

Project Design Phase
Proposed Solution Template

Date	15 February 2025
Team ID	LTVIP2026TMIDS77028
Project Name	Rising Waters – A Machine Learning Approach to Flood Prediction
Maximum Marks	2 Marks

Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Floods cause severe damage to life, infrastructure, and the economy. Existing systems rely on delayed weather reports and manual monitoring, which are reactive rather than predictive. There is a need for an automated, data-driven system that can predict flood occurrence in advance to support early warning and disaster preparedness.
2.	Idea / Solution description	The proposed solution is a Machine Learning-based Flood Prediction System that analyzes historical rainfall and climate parameters to predict flood occurrence. The system uses classification algorithms such as Random Forest and XGBoost and provides instant prediction results through a user-friendly web interface built using Flask.
3.	Novelty / Uniqueness	Unlike traditional weather alerts, this system uses predictive analytics and ensemble machine learning models to forecast floods before they occur. It combines data preprocessing, model comparison, and deployment into a single integrated platform. The architecture is scalable and can be extended to include real-time weather APIs.
4.	Social Impact / Customer Satisfaction	The system helps disaster management authorities issue early warnings, enables residents to take preventive measures, reduces panic during heavy rainfall, and minimizes loss of life and property. It enhances trust in AI-driven decision-making tools.
5.	Business Model (Revenue Model)	The solution can follow a SaaS (Software as a Service) model for government agencies and urban planners. Premium features such as real-time API integration, SMS alerts, and analytics dashboards can be offered through subscription-based pricing.
6.	Scalability of the Solution	The system is designed with a modular architecture and can be deployed on cloud platforms such as AWS or IBM Cloud. It can scale to support multiple regions, integrate real-time weather data, and handle large datasets for broader geographic coverage.