ECTE 250

# ENGINEERING DESIGN AND MANAGEMENT

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# Proposal One

# VIRTUAL DOCTOR ASSISTANT

# PROBLEM

Elderly people or patients with no access to vehicles usually second guess their doctor visits solely due to having no easy way of going to a medical facility.

# SOLUTION

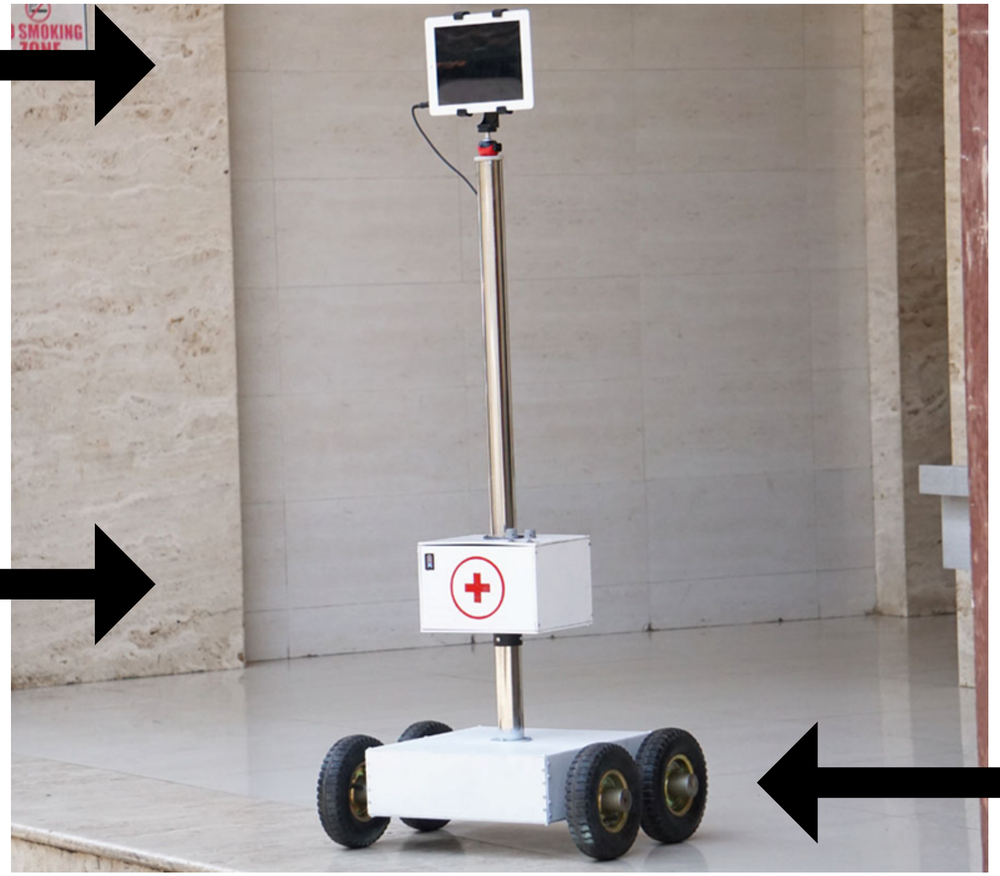
Our solution provides patients with ease of communication with the doctor and eliminates the first step of a doctor's appointment using pulse and temperature.

# Virtual Doctor Assistant Components

1. WHEELS FOR EASE OF MOVEMENT IN THE PATIENT'S HOUSE.
2. SENSORS THAT MEASURE TEMPERATURE, HEART RATE, AND OTHER VITAL INFORMATION.
3. WIFI ENABLED TABLET TO ALLOW FOR VIDEO CALLS WITH A DOCTOR.

Wifi enabled tablet for ease of consultancy with the doctor.

Medical box including pulse and temperature sensors.




Motored wheels for ease of movement to the patient's requirement.

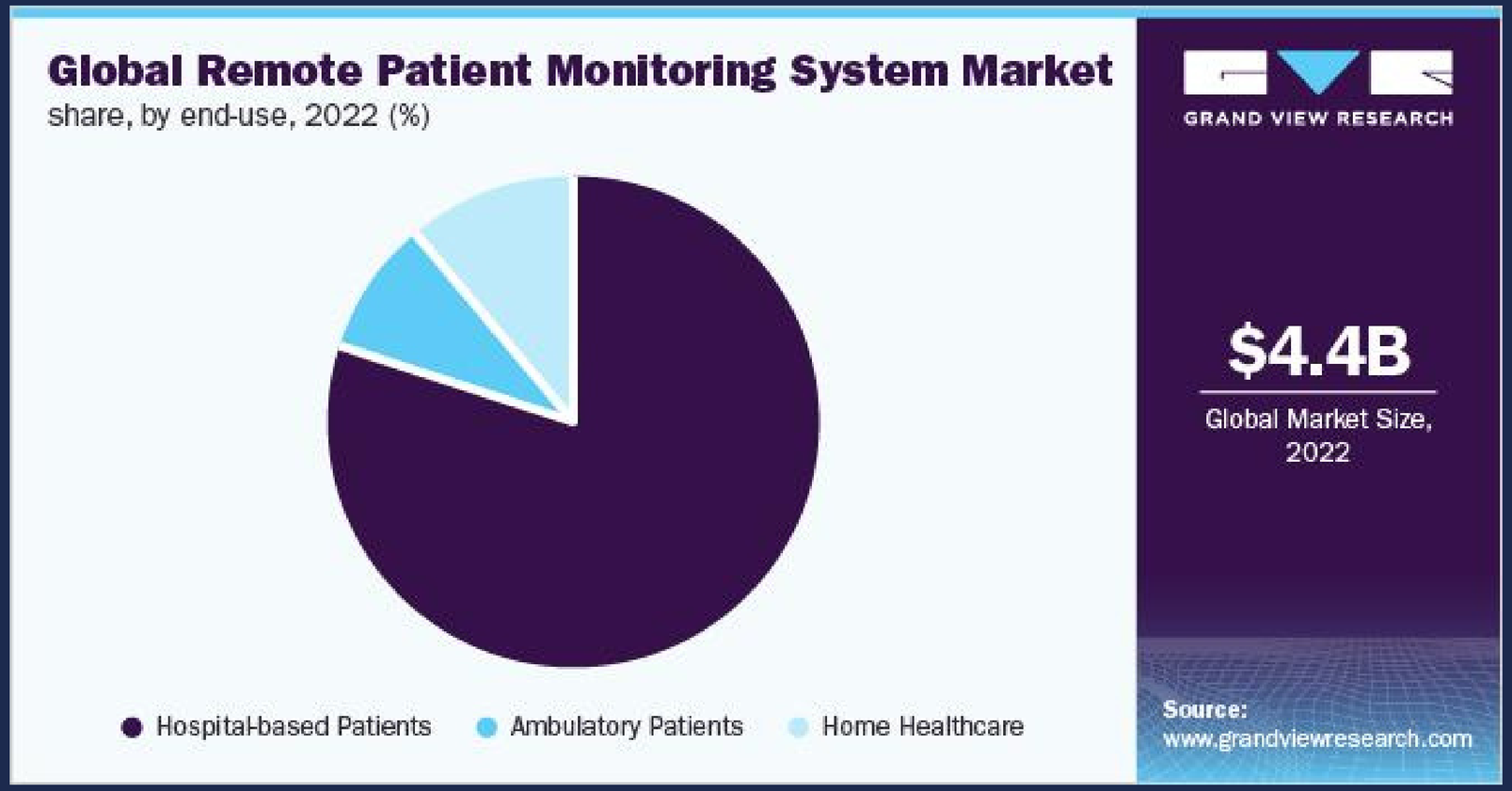
# BENEFITS OF VIRTUAL DOCTOR

Saves time

Decreases nurses tasks

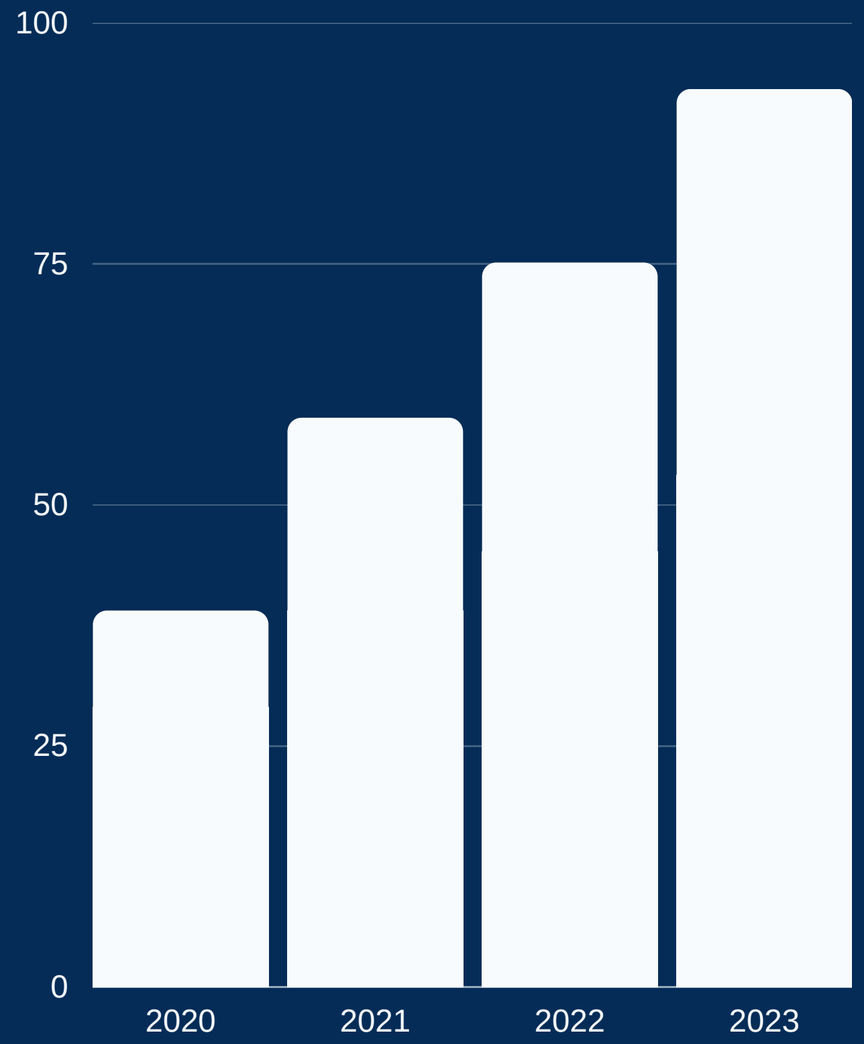
Easier access to medical care

# PROSPECTIVE MARKET



# Market Drivers

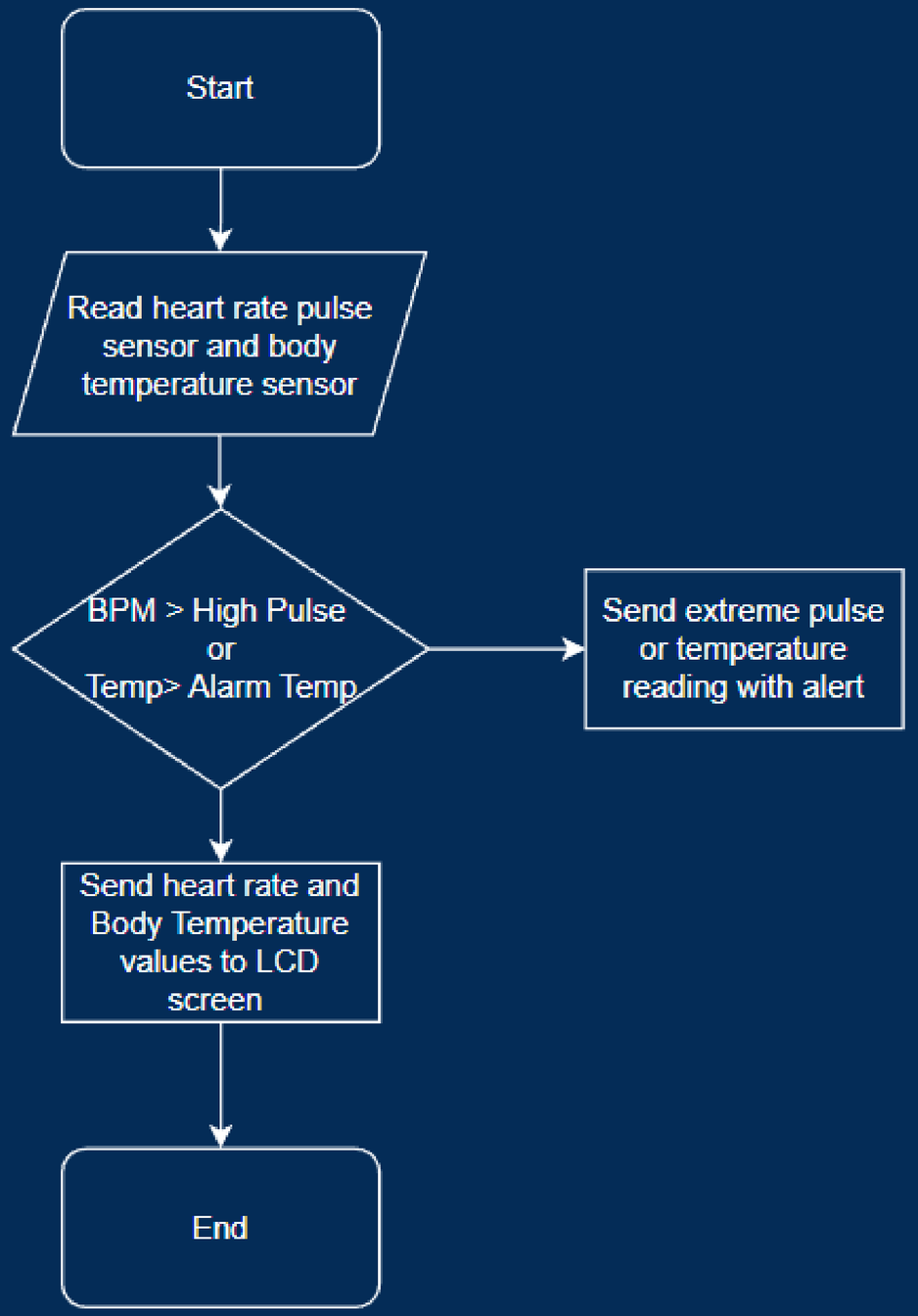
- Cost efficient
- Scope for new products
- Pandemic
- Automated Future

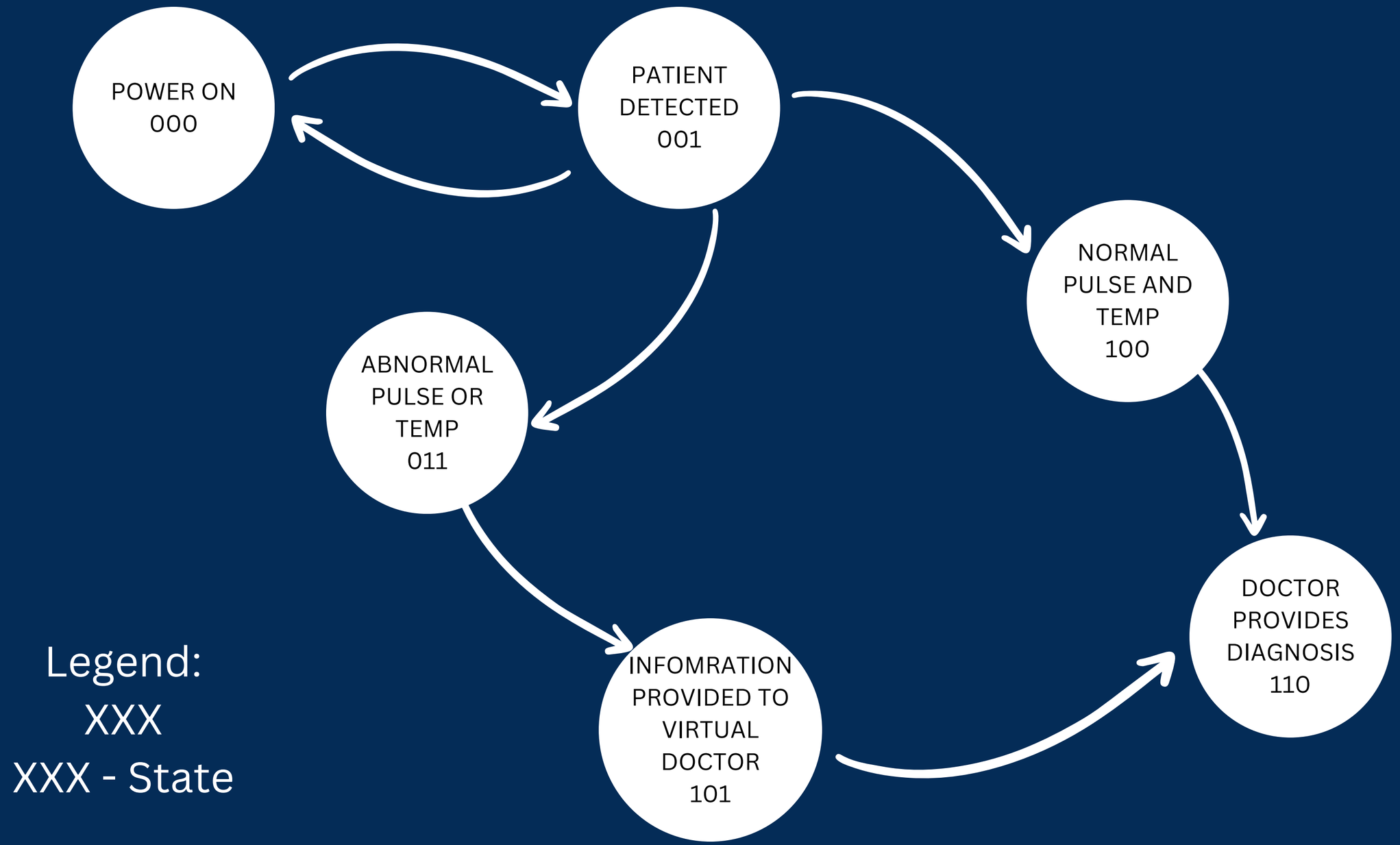



**Case Study**

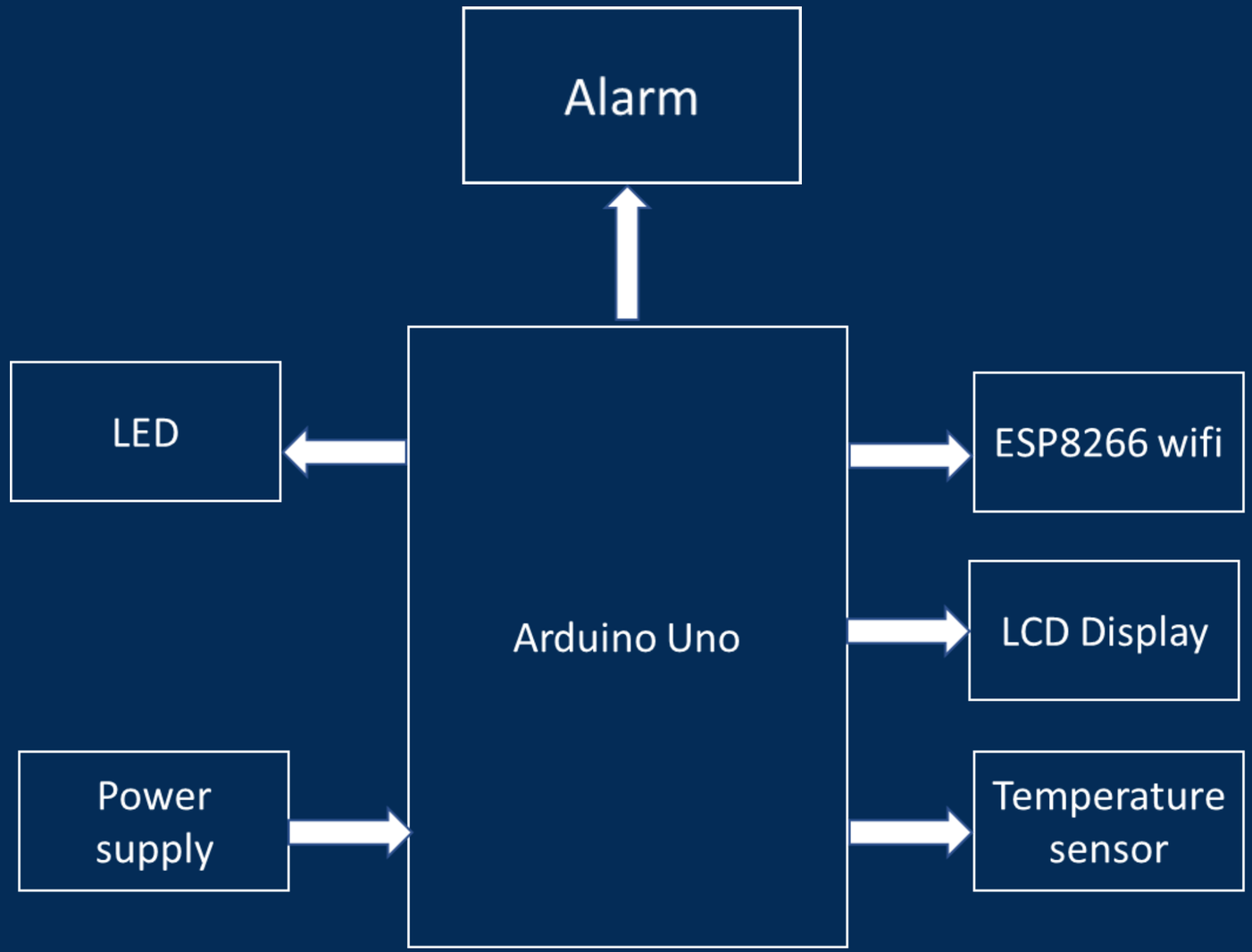
In this graph, we can see that the number of patients using remote monitoring increased significantly.

# FLOWCHART


Start
Read heart rate pulse sensor and body temperature sensor
BPM > High Pulse
or
Temp> Alarm Temp
Send extreme pulse or temperature reading with alert
Send heart rate and Body Temperature values to LCD screen
End


POWER ON
000
PATIENT DETECTED
001
NORMAL PULSE AND TEMP
100
ABNORMAL PULSE OR TEMP
011
DOCTOR PROVIDES DIAGNOSIS
110
INFOMRATION PROVIDED TO VIRTUAL DOCTOR
101
Legend:
XXX
XXX - State

# BLOCK DIAGRAM



| Sr. no | Components Name | Quantity | Cost (AED) |
|---|---|---|---|
| 1 | Arduino Nano Board | 1 | 65 |
| 2 | ESP8266-01 WiFi Module | 1 | 35 |
| 3 | 16x2 LCD Display | 1 | 40 |
| 4 | Potentiometer 10K | 1 | 35 |
| 5 | Pulse Sensor | 1 | 25 |
| 6 | Body Temperature Sensor | 1 | 47 |
| 7 | 2K Resistor | 1 | 10 |
| 8 | 1K Resistor | 1 | 15 |
| 9 | Breadborad | 1 | 50 |
| 10 | LED 5mm Any Color | 1 | 15 |
| 11 | Connecting Wires | 10-20 | 25 |
|  | Prototyping Kit | 1 | 600 |

| | Expected Time Spent (Hours) | Labor Cost (4 engineers) |
|---|---|---|
| Deliverable 1 | 6 | 1800 |
| Deliverable 2 | 12 | 3600 |
| Deliverable 3 | 5 | 1500 |
| Deliverable 4 | 8 | 2400 |
| Deliverable 5 | 18 | 5400 |
| Deliverable 6 | 30 | 9000 |
| Deliverable 7 | 4 | 1200 |
| Deliverable 8 | 3 | 900 |
| Total | 83 | 25800 |

# How is our idea innovative?

This part of the world doesn't have any technological advances that combine video calling, pulse, and temperature sensing technologies together.

# Proposal Two

## FOOD SPOILAGE SENSOR

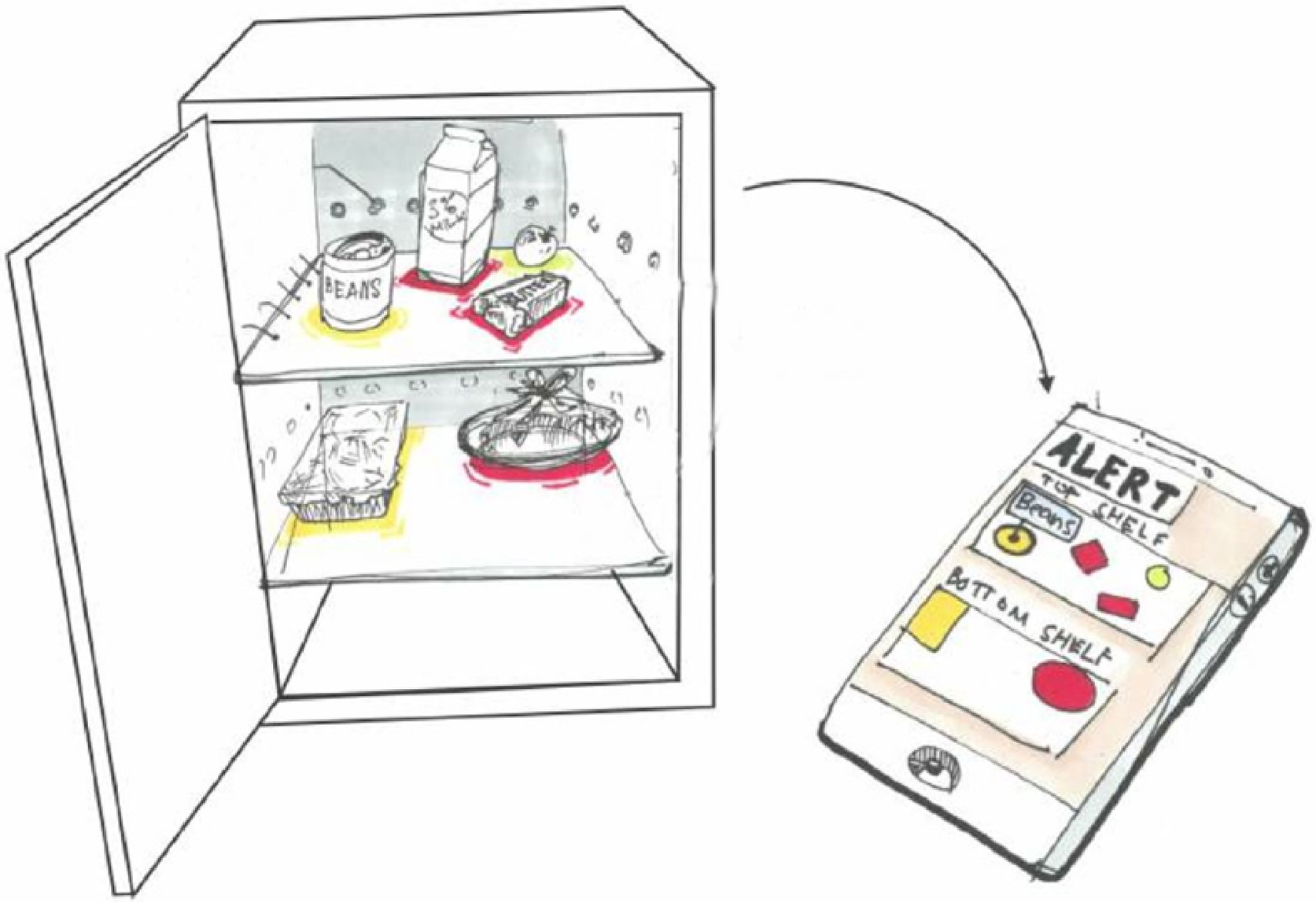
# PROBLEM

Household food wastage is a major cause of food wastage in the world. It is sometimes difficult for manufacturing industries to understand the shelf life of certain products.

# SOLUTION

We propose a food sensor that is kept with food. It will use 2 types of sensors- **temperature and gas.**

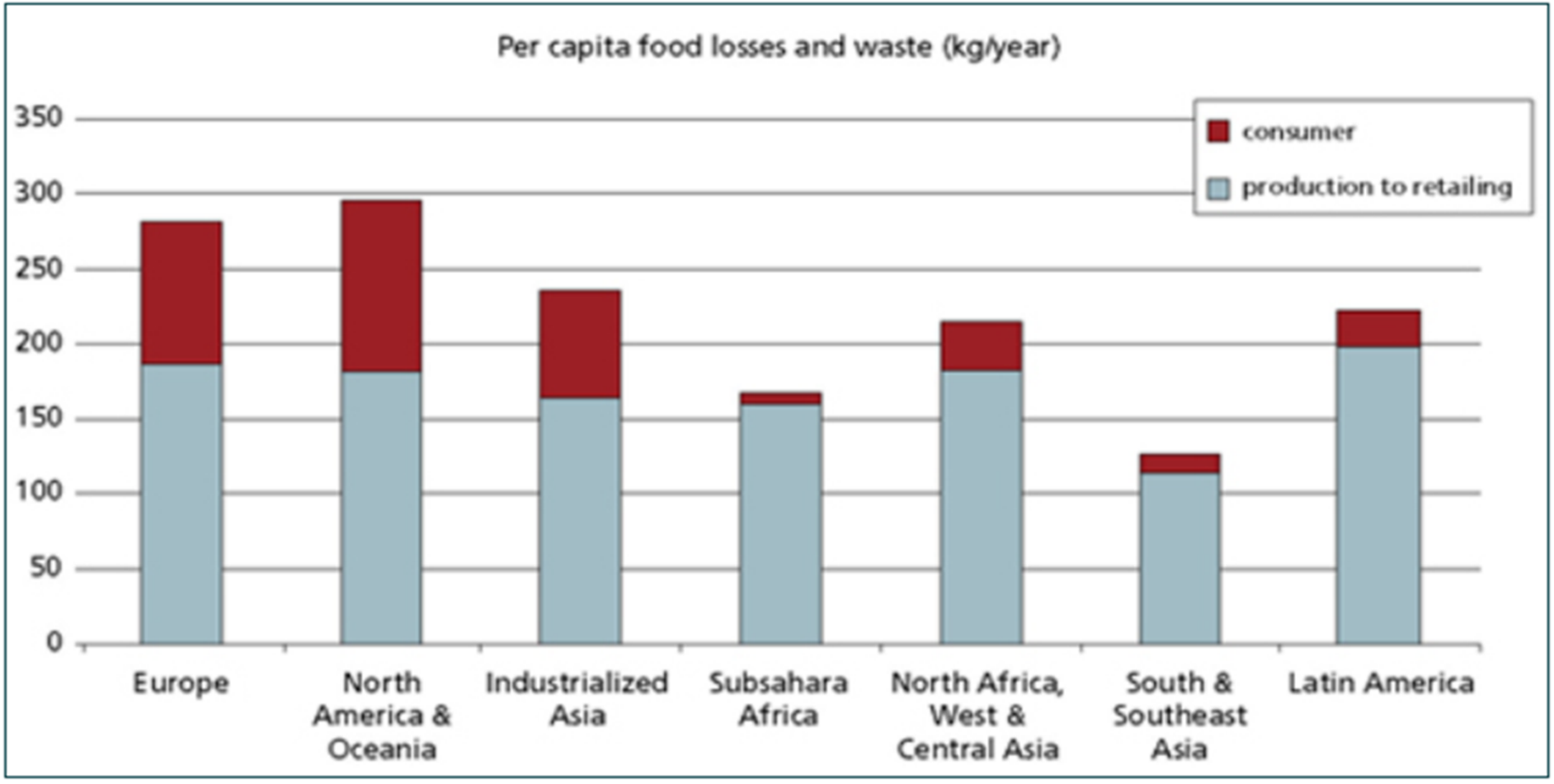
The **temperature sensor** will be used to make sure the temperature in the fridge does not go below the requirement and the **gas sensor** will check to make sure the food is still good to eat or needs to be thrown.


BEANS
ALERT
TOP SHELF
Beans
BOTTOM SHELF

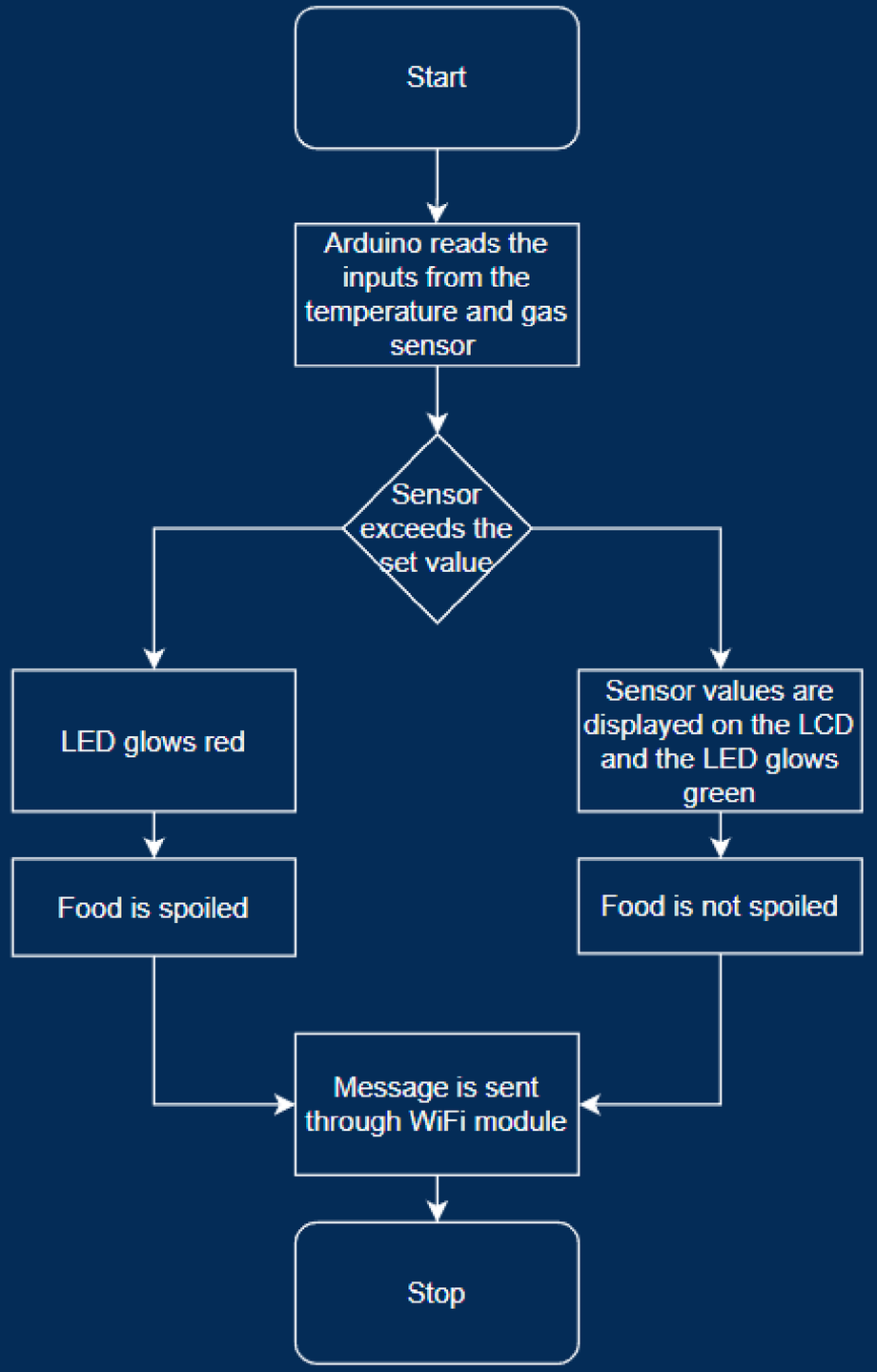
THIS TECHNOLOGY HELPS PEOPLE KEEP TRACK OF THEIR INVENTORY WITHOUT OVER-BUYING PRODUCTS THEY DON'T NEED AND STORING THEM PROPERLY.

USERS CAN ALSO RECYCLE THEIR SCRAPS OF EXPIRED FOOD INTO HOME COMPOST PITS.

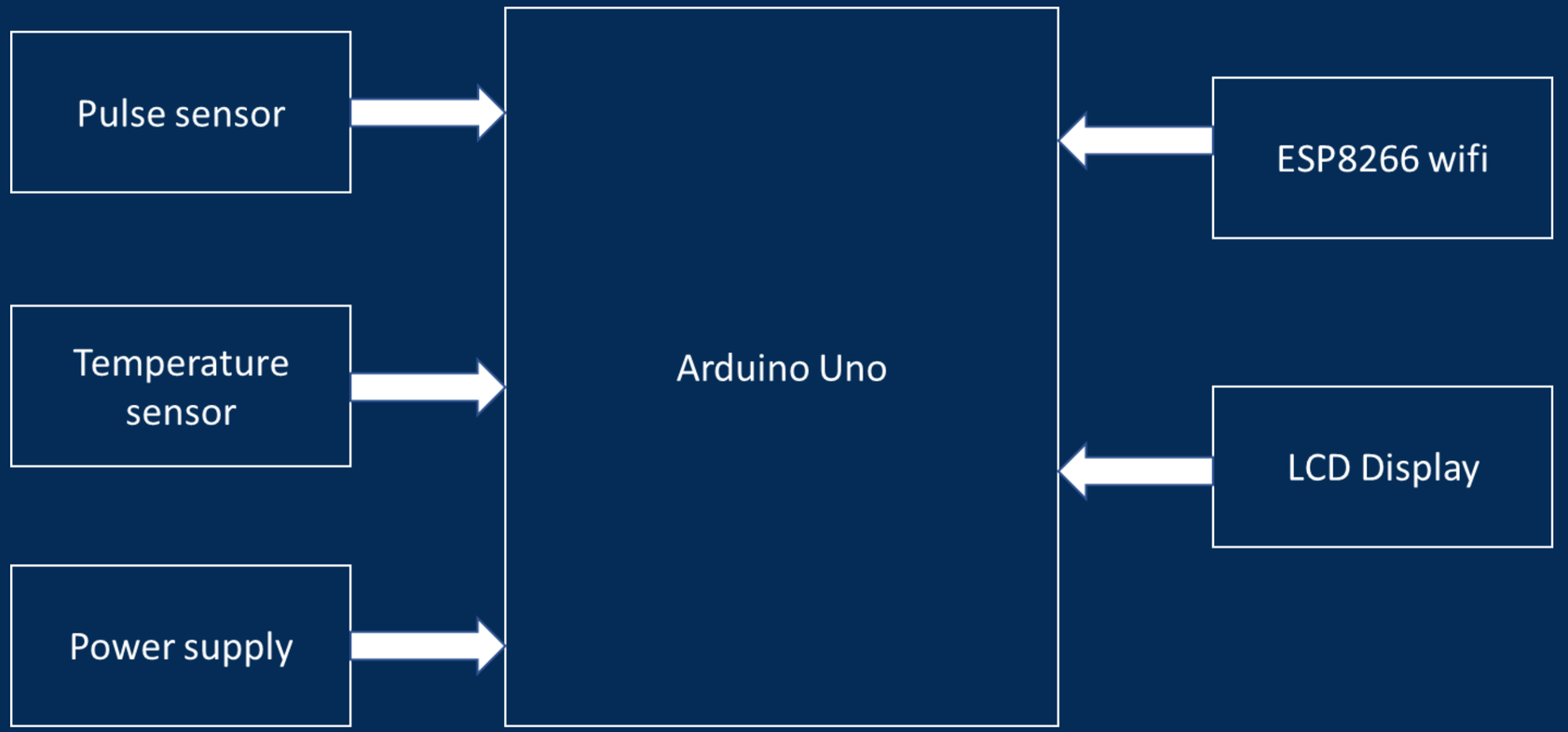
## Per capita food losses and waste, at consumption and pre-consumptions stages, in different regions



# FLOWCHART


Start
Arduino reads the inputs from the temperature and gas sensor
Sensor exceeds the set value
LED glows red
Sensor values are displayed on the LCD and the LED glows green
Food is spoiled
Food is not spoiled
Message is sent through WiFi module
Stop

# BLOCK DIAGRAM



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| 5 | Methane Gas Sensor | 1 | 25 |
| 6 | LM35 Temperature Sensor | 1 | 47 |
| 7 | 2K Resistor | 1 | 10 |
| 8 | 1K Resistor | 1 | 15 |
| 9 | Breadborad | 1 | 50 |
| 10 | LED 5mm Any Color | 1 | 15 |
| 11 | Connecting Wires | 10-20 | 25 |

# How is our idea innovative?

THIS IDEA ENCOMPASSES TWO DIFFERENT TECHNOLOGIES THAT INCLUDE A GAS SENSOR AS WELL AS A TEMPERATURE SENSOR THAT CAN BE USED FOR BOTH RETAIL AND HOUSEHOLD USE.