

Livestock Tracking and Management: IoT devices such as GPS trackers are used to monitor the location and movement of livestock. This helps farmers prevent theft, track grazing patterns, and manage herd health.

PRESENTED BY :

AMULYA P R

ARIN SINGH

AISHWARYA SRIVASTAVA

ARJUN BALA

DHVANI JAIN

ARYAN SAHU



CMR INSTITUTE OF TECHNOLOGY, BENGALURU.

ACCREDITED WITH A++ GRADE BY NAAC

**Faculty Guide :
Dr. Rajesh Gopal**

INTRODUCTION

We are making an IoT device which will be helping the farmer to track the livestock, their grazing pattern and help with tracking herd health as well.

Talking about the benefits :



Real-time location tracking- Farmers can track animals across large grazing areas, reducing time spent manually searching.

Geo-fencing alerts- If an animal leaves a designated area, the system sends an alert — helping prevent theft or loss.

Pattern analysis- GPS data reveals grazing habits, helping farmers rotate pastures more effectively and avoid overgrazing

Behavioral anomalies:- Unusual movement patterns can signal illness, injury, enabling early intervention.

Environmental impact- Efficient grazing reduces soil degradation and supports regenerative practices

Solar Power Plates - Integrated solar panel which will also charge the power unit.



LITERATURE SURVEY

Smart Cattle Care: An IoT-Based Monitoring and Management System

Authors: Charu Harish Arora et al.

Source: IJISRT (2024)

- Introduces a sensor-based wearable system for cattle that collects data on location, health, and environmental conditions.
- **Key Contributions:**
 - Cloud-based analytics and AI for disease prediction and breeding optimization.
 - Automated climate and feeding control.
 - User-friendly dashboard for real-time alerts and insights.

IoT-Based Animal Tracking and Health Monitoring System

Authors: B. Ashwini et al.

Source: IJRTI (2025)

- Describes a system using Arduino Uno, GPS, temperature sensors, and accelerometers to monitor livestock.
- **Key Contributions:**
 - Detects abnormal behavior (e.g., prolonged lying) as indicators of illness or injury.
 - Real-time data transmission to cloud and mobile apps.
 - Geofencing alerts for containment breaches.

OBJECTIVE

Our best aim to achieve is to mainly focus on livestock and farmer support as :-



Support
Integration with
Smart Farming
Systems

Optimize
Grazing
Patterns

Prevent Theft
& Loss

Reduce Labor
& Manual Effort



Small Solar Panels
integrated in the
belt itself which
will supply
the power to
battery pack, will
avoid replacing of
battery and belt.

METHODOLOGY

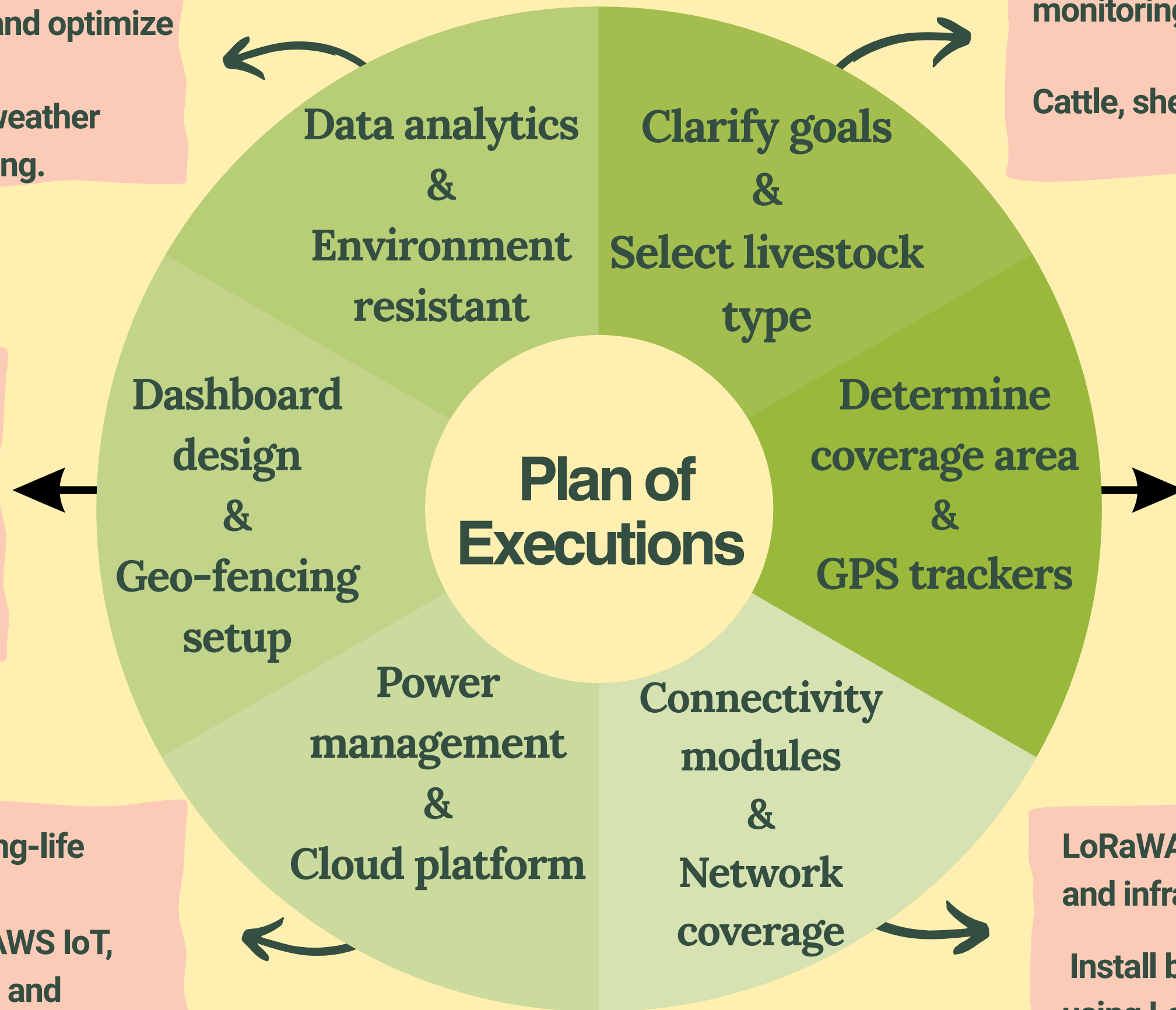
we will use AI/ML models to detect anomalies, predict health issues, and optimize grazing.
The device has to be resistant to weather, as it could be that rigid that last long.

Theft prevention, grazing analysis and health monitoring.
Cattle, sheep, goats, horses etc.

Create a centralized interface for location maps, alerts, and health metrics.

Define virtual boundaries to trigger alerts if animals stray

Use solar-powered trackers or long-life batteries for remote areas.
Choose a scalable IoT platform (AWS IoT, Azure IoT Hub) for data ingestion and analytics.



Determination of size and terrain of grazing fields influence connectivity and device to be used.

Collar-mounted or ear-tag devices with real-time location tracking.

LoRaWAN, depending on terrain and infrastructure.

Install base stations or gateways if using LoRa mesh networks.

CURRENT PROTOTYPE

Currently it is been powered through Arduino to laptop, but we can also power through batteries.

Arduino Uno

GPS Neo 6M

Adjustable Belt

Radium Stickers

Material Used

Power Supply

Tracks location

Adjustable belt

Can easily be spotted at dark

Features

Not on livestock, but tested in open sky.

Testing

1

2

3

4

5

Prototype



EXPERIMENTATION

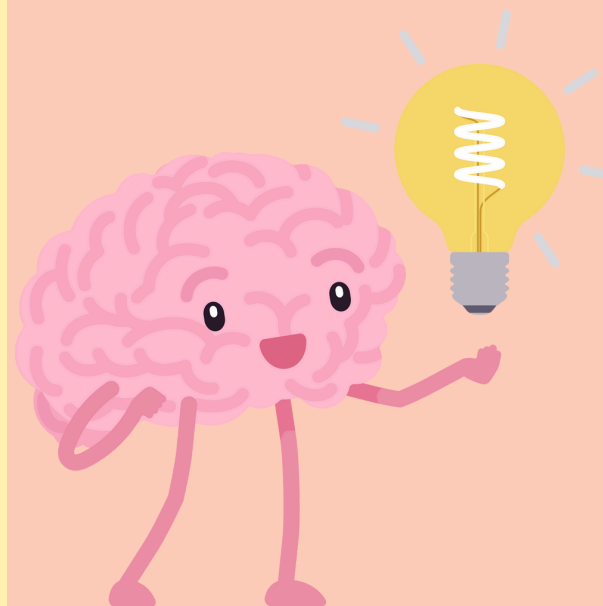
Location: A mid-sized open pasture with 20–50 cattle.

Devices Used: GPS trackers, Alert triggers, Gateway (LoRaWAN)

30–60 days continuous monitoring,
Data logged every 5–10 minutes

Solar plates integrated in belt how much
battery backup in gives

Normal livestock without IoT devices
used for baseline comparison



ANALYSIS

Grazing zone heatmaps, daily movement range.

Accuracy sufficient for pasture level tracking and thief alert

Geofencing number of geofence breaches detected

Robust enough for rural deployment with livestock rough usages

User Feedback : Reduced manual labor, easier decision-making via dashboard

Thank You.