	<b>Description</b>
NFR-1	<b>Usability</b>	The system must provide a simple, intuitive web interface accessible to farmers with minimal technical knowledge.
NFR-2	<b>Security</b>	User inputs must be securely handled. Backend must prevent malicious inputs and ensure safe model execution.
NFR-3	<b>Reliability</b>	The prediction system should consistently produce accurate results (Random Forest accuracy ~85.69%).
NFR-4	<b>Performance</b>	System must generate predictions within a few seconds after form submission.
NFR-5	<b>Availability</b>	Web application should be available whenever users access it, with minimal downtime.
NFR-6	<b>Scalability</b>	System architecture should support integration with larger datasets or cloud deployment in the future.