IoT system design to monitor enemy intrusion on the battlefield

In war, the enemy invades our territory. In this case, design the IoT system to quickly determine the presence and scale of these enemies' intrusions. It should be designed as efficiently as possible in consideration of communication efficiency, communication latency, and installation cost.

Background

- No communication infrastructure (cell phone, communication satellite, GPS, etc.)
- Enemies invade by land (infantry, tank, vehicle, etc.), sea (ship, submarine, swimming, etc.), and air (airplane, helicopter, drone, etc.) - Design it suitable for 3 types of intrusion paths (3 systems for each routes or one integrated system)
- Must be able to know the situation from the military command and control room (the command and control room is located near the battlefield)

Required Information

- Whether the enemy is invading
- Location of the invading enemy
- Number of enemies

Required Content

Communication protocols

- Use the existing wired or wireless communcation protocols (Bluetooth, Zigbee, Lora, Wifi, Ethernet, etc.)
- Multiple communication technologies can be integrated.

Sensors or Actuators

- Types of sensors or actuators to be used in IoT devices to monitor intrusion

IoT Device Design

- What and how many sensors and actuators should be installed?
- Which communication module should be installed?

IoT Device Deployment

- How to deploy the devices on the battlefield? (Approximately a few are placed several meters apart)

Power Supply

- How to supply power to the IoT devices?

Overall Diagram

- Put a picture (diagram) of the overall system

※ **For each item, explain why you designed it that way.**

How to Submit

- Write at least 1 A4 paper freely without any format.
- Submit as a PDF file in the LMS.
- Submission deadline: June 15, 2022 (Wednesday)