



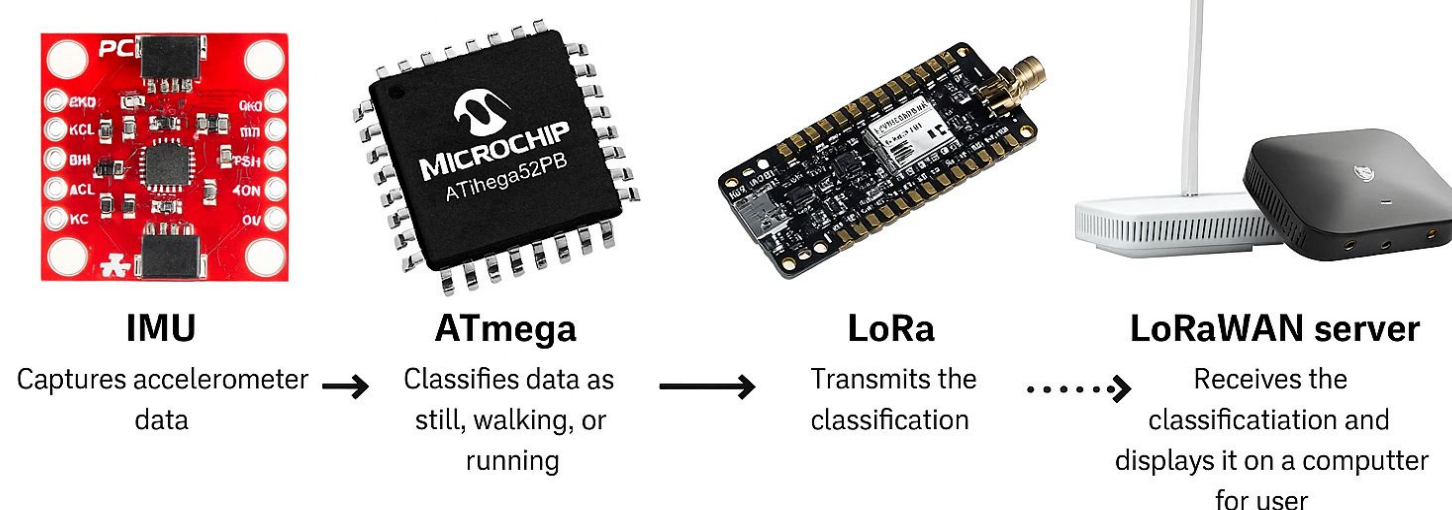
## Project Overview

**Objective:** Create a behavior monitoring device encased in a robust housing, with a waterproof rating of IP67. The device will characterize elephant activity data and send it to researchers at the zoo.

### Key Deliverables:

- IP67
- Attachable to Existing Collar
- LoRa-Enable
- 9-axis IMU sampled at 25 Hz

## Flow of Devices



## Meet The Team

### Mechanical Engineers



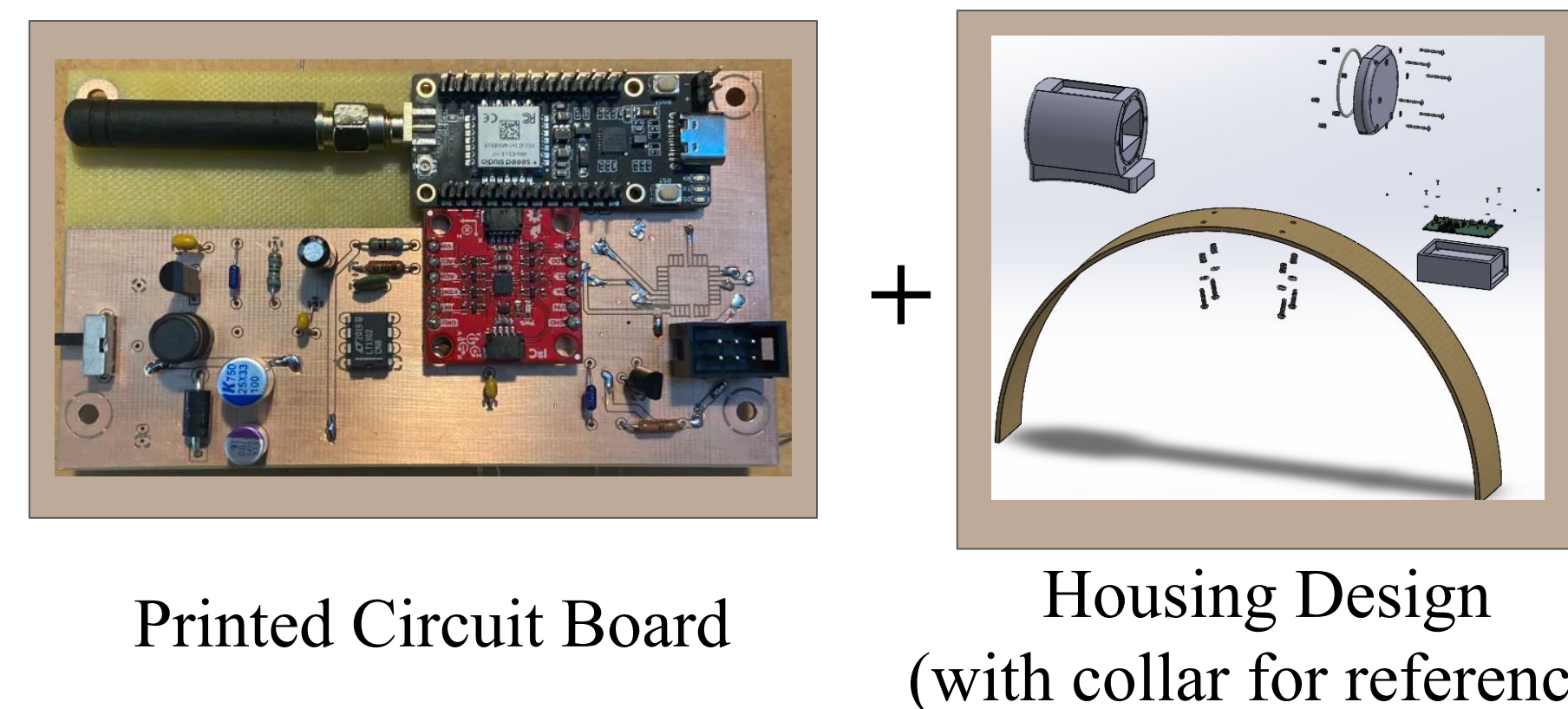
(LEAD) Zachary Watkins Chase Duncan Nolan Atkins Tommy Zheng Jose Cardoso

### Electrical and Computer Engineers

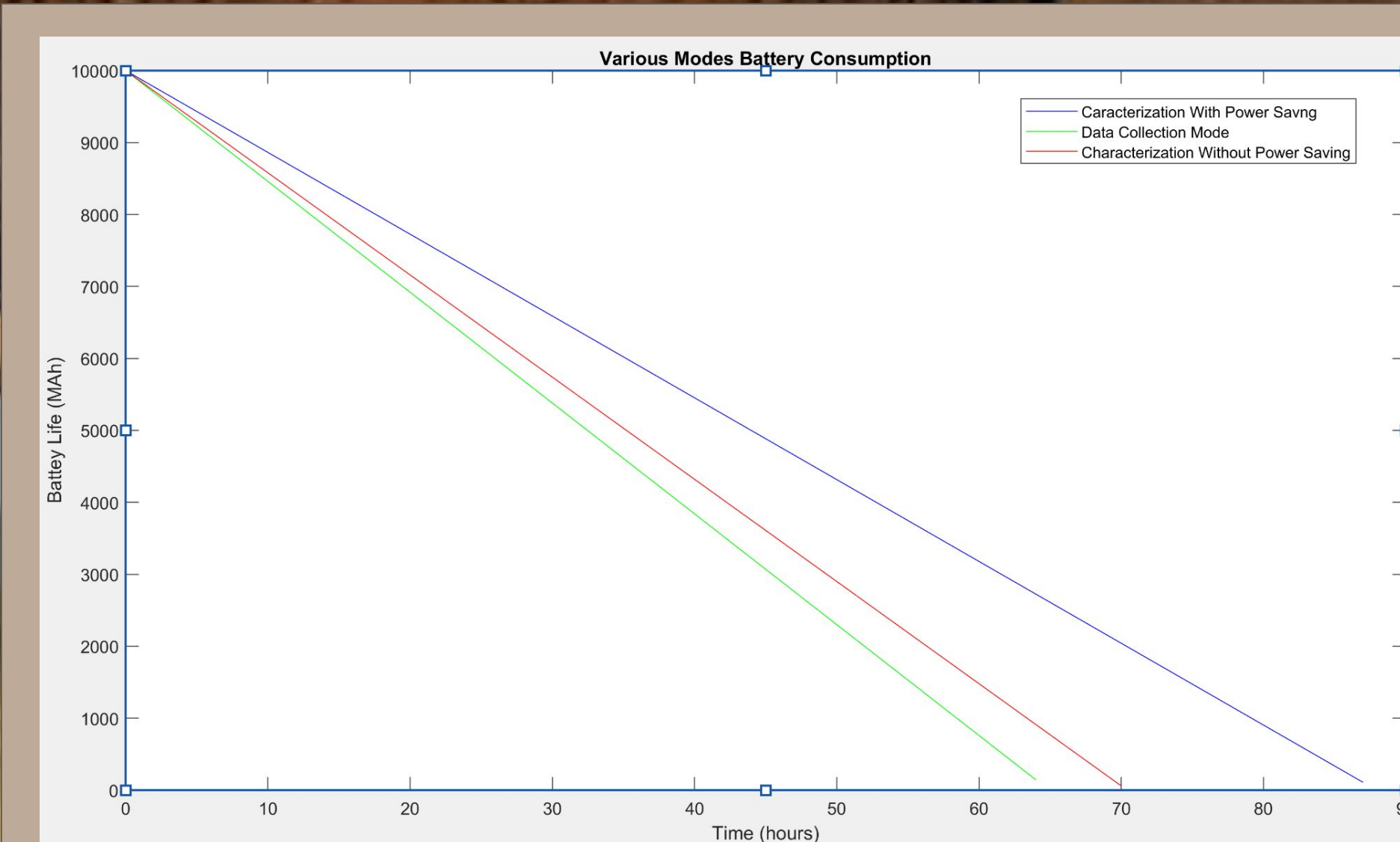


(LEAD) James Allison Nathan Phan Noah Frew

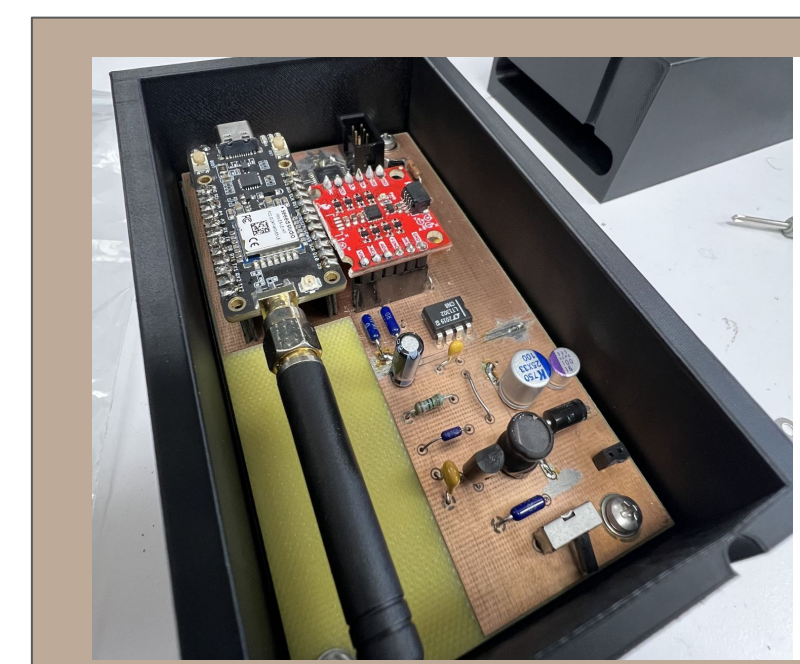
## Elephant Behavior Monitoring Collar



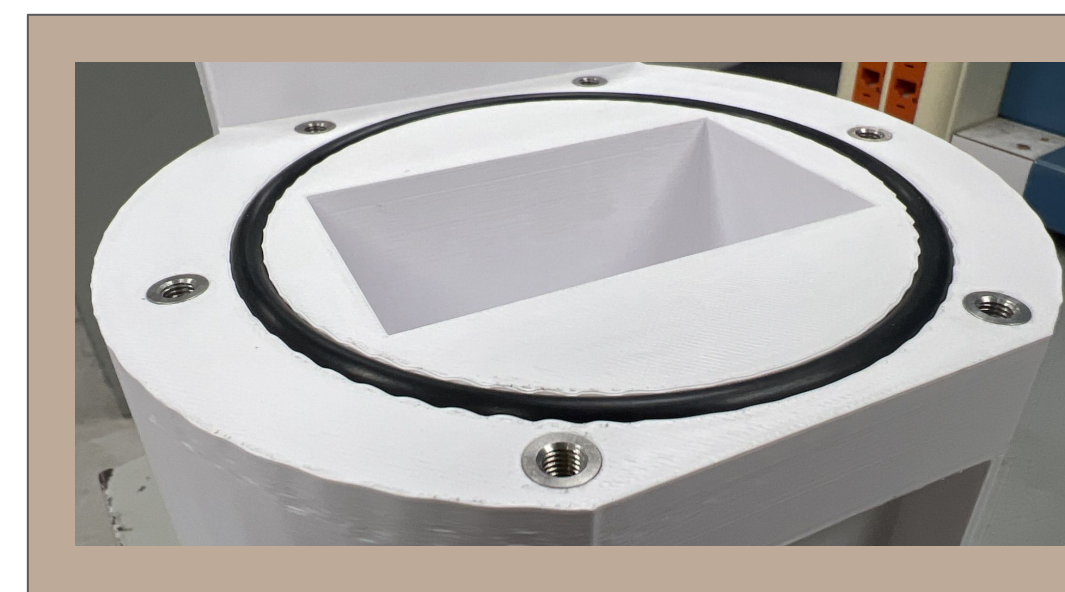
## Battery Consumption Rates



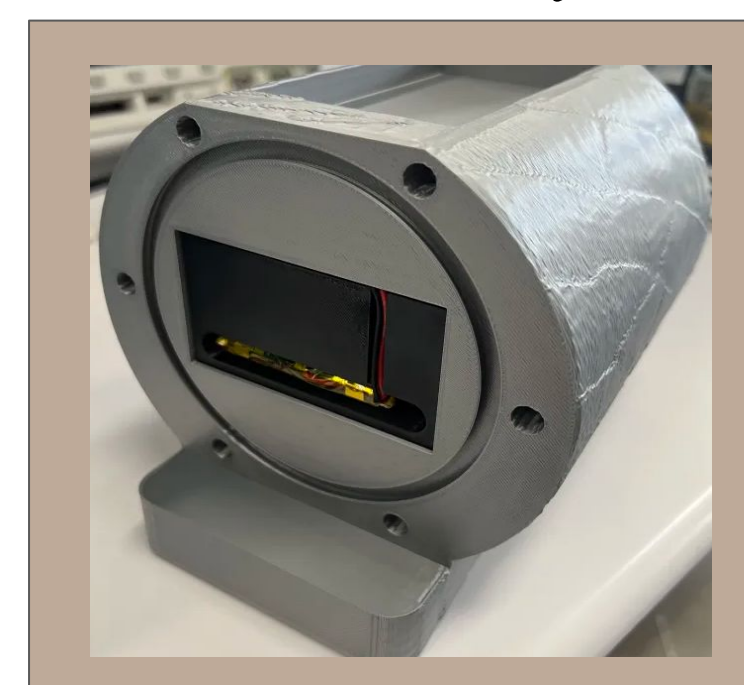
## Manufacturing & Assembly



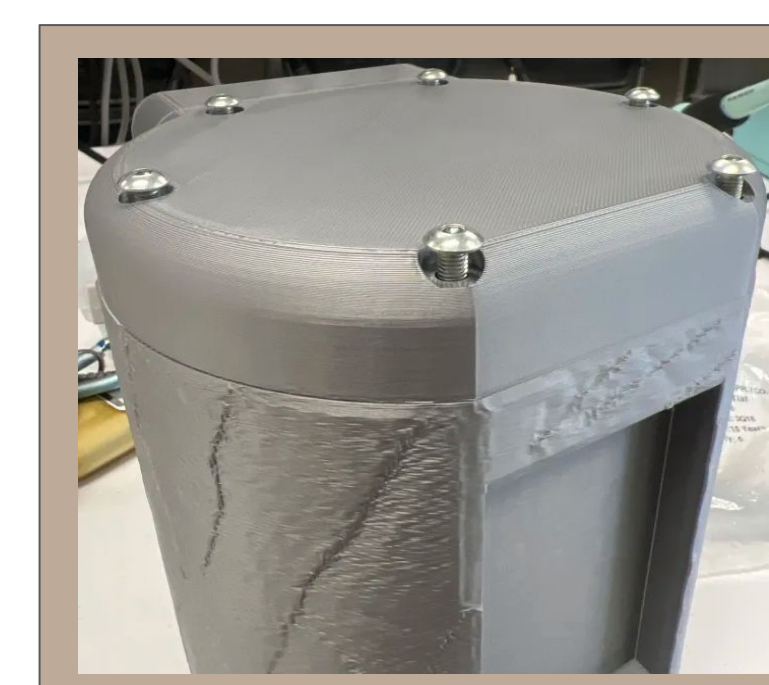
PCB in tray



Heat inserts and O-ring

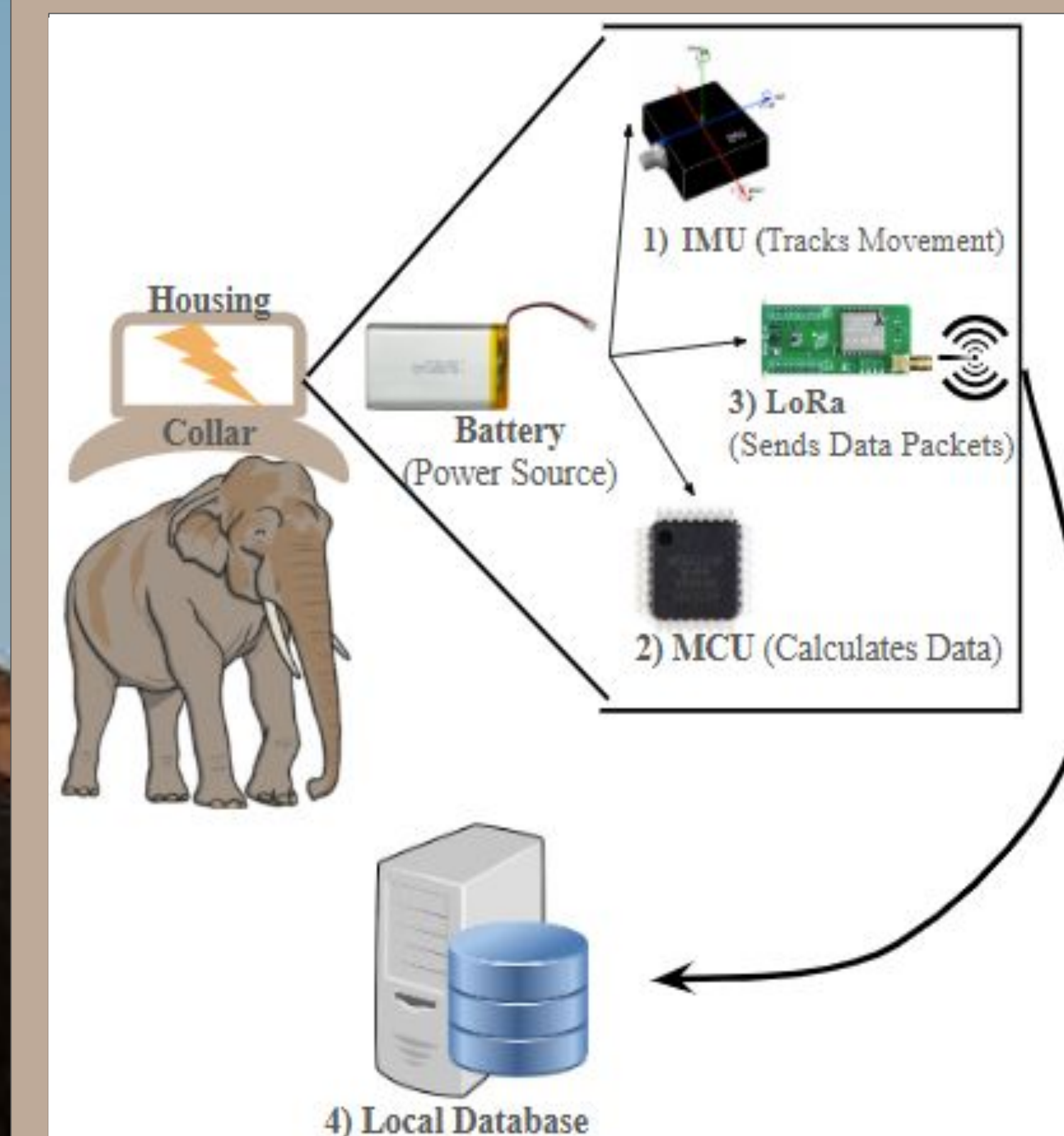


Full tray in housing



Lid fastened down

## System Level Diagram



## Importance

Our device captures real-time movement data from elephants, which researchers can translate into detailed behavior patterns. This information enables early detection of injury, illness, or distress, empowering wildlife conservationists to make informed, proactive decisions that protect elephants' well-being.

## Acknowledgements

We would like to thank the following individuals for their support and contributions in the development of our project:

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Professor Barry Dorr  
Mr. Mark Bruno

### San Diego Zoo Wildlife Alliance:

Dr. Kyra Swanson