

HOCHSCHULE  
HAMM-LIPPSTADT

Department of Electronic Engineering

Interactive Systems Engineering 2 (SS2022)

Semester task: Medical device for monitoring patients

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# Belly Fat Reader

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# Overview

## Reasons for human Belly-fat

- Because of the busy lifestyle people are tend to eat lot of unhealthy foods such as fast foods and foods including too much fat,sugar and calories.
- Too much alcohol, smoking
- Stress and poor sleep
- Lack of physical exercises



In order to maintain a healthy lifestyle we should know how many fat has gathered in your belly.

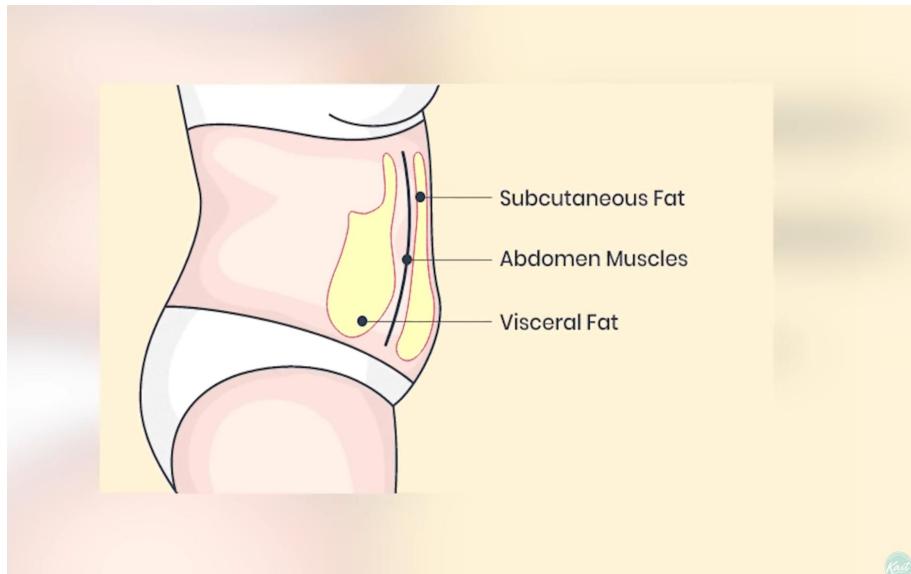
Therefore we came to an idea of designing a device to measure fat levels in human belly area.

## About the device - Belly Fat Reader



- Targeted group: People who wish to regularly monitor their belly fat level.  
(pro-users can register under one of our registered doctors to provide you medical advice)
- What is included: BFR device, BFR app (For the patients-users ), BFR app (For the doctors/ fitness trainers)
- About the device:
  1. compact device (size: 80\*60\*30)
  2. One button and One LED light
  3. Long-lasting battery power
  4. Uses NIR technology - no healthy/radiation problems

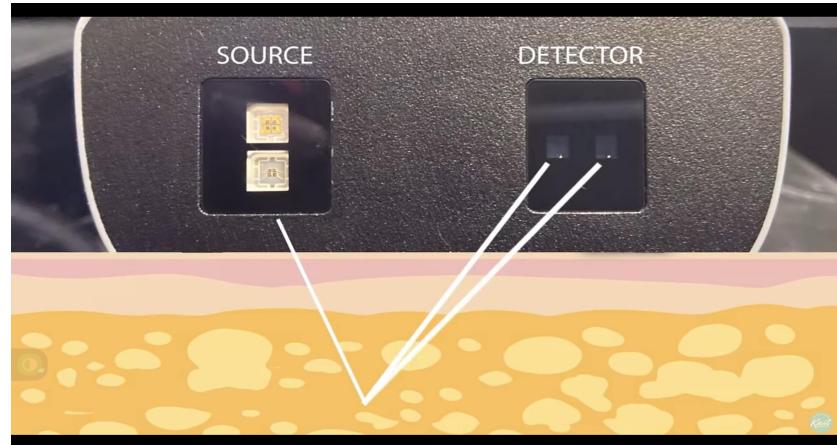
# Understanding the problems



Subcutaneous fat : healthy fat  
Visceral Fat : unhealthy fat

We have to figure out a way to measure visceral fat level.

# What is Near InfraRed (NIR) technology



- Based on the principals of the light absorption reflectance and near infrared spectroscopy.
- Ability of absorbing infrared light of the fat tissues
- 928 nm

# About the app

## App For the users

After taking measurements from the device everything else is happening from the app. You can monitor your,

- 1) Belly fat level
- 2) Daily / weekly/ monthly progress
- 3) Fat level forecast (based on your history) (Pro version)
- 4) Doctor's medical assistance (Pro version)
- 5) 24/7 Technical support
- 6) Updatable



# About the app

App For the doctors/ Sport Trainers,

The registered doctors can log in to the BFR doctor's profile (either with smartphone app or the web version) and can review their patient's history and reports sent by the BFT apps. They can provide medical assistance if required.

Our basic Business model

The device itself cost 100€

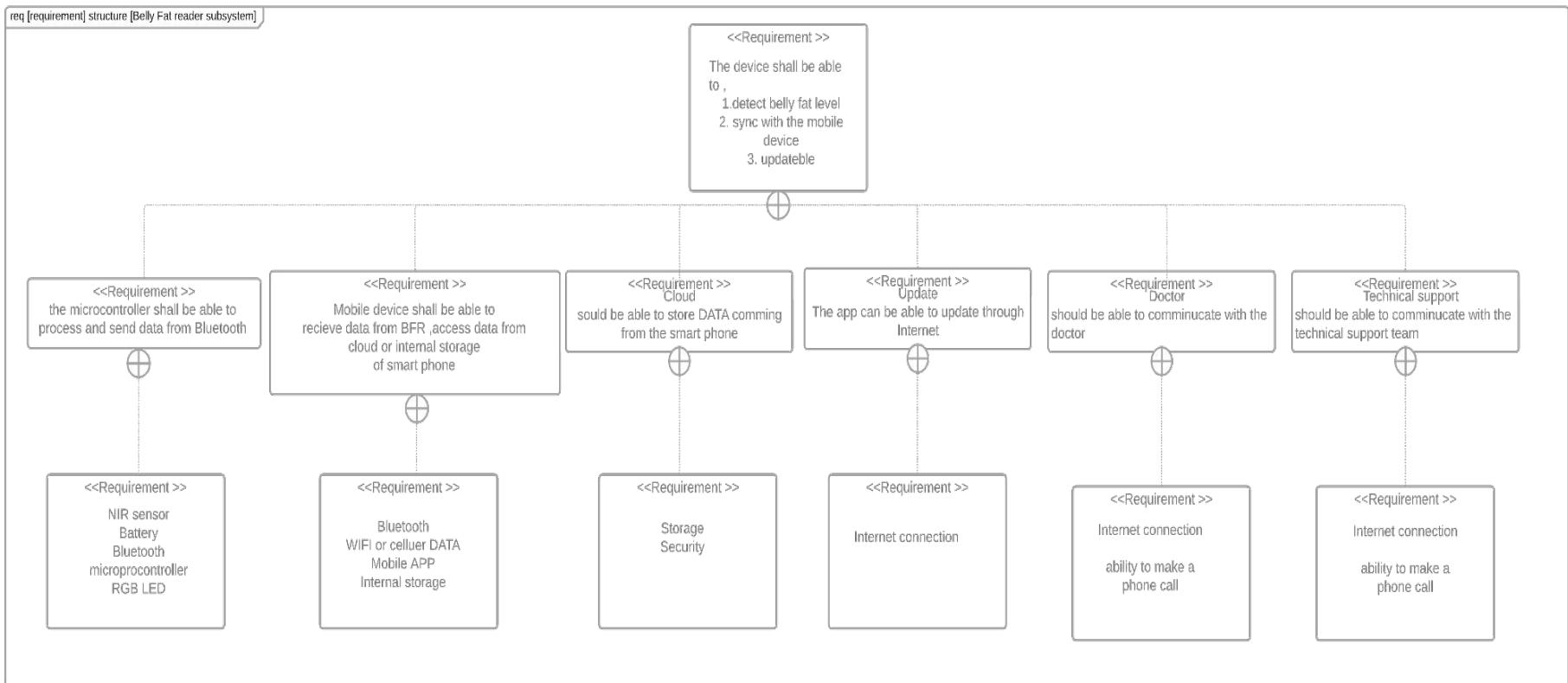
1. Basic version (app): comes free with the device
2. Pro version (app): users can buy in order to gain BFT readers' full potential.

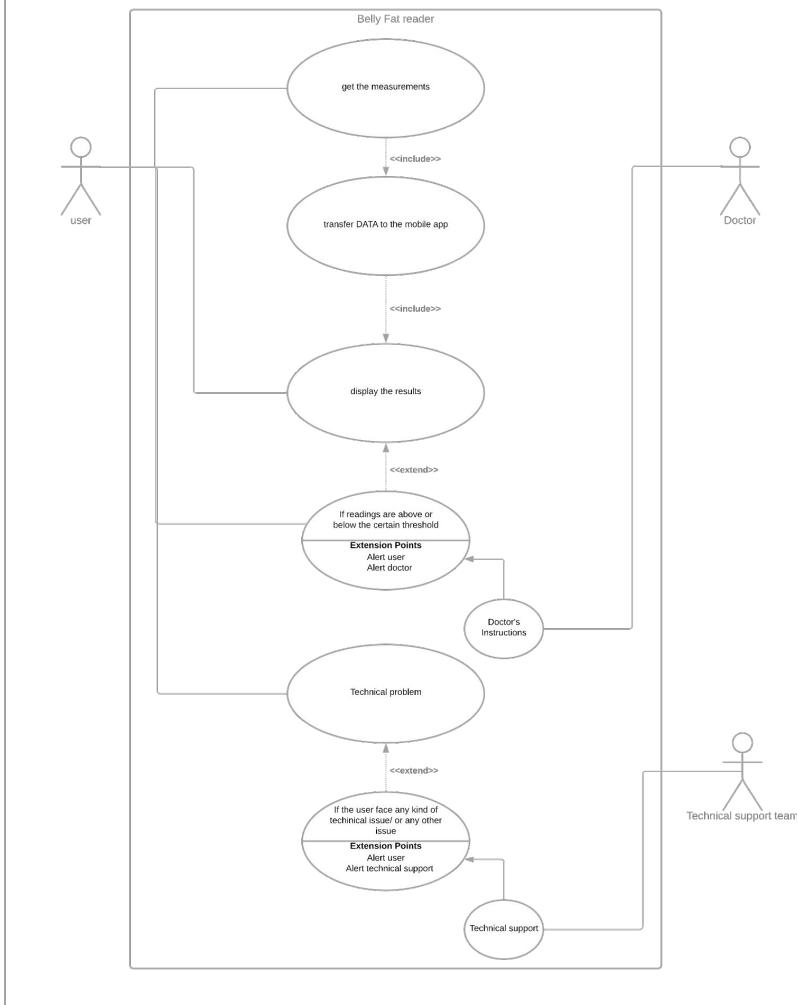
A yearly subscription of 50€: Doctors' medical assistance, belly fat forecast, free device repair, etc...

3. Registered doctors/ fitness trainers can earn money through medical assistance to the patients.



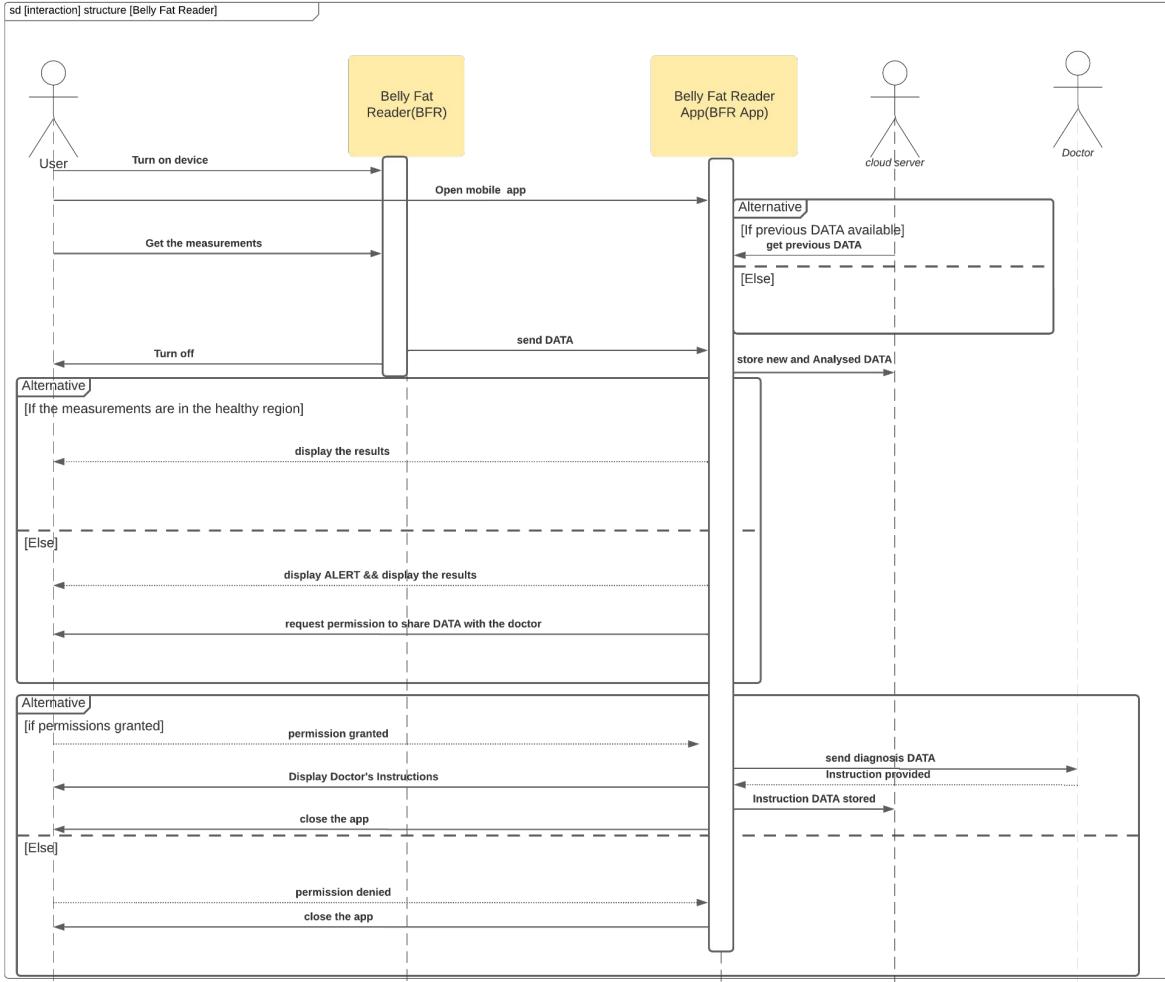
# The Requirement Diagram





## The Use Case Diagram

# The Sequence Diagram



**Thank you!**

