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

Date	20 December 2025
Team ID	LTVIP2026TMIDS83736
Project Name	**Rising Waters: A Machine Learning Approach to Flood Prediction**
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	Homepage/Introduction	Display project overview Show system features Provide navigation to prediction pages
FR-2	Manual Flood Prediction	Accept 8 input parameters (monsoon, topography, drainage, river management, deforestation, urbanization, climate change, dam) Validate input data Display prediction results
FR-3	ML Model Integration	Load pre-trained model on startup Apply data transformation Generate flood probability predictions
FR-4	Result Display	Show flood risk level (Yes/No or probability) Display results in user-friendly format Provide clear visual indicators
FR-5	Navigation	Navigate between pages (intro, home, prediction, image) Consistent UI across all pages

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	User interface should be simple and intuitive Input forms should be easy to understand Results should be clearly displayed without technical jargon Minimal learning curve for end users
NFR-2	**Security**	Input validation to prevent malicious data injection Secure file upload mechanism for images Protection against common web vulnerabilities
NFR-3	**Reliability**	System should load ML model successfully on startup

		Prediction accuracy should be consistent Error handling for invalid inputs Graceful failure recovery
NFR-4	**Performance**	Prediction results should be generated within 2-3 seconds Page load time should be under 2 seconds Image processing should complete within 5 seconds Efficient model inference
NFR-5	**Availability**	Flask application should run 24/7 without crashes System should handle concurrent user requests Minimal downtime during maintenance
NFR-6	**Scalability**	System should handle multiple simultaneous predictions Model should be easily retrained with new data Architecture should support future feature additions Dataset can grow without performance degradation