

Project Design Phase
Problem – Solution Fit Template

Date	15 February 2026
Team ID	LTVIP2026TMIDS24126
Project Name	Rising Waters – A Machine Learning Approach to Flood Prediction
Maximum Marks	2 Marks

Problem – Solution Fit Template:

In the context of flood-prone regions, communities, disaster management authorities, and emergency responders face significant challenges due to the lack of accurate and timely flood prediction systems. Delayed warnings, outdated forecasting methods, and limited real-time data integration lead to loss of life, infrastructure damage, and ineffective disaster response.

The Problem–Solution Fit in our project ensures that the Machine Learning-based flood prediction system directly addresses these challenges by providing real-time risk assessment, early warning alerts, and actionable insights. Our solution is designed to align with the actual needs, behaviors, and decision-making processes of authorities and affected communities.

This approach helps identify risk patterns, improve preparedness, and deliver reliable predictions that truly solve the stakeholders' problem.

Purpose:

- Solve complex flood prediction challenges by leveraging Machine Learning models that analyze historical and real-time environmental data.
- Improve early warning effectiveness by integrating real-time rainfall, river levels, and weather forecasts into a unified predictive system.
- Enhance communication strategies through clear risk-level alerts (Low/Medium/High) and timely notifications to authorities and communities.
- Increase trust and adoption by providing accurate, consistent, and data-driven predictions that reduce uncertainty during monsoon and extreme weather events.
- Understand and improve existing flood management systems by analyzing current limitations and enhancing them with predictive analytics and automation.

Template:

Problem – Solution Fit Canvas

RISING WATERS – FLOOD PREDICTION SYSTEM

<p>1. CUSTOMER SEGMENT(S)</p> <p>Who is your customer?</p> <ul style="list-style-type: none"> Disaster Management Authorities Emergency Response Teams Community Leaders in flood-prone areas Residents living in high-risk flood zones Urban planners & infrastructure authorities 	<p>CS</p>	<p>6. CUSTOMER CONSTRAINTS</p> <p>What constraints prevent your customers from taking action?</p> <ul style="list-style-type: none"> Limited real-time flood data Budget constraints for advanced prediction systems Lack of technical expertise in predictive analytics Poor communication infrastructure in rural areas Delayed weather updates 	<p>CC</p>	<p>5. AVAILABLE SOLUTIONS</p> <p>Which solutions are available at the customers when they face the problem of mock to get job done?</p> <ul style="list-style-type: none"> Manual flood monitoring systems Traditional weather forecasting reports Basic rainfall threshold alerts News-based flood warnings <p>Limitations:</p> <ul style="list-style-type: none"> Not real-time Low predictive accuracy No ML-based risk classification Delayed alerts 	<p>AS</p>
<p>2. JOBS-TO-BE-DONE / PROBLEMS</p> <p>Which jobs-to-be-done / problems to you address for your customers?</p> <ul style="list-style-type: none"> Predict Floods before they occur Reduce loss of life and infrastructure damage Improve disaster preparedness Enable data-driven evacuation-planning Provide district-level flood risk assessment 	<p>J&P</p>	<p>9. PROBLEM ROOT CAUSE</p> <p>What is the main reason this problem exist?</p> <ul style="list-style-type: none"> Dependence on outdated forecasting heaths Lack of integrated environmental data No predictive analytics for-Early warnings Poor coordination between agencies Climate variability increasing unpredictability 	<p>RC</p>	<p>7. BEHAVIOUR</p> <p>What does your customer do to address the problem and get the job done?</p> <ul style="list-style-type: none"> Monitor rainfall manually React only after flood levels rise Issue emergency alerts late Use historical data without predictive modeling Depend on traditional weather bulletins. 	<p>BE</p>
<p>3. TRIGGERS</p> <p>Which triggers your customers to act?</p> <ul style="list-style-type: none"> Heavy continuous rainfall Mixing river water levels Weather department alerts Past flood disasters Public pressure during monsoon season 	<p>TR</p>	<p>10. YOUR SOLUTION</p> <p>Tryout is as they wants working business, with clewn your current solution it.</p> <p>His imminent base on taking tsao typer team imcomes sunris?</p> <ul style="list-style-type: none"> Machine Learning based flood prediction system Rebo (im monsoon integrator) (infall, Roar thers weather forecasts) Flood Risk Classification (Low / Medium / High) Automated alert-system (STAs / App-rodications) Visual dashboard for authorities 	<p>SL</p>	<p>8. CHANNELS OF BEHAVIOUR</p> <p>ONLINE:</p> <ul style="list-style-type: none"> Mobile application alerts Web based monitoring dashboard Email alerts for authorities <p>OFFLINE:</p> <ul style="list-style-type: none"> Public announcement systems Local disaster management offices Community meetings Emergency sirens 	<p>CH</p>
<p>4. EMOTIONS: BEFORE / AFTER</p> <p>How do customers feel when they face a problem or job and afterwards?</p> <p>La, Aks, Sisauue = earthfoots in curvild - reay in your form retoceduing & disagre.</p> <p>BEFORE:</p> <ul style="list-style-type: none"> 1. Experience: Sturo froro Another monsoon experimenter Bas of clister levels Dvern sanice meccoz making <p>AFTER:</p> <ul style="list-style-type: none"> Makems deing is question tosets Exondefilof imvalih roar walking Eased beruns or safatd predictions 	<p>EM</p>	<p>4. EMOTIONS: BEFORE / AFTER</p> <p>How to customers feel when they face a problem or job and afterwards?</p> <p>La, Aks, Sisauue = earthfoots in curvild - reay in your form retoceduing & disagre.</p> <p>BEFORE:</p> <ul style="list-style-type: none"> Monsoon experimenter Bas of clister levels Dvern sanice meccoz making <p>AFTER:</p> <ul style="list-style-type: none"> Local, laer fe, early warning system. Pecilent frere dicinc heavy rainfall, higparad preperatihies 	<p>EM</p>	<p>4. EMOTIONS: BEFORE / AFTER</p> <p>BEFORE:</p> <ul style="list-style-type: none"> Manage tifer monsoon, Pedicel tiser during heavy rainfall, Triparad preperatihies <p>AFTER:</p> <ul style="list-style-type: none"> Look laer fe, early warning system. Pecilent alerts during heavy rainfall. Triparad preperatihies 1 huto in prasur:al fertomalg! 	<p>EM</p>

References:

- <https://www.ideahackers.network/problem-solution-fit-canvas/>
- <https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe>