INNOVATIVE IDEAS OF FLOOD MONITORING AND EARLY WARNING SYSTEM

“IoT Early Flood Detection & Avoidance System” is an intelligent system which keeps close watch over various natural factors to predict a flood, so we can embrace ourselves for caution, to minimise the damage caused by the flood.

Methods for flood monitoring:

**1. Meteorological and Hydrological Monitoring**

**2. Data collection and Analysis**

**3. Communication system**

**4. Warning meassages**

**5. Remote sensing and GIS (Geographic Information System)**

**6. Community education and preparedness**

**7. Automated alert system**

**8. Collaboration and coordination**

**9. Feedback and Evaluation mechanism**

**Flood Monitoring and Early Warning System includes of:**

* Utilize a combination of sensors including water level sensors, rain gauges, weather stations, and ground movement sensors to monitor various parameters relevant to flooding.
* Employ drones equipped with specialized sensors to provide high-resolution imagery and collect data in areas that are difficult to access, aiding in accurate flood modeling
* Monitor structural integrity during flood events and provide early warnings in case of potential failure.
* Enabling the system to anticipate and forecast potential flood events.
* Provide a user-friendly dashboard or mobile application for real-time monitoring and visualization of flood-related data, including water levels, rainfall, and weather conditions.
* Implement automated alerting via various channels such as SMS, email, social media, and sirens to reach a wide range of residents in affected areas.

WAYS TO CONTROL TRAFFIC RISKS:

* Constructing dams and reservoirs to regulate river flow, store excess water.
* Building embankments along riverbanks or coastlines to contain floodwaters and prevent them from inundating adjacent areas.
* Erecting concrete or steel barriers along rivers or streams to confine floodwaters within a designated area.
* Planting trees and vegetation in strategic locations to stabilize soil, reduce erosion, and increase water absorption.

Hardware Requirement:

1. **Water Level Sensors**
2. **Data Logger and Transmitter**
3. **Power Supply**
4. **Microcontroller or Microprocessor**
5. **Data Storage Device**
6. **Cloud Platform**
7. **Alerting and Communication Devices**
8. **Security Cameras**

Software Requirement:

1. **Operating System (OS)**
2. **IoT Middleware**
3. Programming Language – c/c++