Ideation Phase
Brainstorm & Idea Prioritization Template

Date	31 January 2025
Team ID	LTVIP2026TMIDS90283
Project Name	rising waters: a machine learning approach to flood prediction

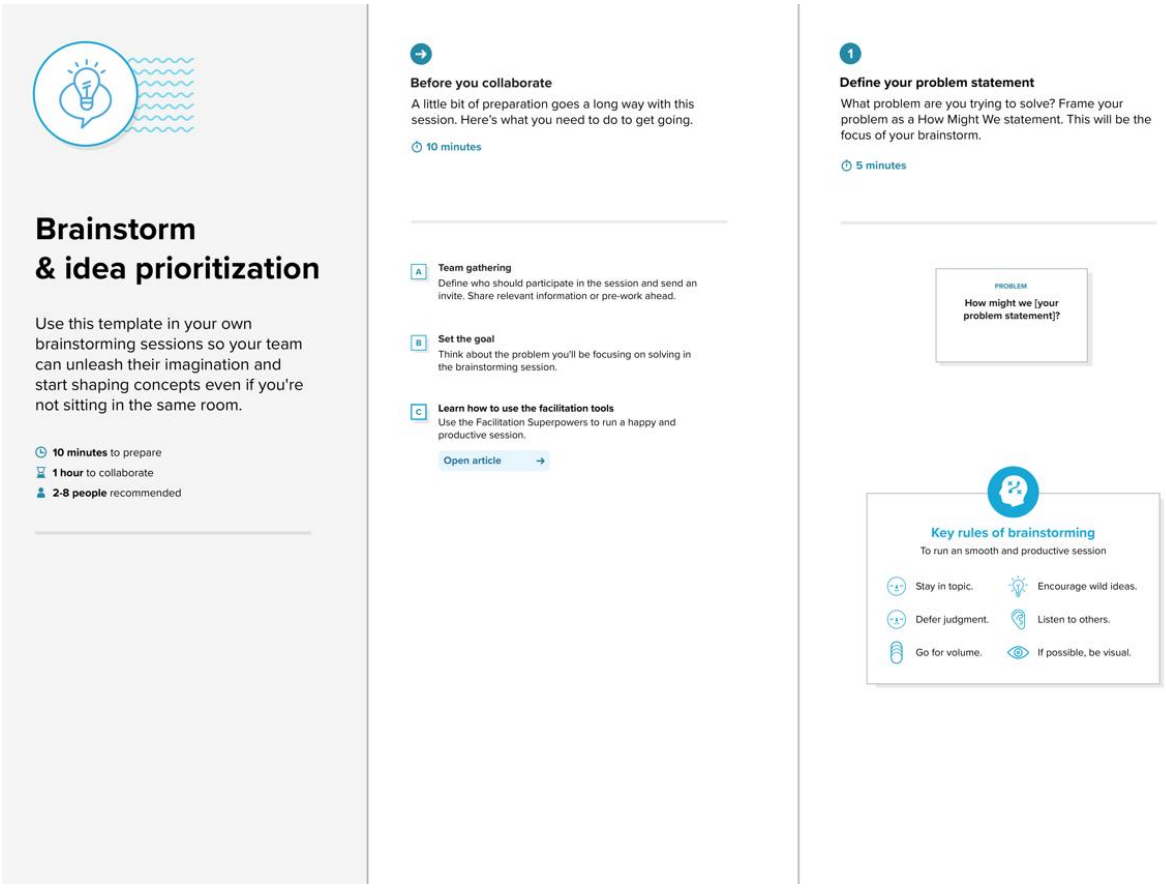
Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

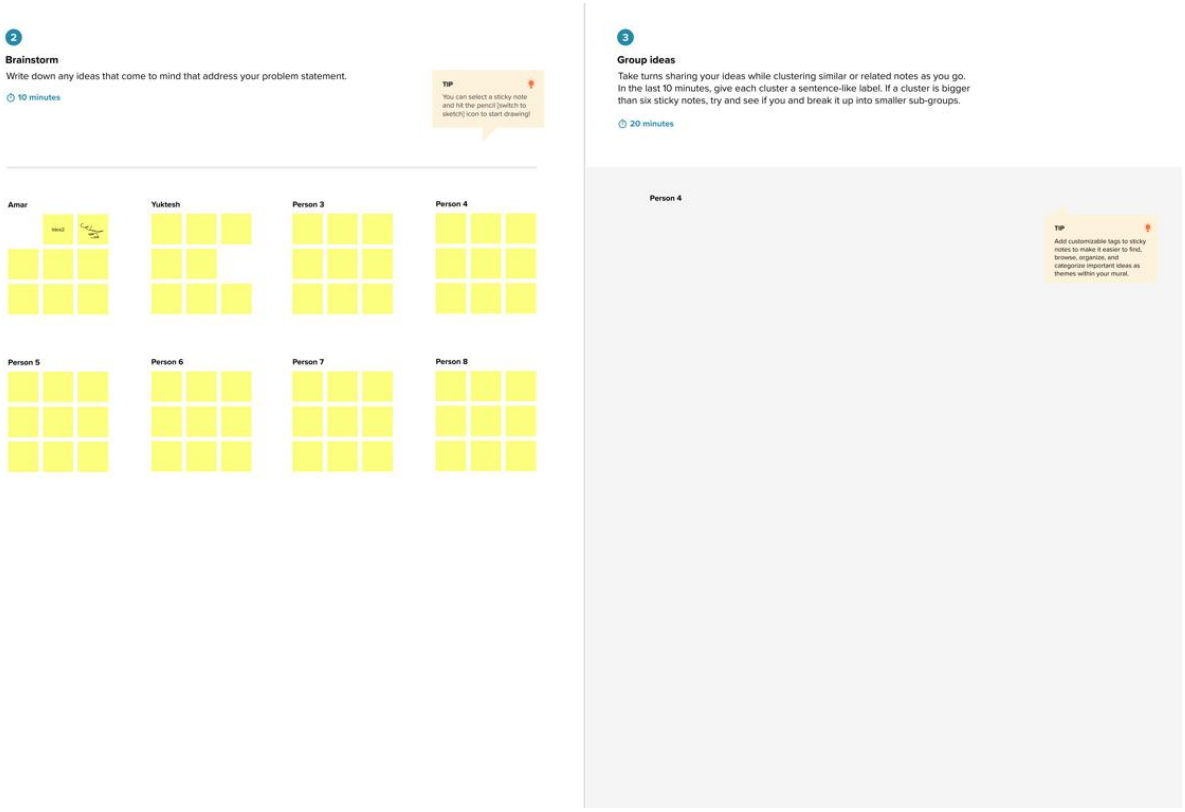
Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

Reference: https://www.mural.co/templates/brainstorm-and-idea-prioritization

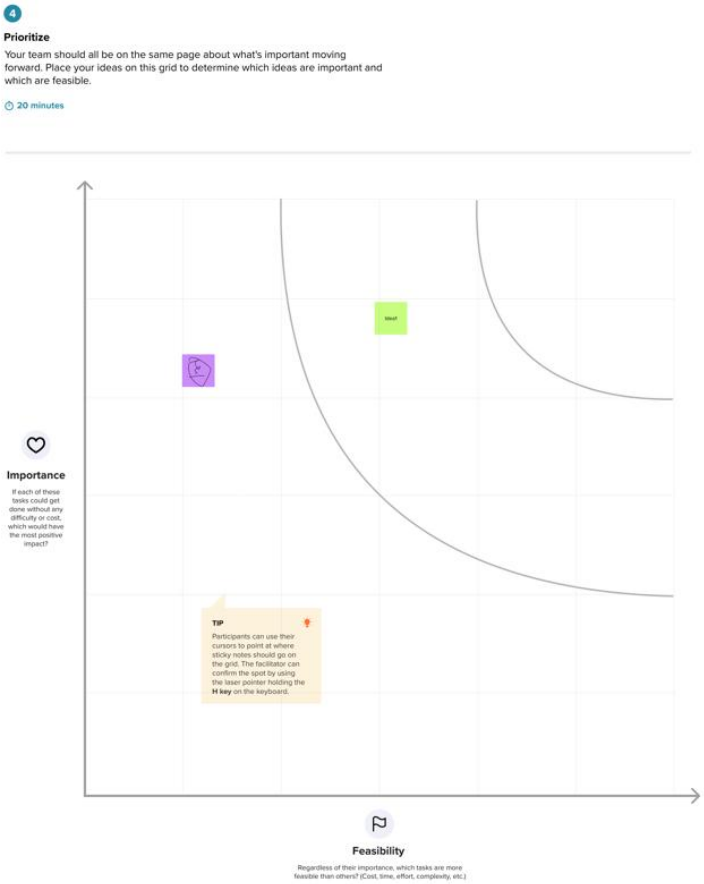
Step-1: Team Gathering, Collaboration and Select the Problem Statement



Step-2: Brainstorm, Idea Listing and Grouping



Step-3: Idea Prioritization



Step-1: Team Gathering, Collaboration and Selection of Problem Statement

Floods are one of the most destructive natural disasters affecting human life, agriculture, infrastructure, and the economy. Early prediction of floods is essential to minimize damage and improve disaster preparedness.

After team discussion and collaboration, we identified the following real-world problem:

“How can we use Machine Learning techniques to predict flood occurrence based on environmental and rainfall data?”

The team discussed multiple environmental problems such as drought prediction, rainfall forecasting, and climate change analysis. After evaluation, flood prediction was selected because:

- It has strong real-world impact
- It directly relates to disaster management
- It can be solved using supervised machine learning
- Dataset availability was feasible

Thus, we finalized the problem statement:

To develop a Machine Learning model that predicts the possibility of flood occurrence based on rainfall and climatic features.

Step-2: Brainstorming, Idea Listing and Grouping

During brainstorming, all team members shared ideas without restrictions. The following ideas were generated:

Idea List

1. Build a flood prediction model using rainfall data
2. Use temperature, humidity, and cloud cover as features
3. Compare multiple classification algorithms
4. Build a web-based application for prediction
5. Deploy the model on cloud platform
6. Create real-time prediction system
7. Use data visualization for analysis
8. Save trained model for reuse

Grouping of Ideas

The ideas were grouped into three main categories:

1 Data & Analysis

- Collect flood dataset
- Perform univariate, bivariate, multivariate analysis
- Preprocess and clean dataset
- Handle missing values
- Perform feature scaling

2️⃣ Model Development

- Train multiple classification models
- Compare Decision Tree, Random Forest, KNN, XGBoost
- Evaluate performance
- Select best-performing model
- Save model using joblib

3️⃣ Application Development

- Build Flask backend
- Create HTML & CSS frontend
- Integrate model with UI
- Display prediction results
- Deploy locally and optionally on cloud

Step-3: Idea Prioritization

After evaluating feasibility, complexity, and impact, ideas were prioritized as follows:

Priority	Task
High	Data collection and preprocessing
High	Model training and evaluation
High	Model integration with Flask
Medium	Data visualization improvements
Medium	UI enhancement
Low	Cloud deployment (IBM)

🎯 **Final Selected Approach**

After prioritization, the team decided to:

- Use supervised classification algorithms
- Train multiple models
- Compare performance
- Select best model
- Develop Flask-based web application
- Provide user-friendly prediction interface