Project Design Phase
Problem – Solution Fit Template

Date	16 February 2026
Team ID	LTVIP2026TMIDS48526
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 Delayed warnings, outdated forecasting methods, and limited real-time data integration lead to loss of life, infrastructure damage, and ineffective disaster response.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 PREDICION SYSTEM

1. CUSTOMER SEGMENT(S) — CS
Who is your customer?
- Disaater Management Authorities
- Emergency Response Teams
- Community Leaders in flood-prone areas
- Residents living in high-risk flood zones
- Urban planners & infrastructure authorities

6. CUSTOMER CONSTRAINTS — CC
What constraints prevent your customers from taking action?
- Limited real-time flood data
- Budget constraints for advancd prediction systems
- Lack of technical expertise in predictive analytics
- Poor communication infrastructure in rural areas
- Delayed weather updates

5. AVAILABLE SOLUTIONS — AS
Which solutions are avarlibb, it the customers when they face the problem of mock to get job be doet).
- Manual flod monitoring systems
- Traditional weather forecasting reports
- Basic rainfall threshold alerts
- News-based flood warnings

Limitioons:
- His predictive accuracy
- No ML-based risk classification
- Delayed alerts

Limitations:
- Not real-time
- Low predictive accuracy
- No ML-based risk classification
- Delayed alerts

2. JOBS-TO-BE-DONE / PROBLEMS — J&P
Which jobs-to-be-done / problems to you address for your customers?
- 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

9. PROBLEM ROOT CAUSE — RC
What is the main reason this problem exist?
- Dependence on outdated forecasting heths
- Lack of integrated environmental data
- No predictive analytics for-Early warnings
- Poor coordination between agencies
- Climate variability increasing unpredictaibility

7. BEHAVIOUR — BE
What does your customer do to address the problem and get the job done? Worarprason this onbmeerer or tradiation c detatatec lago and btalles.
- Monitor rainfall manually
- React only after flood levels rise
- Issue emergency alerts late
- Use historical data without predicive modeling
- Depend on traditional weather bulletins.

3. TRIGGERS — TR
Which flaggen your customers to act?
- Hewry continuous rainfall
- Mxing fnver water lovels
- Weather department alerts
- Past flood disaaters
- Public pressure during morsoon season

10. YOUR SOLUTION — SL
Trypol io aa they wonte eoriting bustness, w the clewn your current solution iit. His smenual lase n taking tsoal ttyper team tncomess surenisg?.
- Machine Learning based flood prediction system
- Rebo (im a sorral integratorr (Inerfall, Poar thers weather forecasts)
- Flood Risk Classification (Lale /-Medlum / High)
- Autornated alert-system (STAs / App-rodications)
- Visual dashboard for authorities

8. CHANNELS OF BEHAVIOUR — CH
● ONLINE:
- Moaite application alerts
- Wso based cconitoring dashboard
- Email alerts for authorities

● OFFLINE:
- Public announcement systems
- Local disaater management offices
- Community meetings
- Emergency sirens

4. EMOTIONS: BEFORE / AFTER — EM
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References:

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