Integrated LoRaWAN Edge Computing Early Warning System

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Background

- Flooding and other events associated with climatic and geological causes may develop into large-scale disasters when they occur in populated regions.
- Recent cases of flooding in remote areas of Nepal have shown multiplier effects, as floodwaters travel downstream through catchment and watershed region

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Background

- Installing Early Warning Systems (EWS) in risk-prone areas serves many purposes, including:
  - **Risk Reduction** – Minimizes loss of life and property
  - **Informed Decision-Makin**g – Provides data for timely actions
  - **Efficient Resource Allocation** – Directs aid and response where most needed
  - **Economic Protection** – Reduces disaster-related financial losses
  - **Public Safety** – Safeguards communities and infrastructure
  - **Enhanced Coordination** – Improves communication among agencies and stakeholders

Background

Aftermath of Thame Flash Flood on Aug 16, 2025

Project Area

Mapya Dudhkoshi Rural Municipality, Solulkhumbu District

150KM from captial Kathmandu

Valley leading to Mount Everest

Population 12,648, Households 3,140
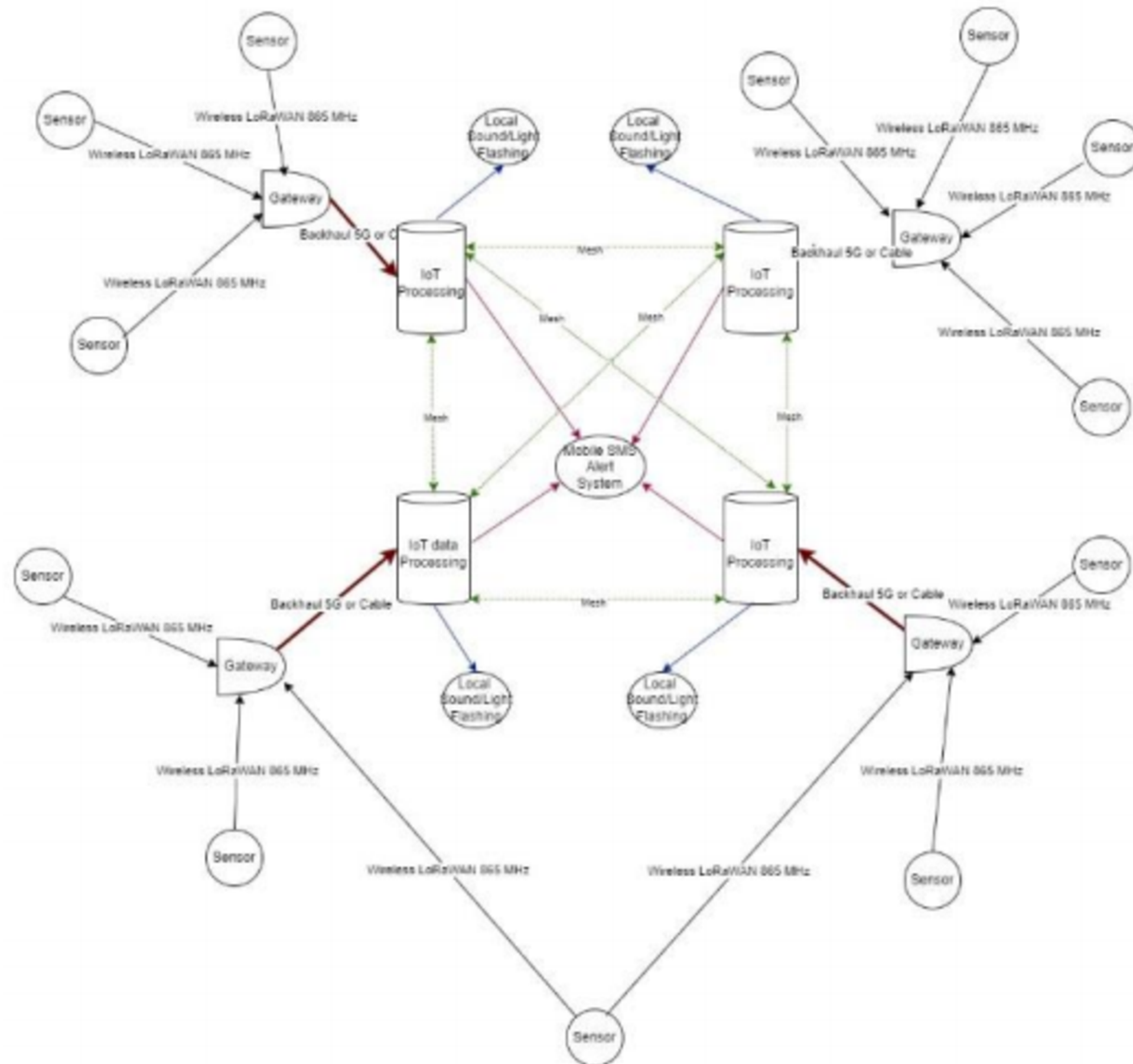
Dhudhkoshi River, Mapya Dhudhkoshi River

Project Area

Before flash flood

After Flash Flood

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Smart Integrated LoRaWAN with Edge Computing

Proposed Network

Integrate LoRaWAN Sensor Network with Edge Computing to enhance Early Warning Systems

LoRaWAN 865 MHZ

SMS Alert, Local Sound Alert, FM , Light Flash

Partner Organizations/Institutions

- APT Grant
- Support by KDDI Foundation
  - in collaboration with National Institute of Information and Communications Technology (NICT)
- Coordinated by MoCIT
- Beneficiary Mapya Dudhkoshi Rural Municipality

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Thank you!

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