



**OUR ADMT 3M  
INNOSCIENCE  
CHALLENGE PRODUCT**

# OUR TEAM

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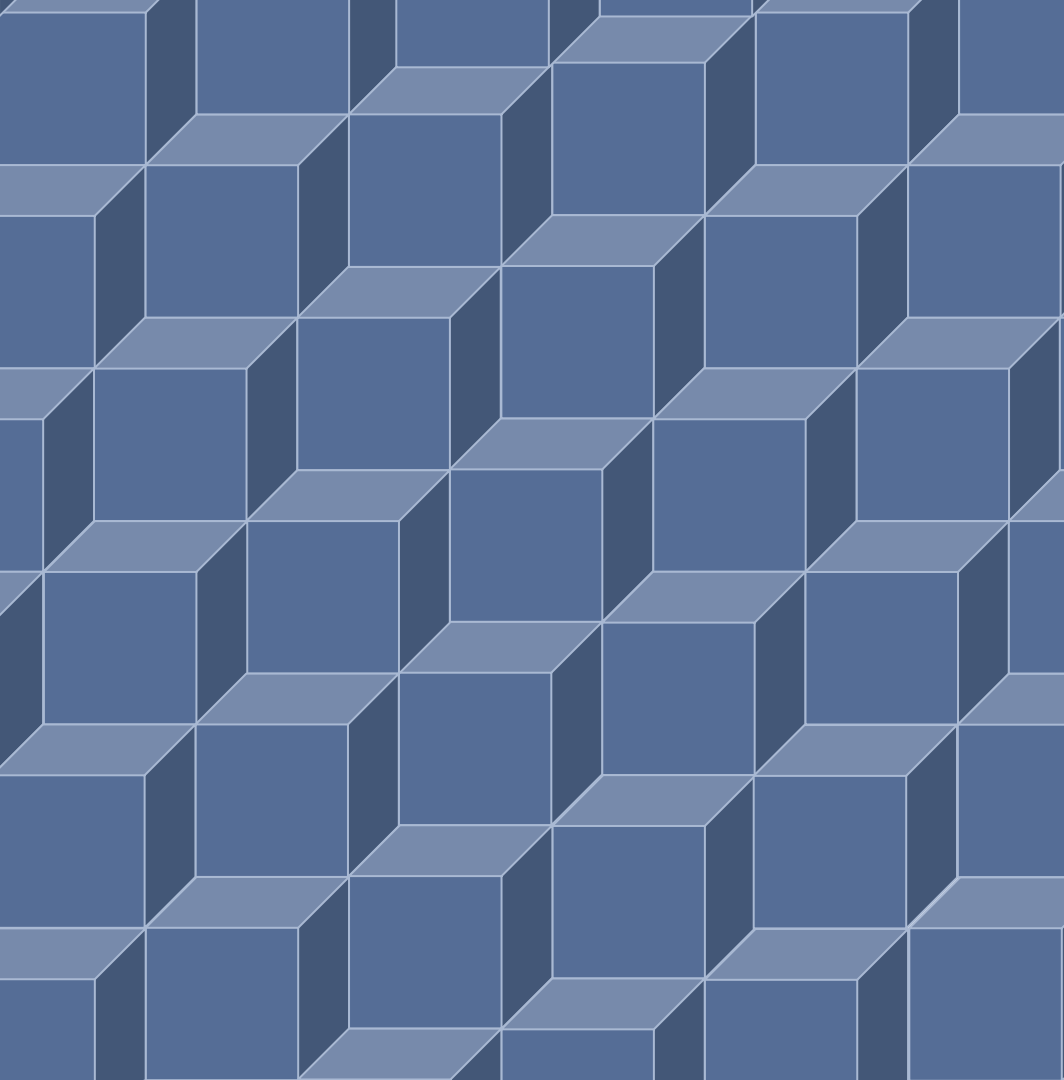
## How many of the elderly actually face this problem?

According to the department of health and human services, medication nonadherence is widespread among the elderly.


- Fifty-five percent of the elderly are non-compliant with their prescription drug orders, meaning they don't take their medication according to the doctor's instructions.
- Approximately 200,000 older adults are hospitalized annually due to adverse drug reactions



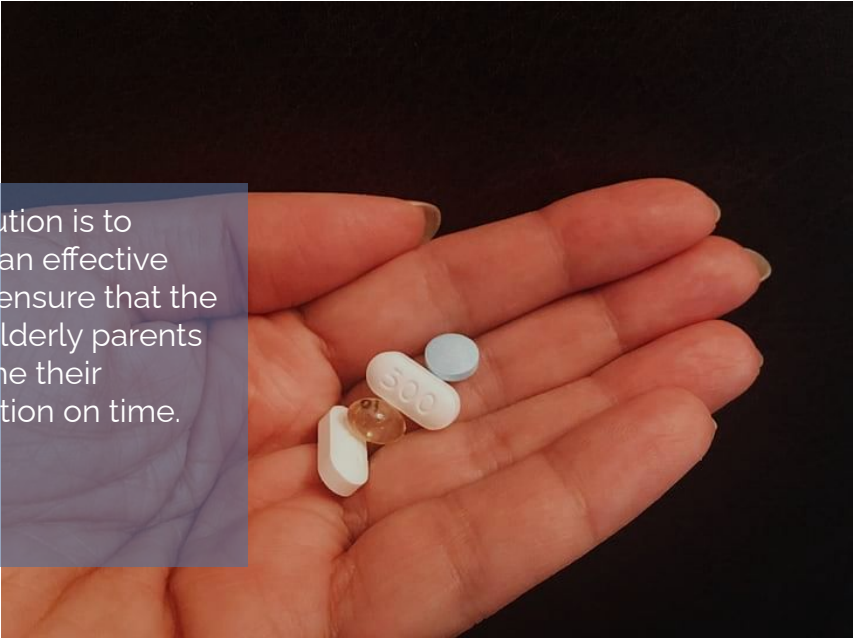
**Our research findings.**



# **Our Problem Statement**



Some of the elderly with certain conditions like dementia can't take care of their medication themselves and may forget to take them



our solution is to deliver an effective way to ensure that the user's elderly parents consume their medication on time.



A blue-tinted portrait of Benjamin Franklin, showing his characteristic long, wavy hair and a serious expression. The image is monochromatic, with various shades of blue. Overlaid on the portrait is a quote in white text.

“A gram of **prevention** is  
worth a **kilogram** of a **cure**”  
~Benjamin Franklin



## our project

### **Our solution:**

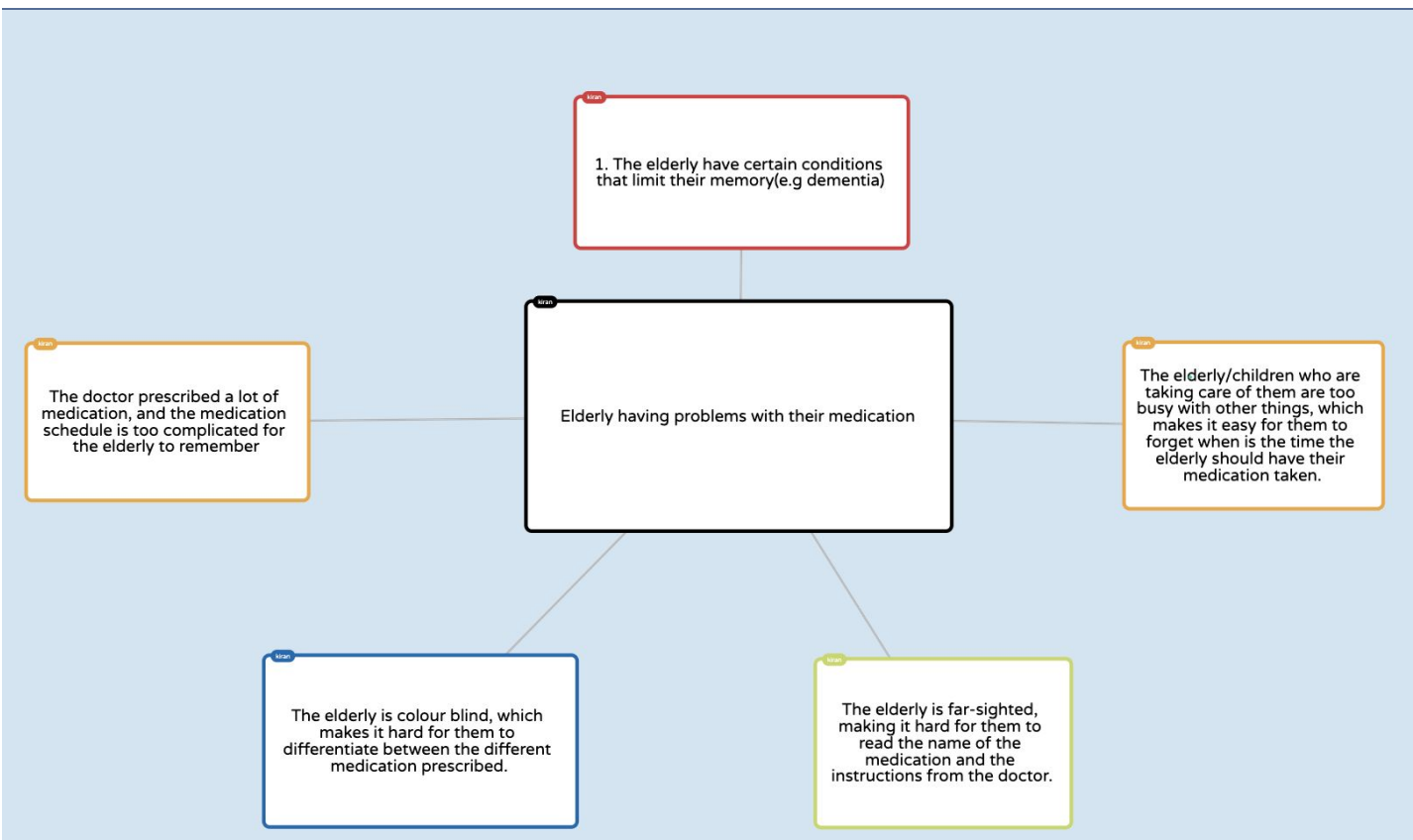
We want to develop a product which would help the elderly with or without special needs with their medication timings and their consumption of medication.

### **Objectives of product:**

to ensure that the elderly consumes their medication at the right time and of the right dosage.



# Applying the 5 whys to our problem



## Should not have

1. Be made of weak Materials that would not last long.
2. Fail in meeting needs of the target user.

## Good To Have

### Must Have

1. Be able to alert the user when it's time to take medicine
2. Ensure that the elderly consumes the right dosages of medicine at the right time
3. User manual for user.

1. Added language features for better communication with user (able to speak dialects)
2. Additional features to

Make consumption of medicine easier

# ABOUT THE PROJECT

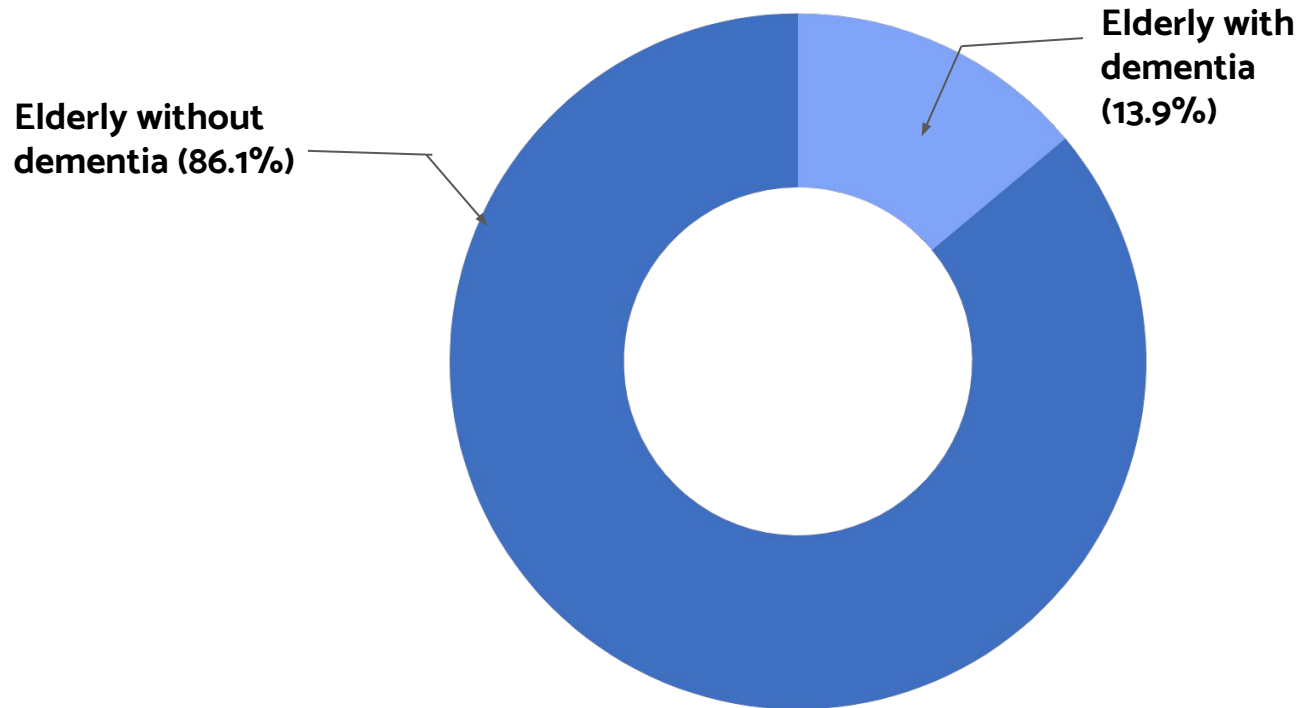
We are designing an auto medication dispenser, which can be programmed by an app.



**RESEARCH  
FINDINGS**

What is dementia?

- Dementia is a condition that causes progressive intellectual decline.
- This condition affects the brain, causing brain cells to die at a faster rate than usual. Dementia leads to:
  - ◆ Failing memory
  - ◆ Deterioration of intellectual function
  - ◆ Personality changes



**From a sample size of 3.1 million elderly**



# OUR NUMBERS

**50 million  
worldwide**

No. of elderly with  
dementia in 2018

**Expected to reach  
82 million  
worldwide**

No. of elderly with  
dementia in 2030

**Expected to reach  
152 million  
worldwide**

No. of elderly with  
dementia in 2050

# Ideation

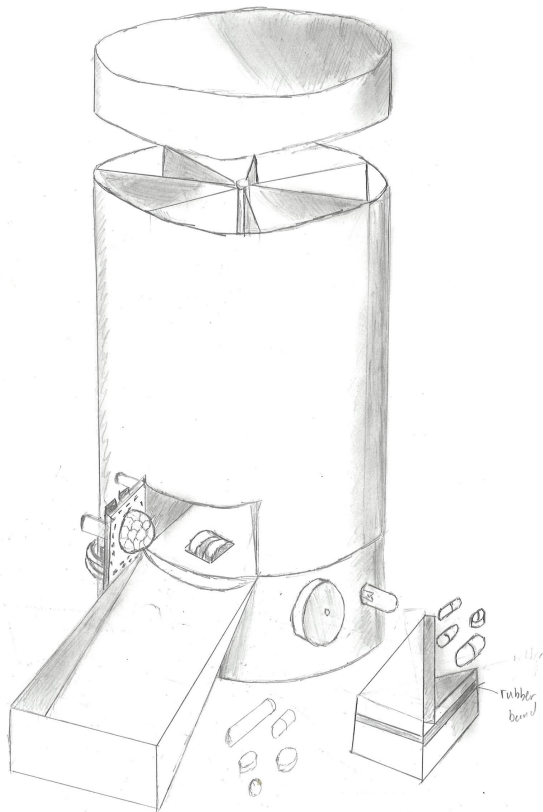


note\* idea highlighted is the idea chosen

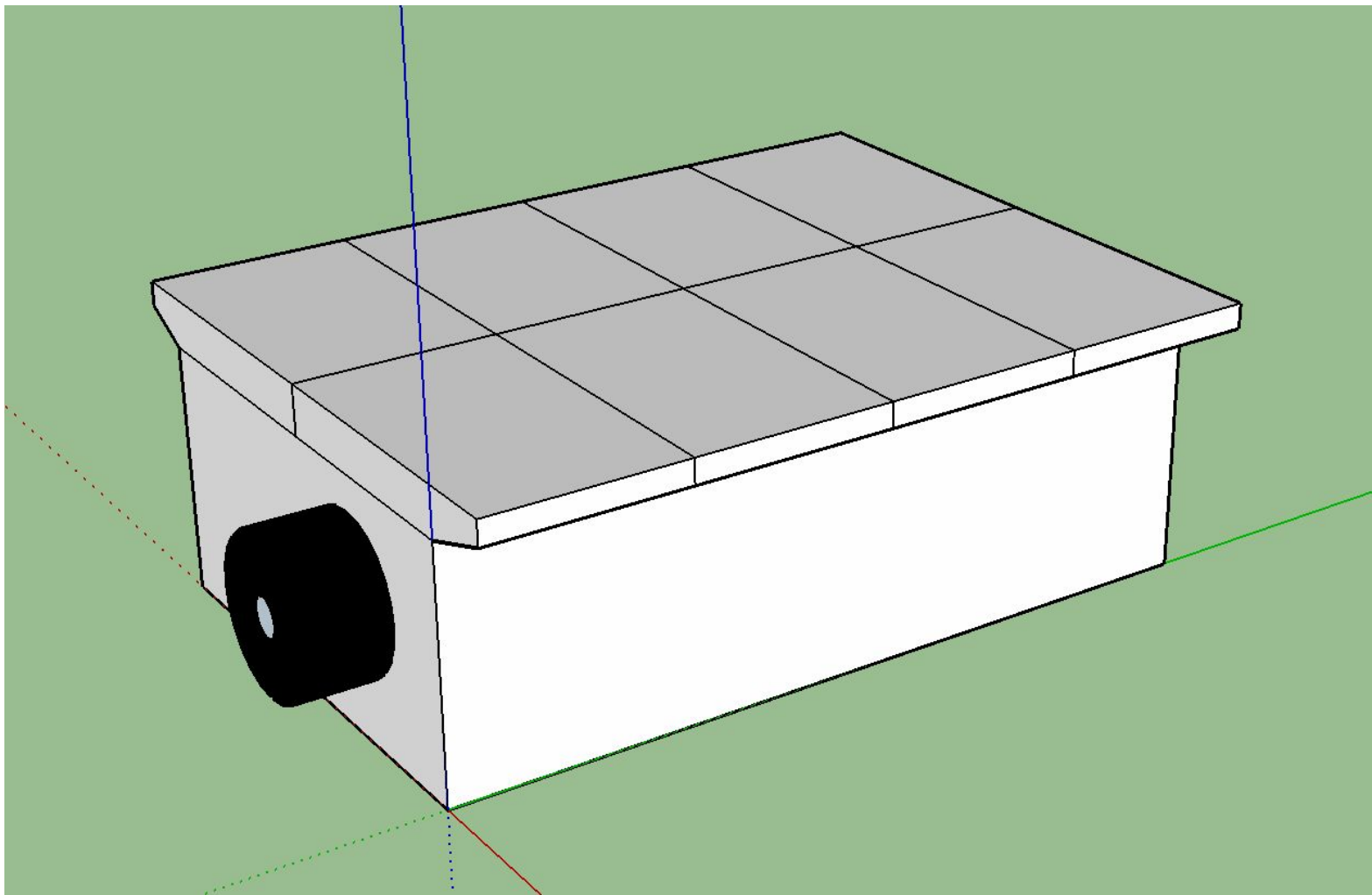
8	ideadescrit	durability	aesthetics	functionality	environmentally friendly	total	<b>evaluation matrix</b>
<b>Idea 1</b>	Pill dispenser that dispenses the right dosage of the right medication when its time for the user to consume their medication, together with a piezo buzzer to remind them that its time.	<b>7</b>	8	7	10	32	
Idea 2	Wristband with piezo buzzer which can either attach to walking stick of user or the arm of the user, which alerts the user when its time to take medication, and also tells the user on which medication to take.	6	5	4	10	25	
Idea 3	Fridge magnet which alerts the helper/children of user when its time to give the user medication, and what dosage of what medication to give.	7	6	5	10	28	

# ideation sketches of prototype

3M INNOSCIENCE PROTOTYPE



idea 1



**Idea 2**

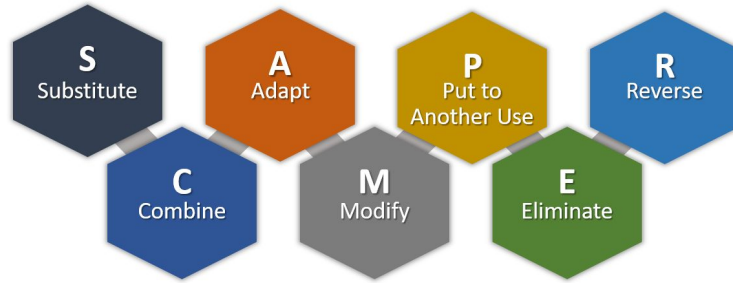
## idea 2 (scamper applied)

Includes app to programme the wristband.

Combine the wristband and the medicine box. So that the elderly don't forget (combine)

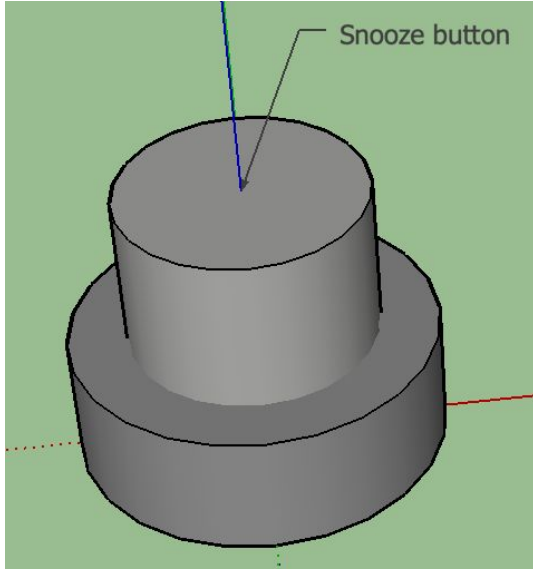
Modify: make the box be able to be taken off easily by rails

Substitute: wristband is elastic, easy to put on



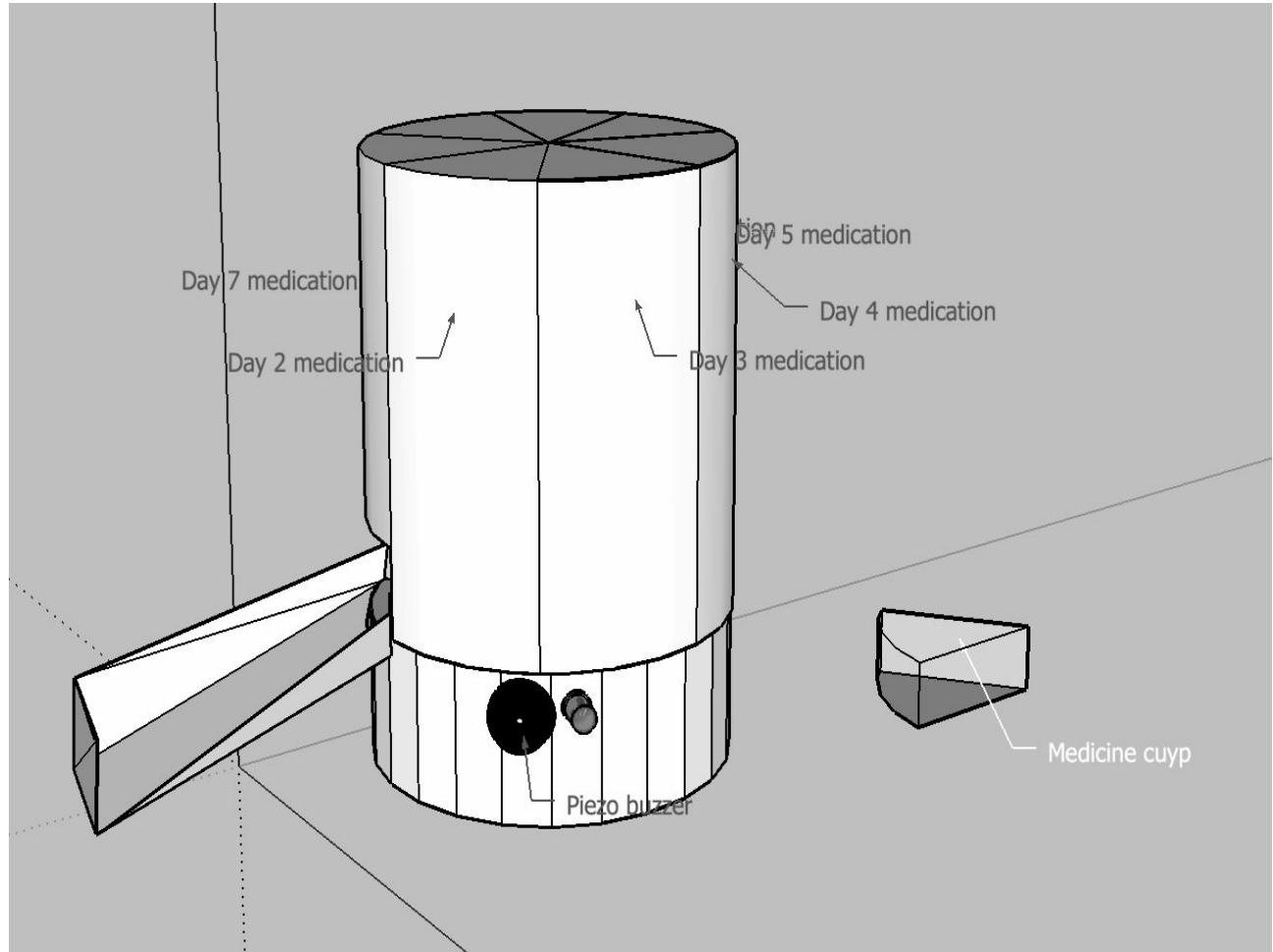


Modify: Add a snooze button on the fridge magnet, in which the helper can press when she has fed the user his/her medicine. If after 2 minutes the snooze button hasn't been pressed, a notification via email will be sent to the employee of the helper to indicate that the medicine has not been fed.



**idea 3 (scammer applied)**

# What is the product



# The physical prototype

# 3D representation

<https://drive.google.com/file/d/1wc-8nE7mn0DSJ72LD29CZJfG0P67rf8R/view?usp=sharing>

click the link to access the video on the 3D representation

## Materials used

1. Cardboard(main building material)
2. Super glue
3. Servo motors
4. SSTuino Kit
5. White glue
6. Masking tape



Materials Used



**physical model**





**prototyping process**

```
#define SSID "linksys16451"
#define PASSWORD "rknpc57xmk"
#define IO_USERNAME "TYPHOON345"
#define IO_KEY "aio_qSmt04jLAPqpHBEAhmCONAJYNraM"
#define FEED_KEY "innoscence"

SSTuino wifi = SSTuino();

String receivedRawData = " ";
Servo servo1; // declaring the 2 servos
Servo servo2;

void setup()
{
  Serial.begin(9600);

  // Open the link between the two devices
  wifi.openLink();

  // Reset the Wi-Fi chip to clear any previous settings
  wifi.reset();

  // Verify that the link is ok between the two devices
```

1

Arduino Uno on /dev/cu.SLAB\_USBtoUART

# use of ICT

# **final prototype in action**

[https://drive.google.com/drive/folders/1zZYW1qnugklqO3aNMy3Ctz4\\_CC56lhhz?usp=sharing](https://drive.google.com/drive/folders/1zZYW1qnugklqO3aNMy3Ctz4_CC56lhhz?usp=sharing)

**THANKS**

Does anyone have  
any questions?



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