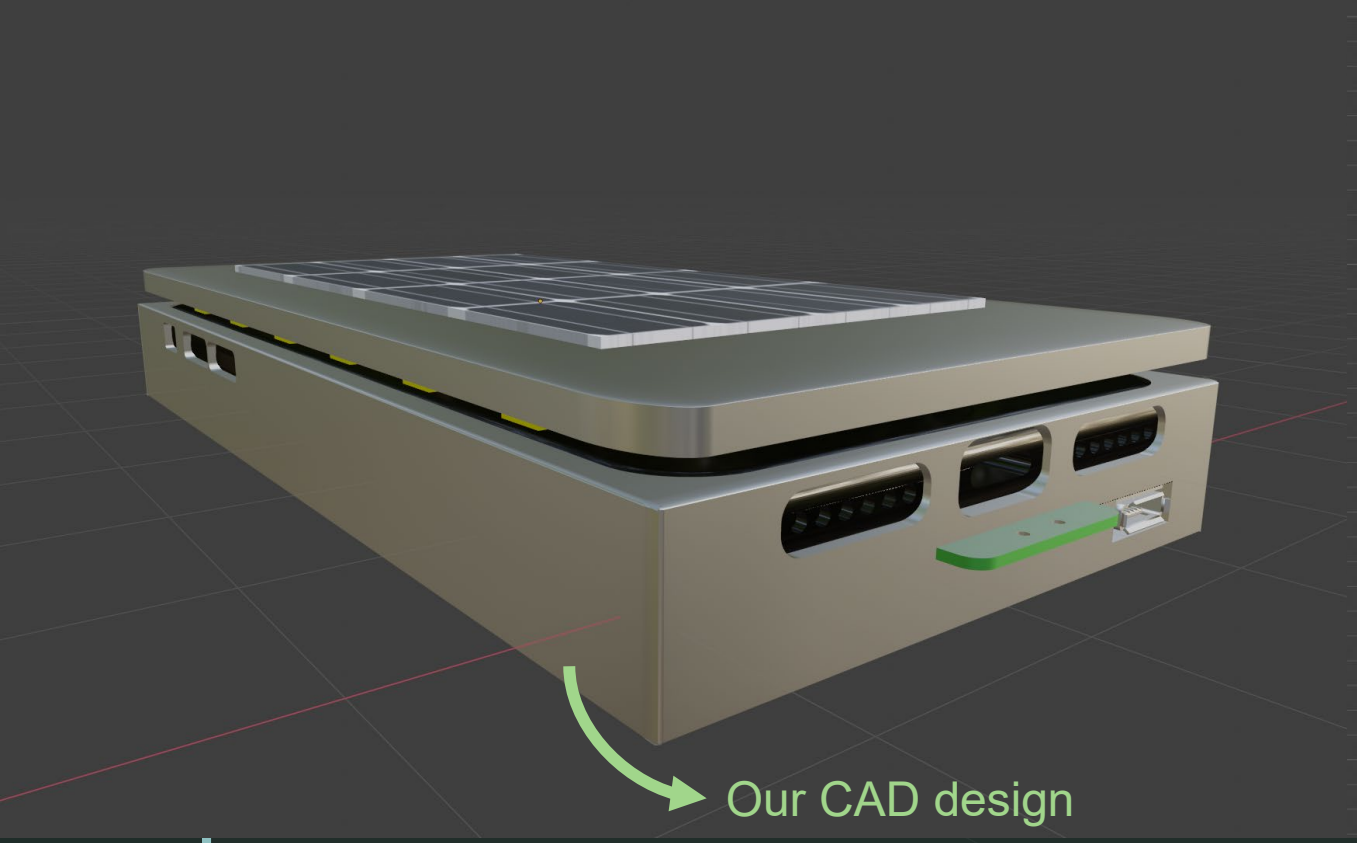
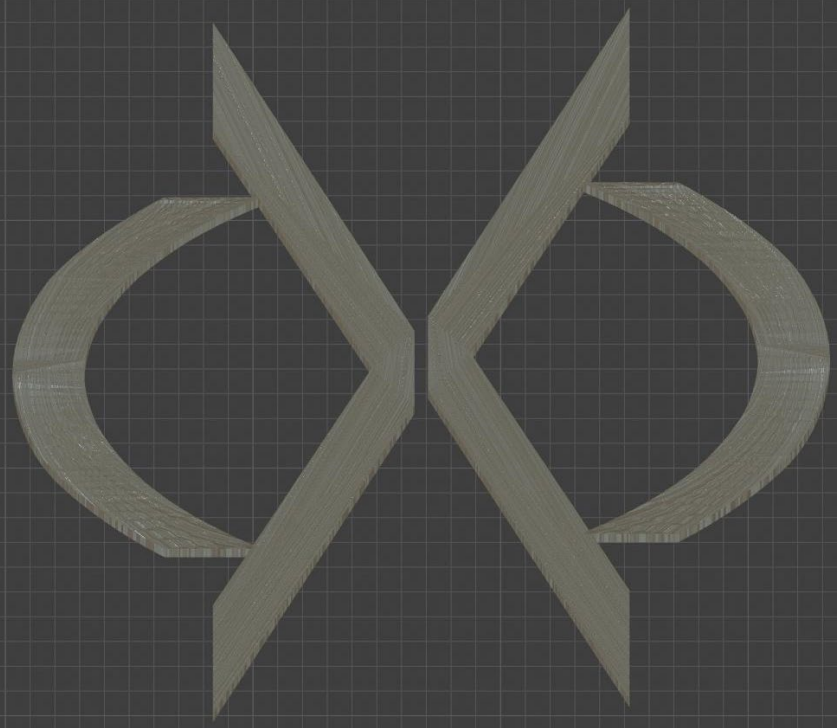


Our CAD design



Our cringey logo

Duality – *More than encased*

Vincent Song / Chan Shing Fung

Aian Chan / Pang Tsz Hin

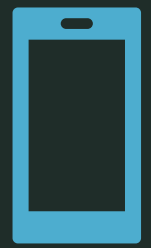
Vision

Clean life, clean mind, one touch

Our Vision

Problems we tackle

Problems we tackle



DROPPING PHONES

GERMS & COVID-19

Problem

Phones may die outdoors because of extreme cold

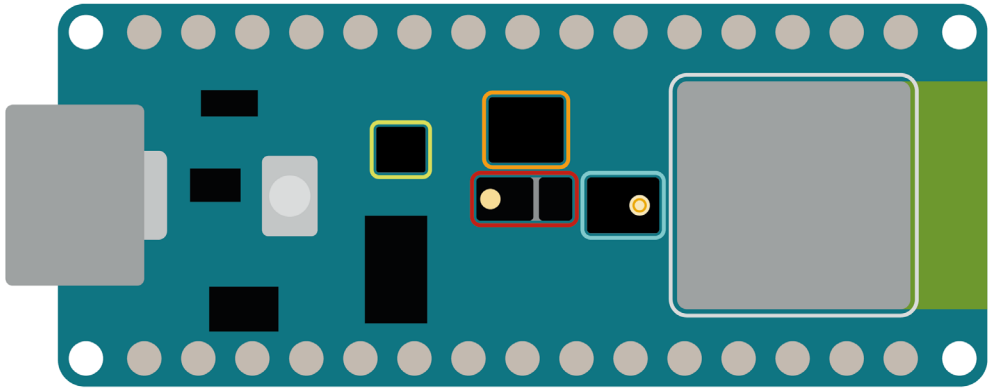
People fear the harmful impacts of so-called ‘radiation’ from phones

Render Window Help
Layout Modeling Sculpting UV Editing Texture Paint Shading Animation Rendering
Scene
View Layer
Global
Options
View Select Add Object
Perspective
Wiring | _ncl1_139
Wiring
Wire segment.001
Wire segment.002
Arduino Nano 33 IoT
BMS
NEO-6M
Step-up
Wire segment
_ncl1_139
Transform
Location X 0 m
Y 0 m
Z 0 m
Rotation X 0°
Y -0°
Z 0°
Mode XYZ Euler
Scale X 1.000
Y 1.000
Z 1.000
Delta Transform
Relations
Collections
Instancing
Keying View Marker
Start 1 End 250
Wiring | _ncl1_139 | Verts:280,534 | Faces:451,461 | Tris:508,795 | Objects:3

Our Design

Powered by Arduino

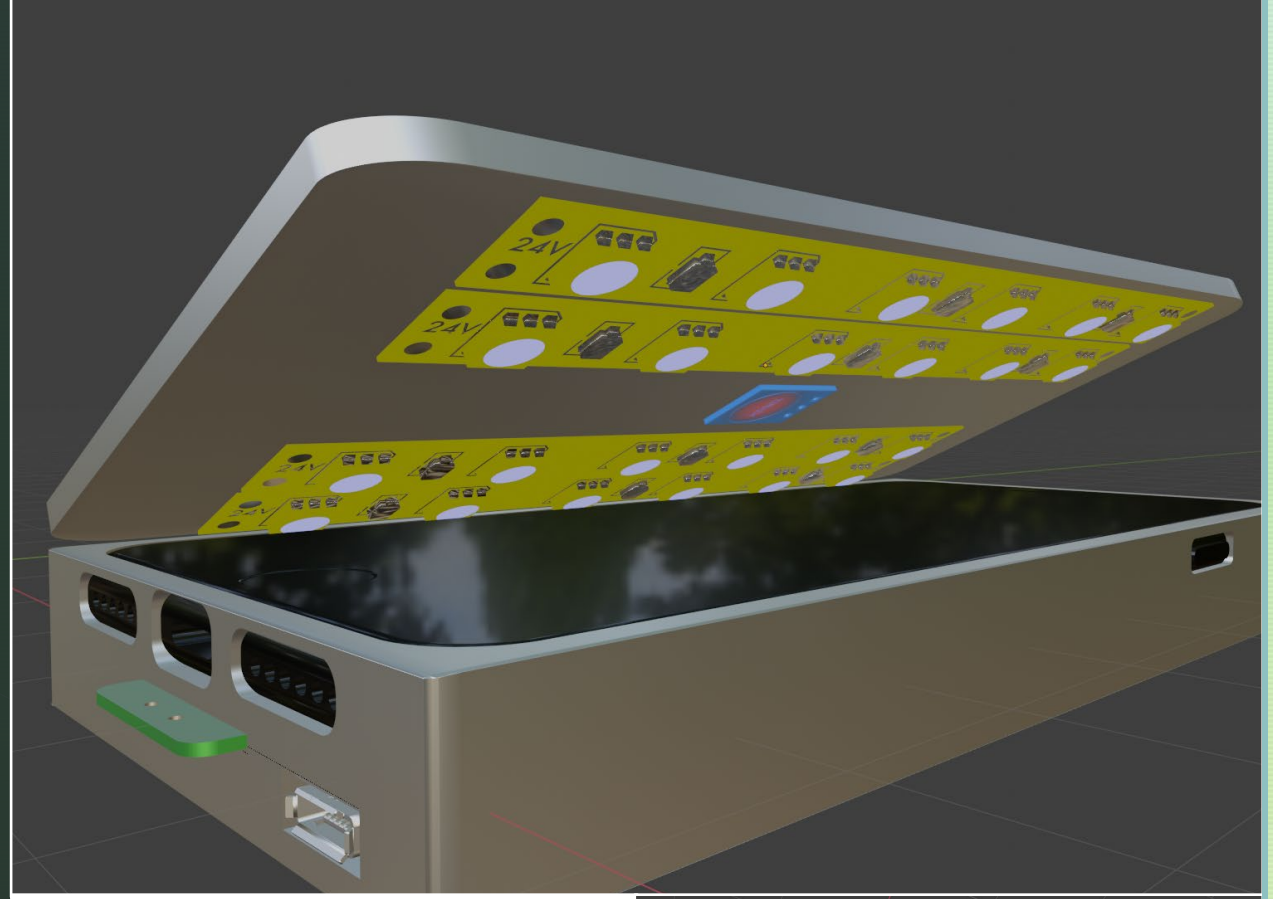
NANO 33 BLE SENSE

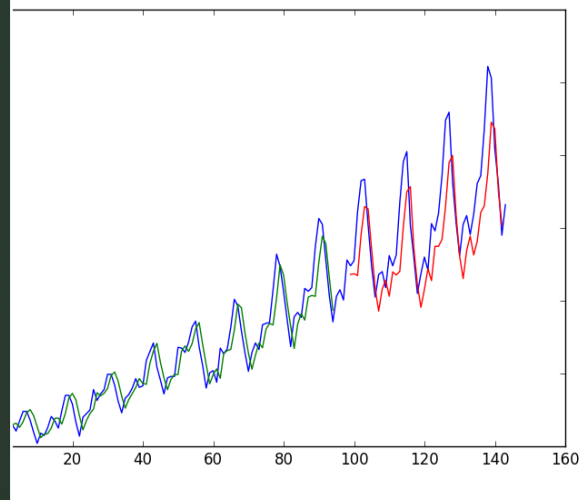


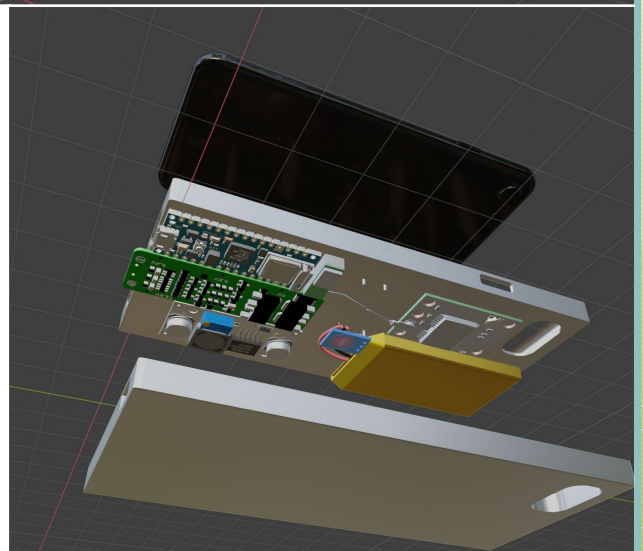
- Color, brightness, proximity and gesture sensor
- Digital microphone
- Motion, vibration and orientation sensor
- Temperature, humidity and pressure sensor
- Arm Cortex-M4 microcontroller and BLE module

Our Solution – the basic idea

- UV Sterilising
- Pre-fall warning system, performed through 9-axis inertial sensor and accelerometer
- Potential Warning System for family members of elderly living alone
- BLE beacon for social distancing, cough detection

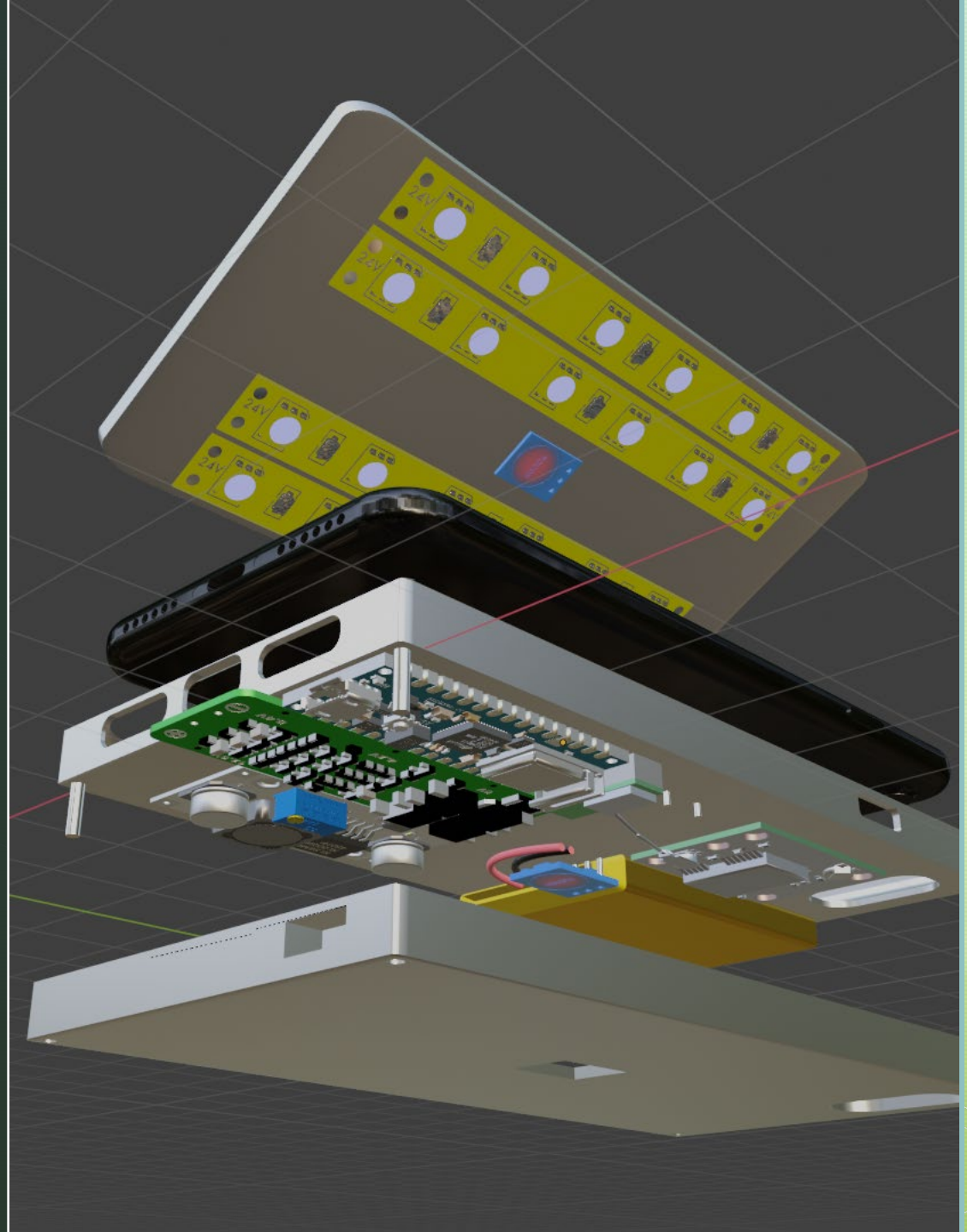




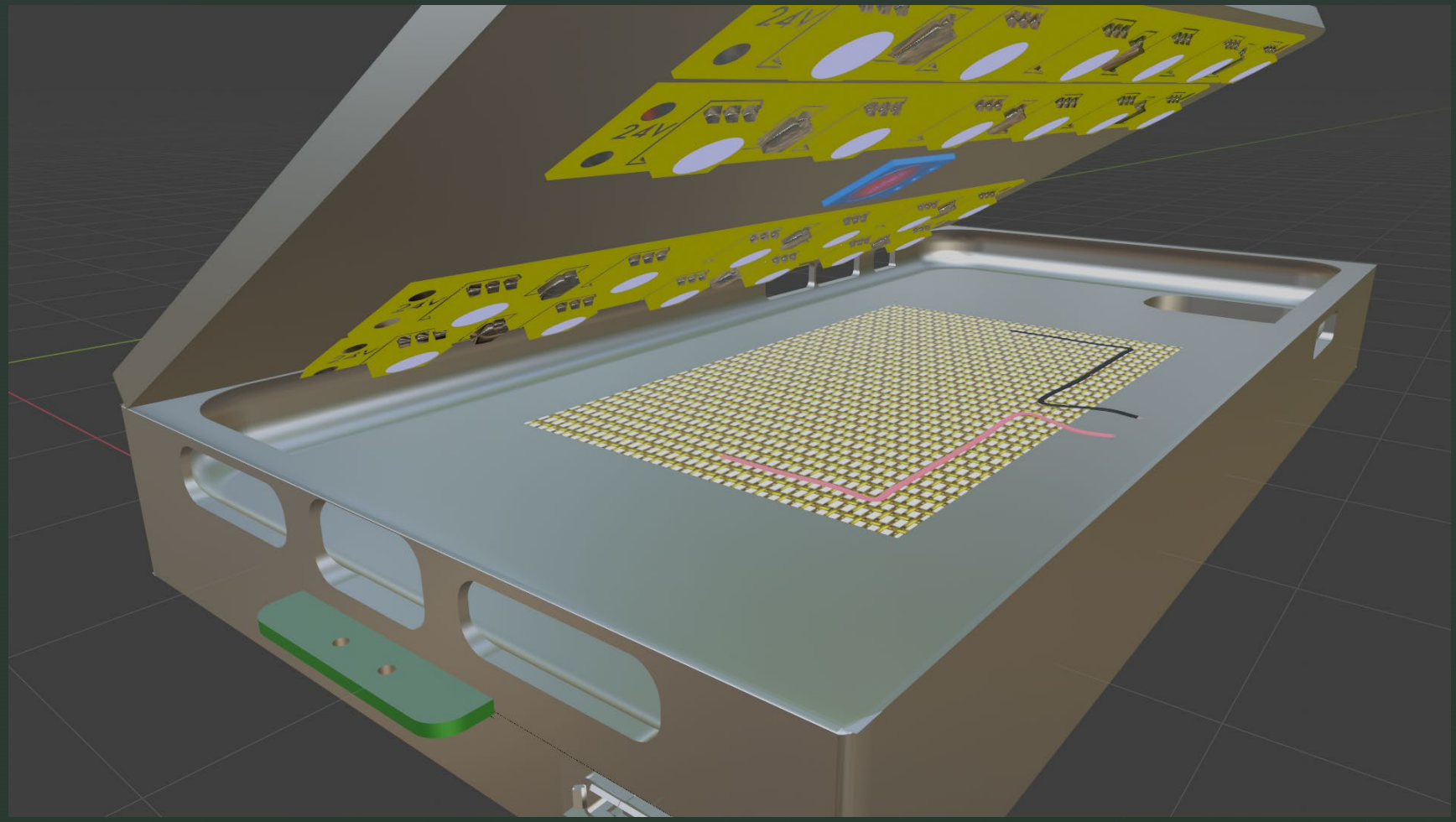


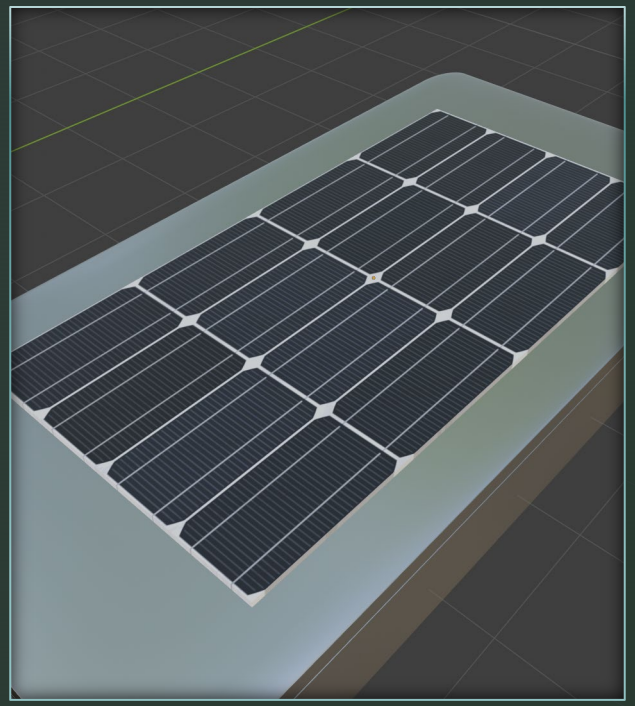
Material

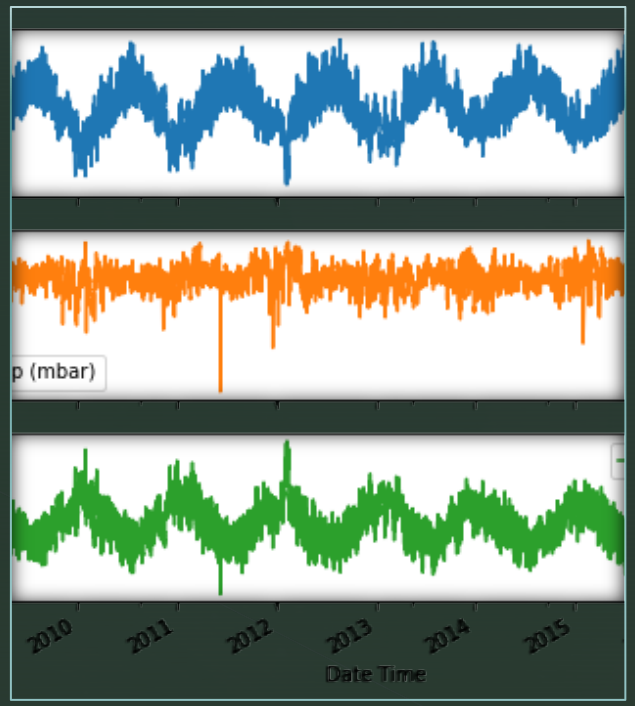
- Silicone based
  - Non-toxic for people, planet and oceans
  - More durable than normal plastic
- Lined with preprocessed aluminium to kill bacteria and virus (NaOH)
  - Light-weight
  - Scratch-resistant
- Thin inter-layer of lead-boron and carbon nanotube, absorbing all frequencies of radiation

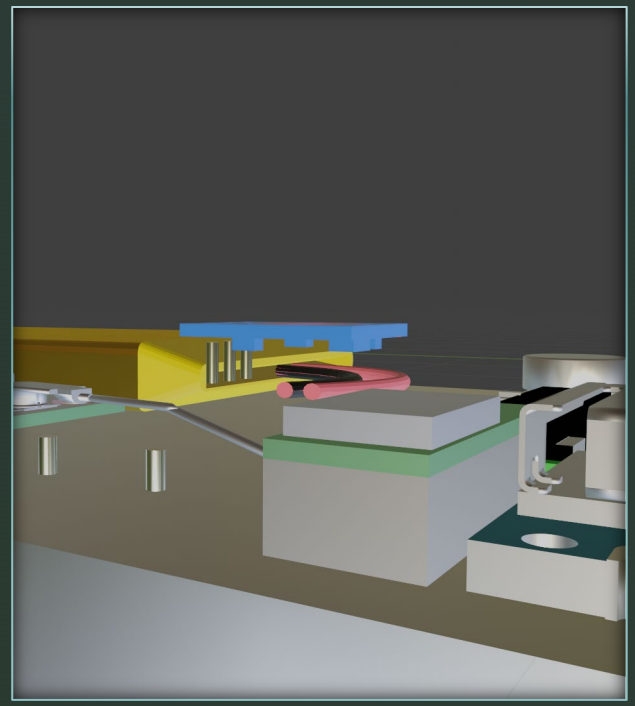


Temperature adjustment – with heating pad





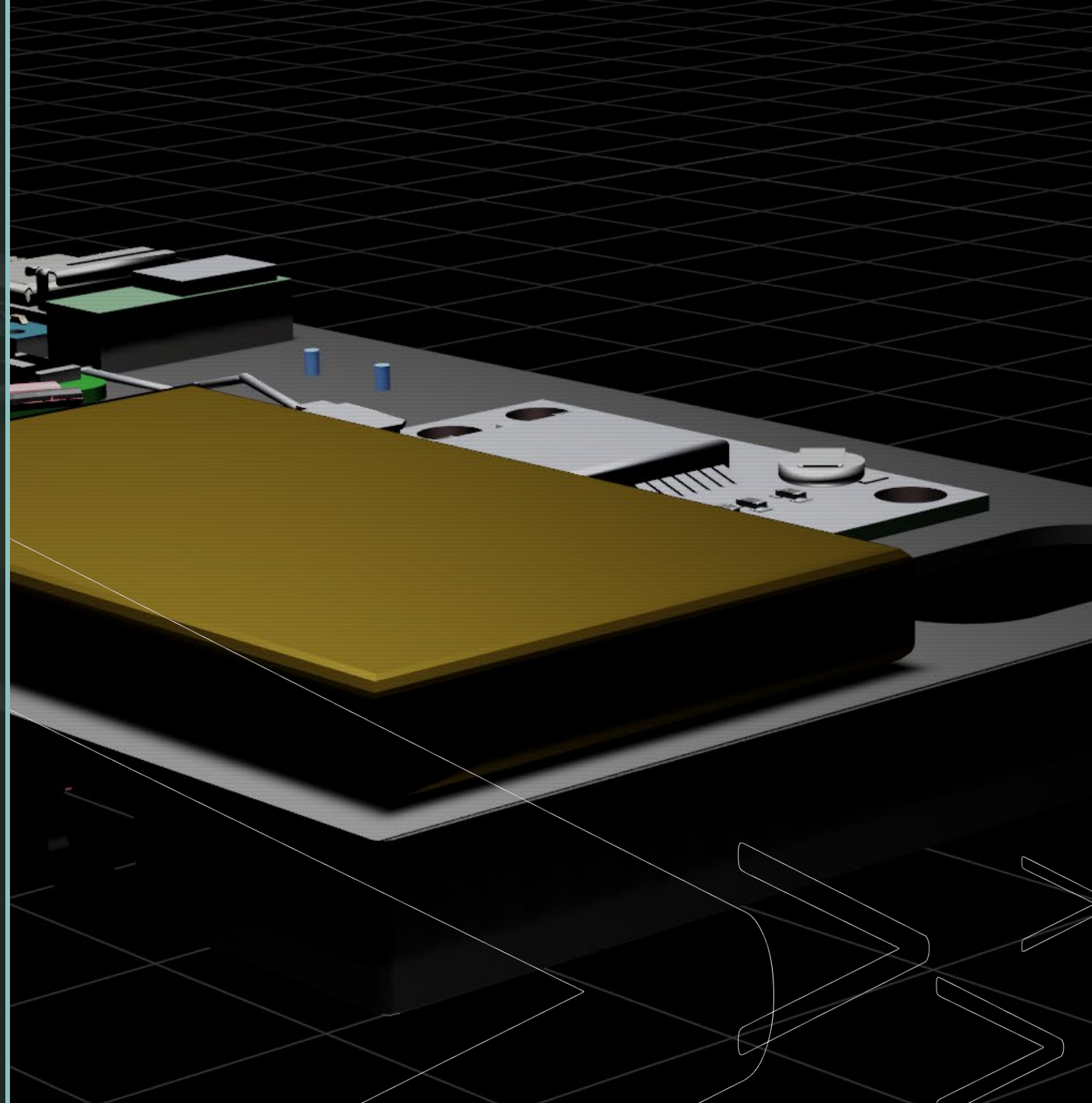




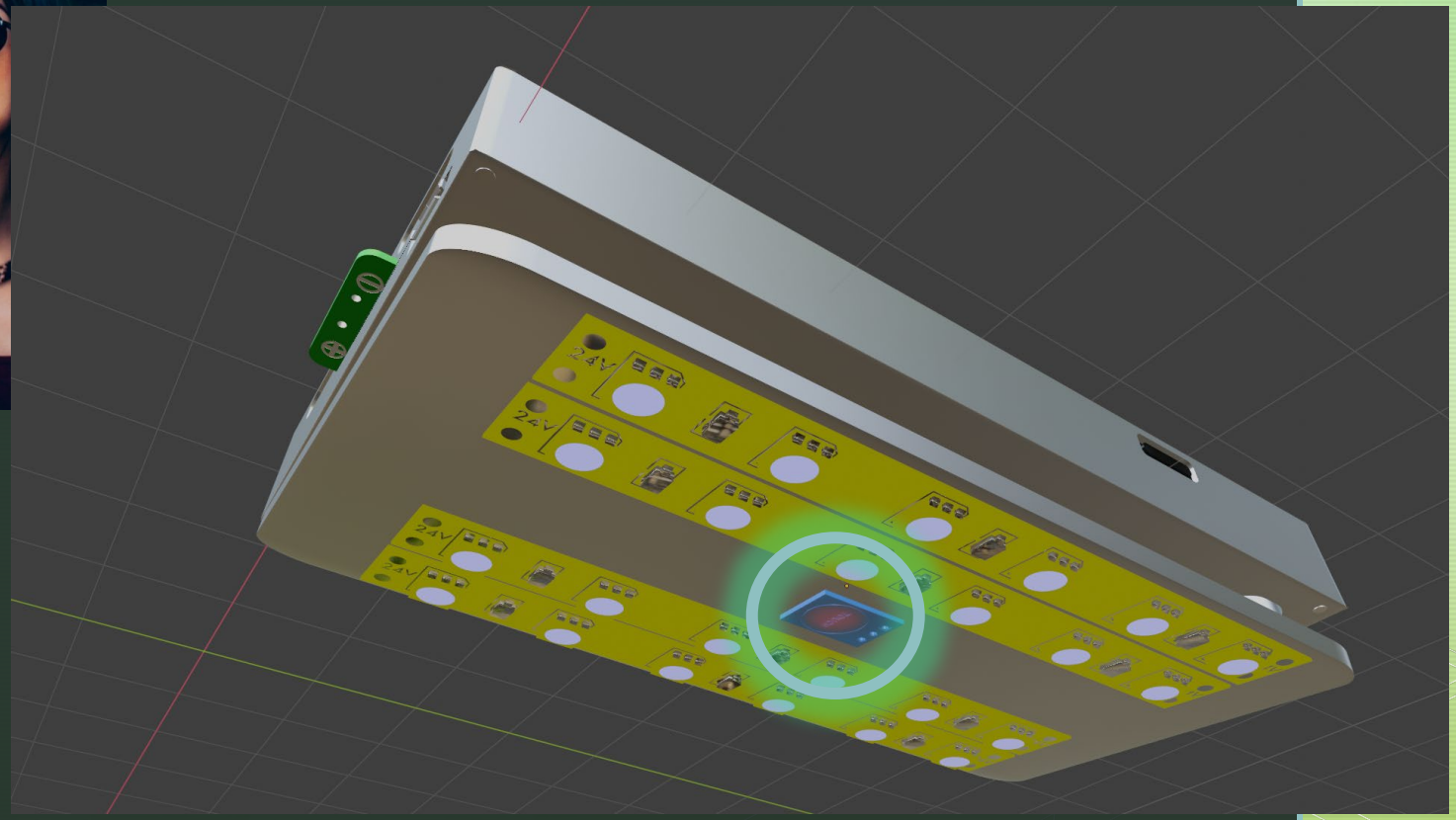
Designed for the outdoors

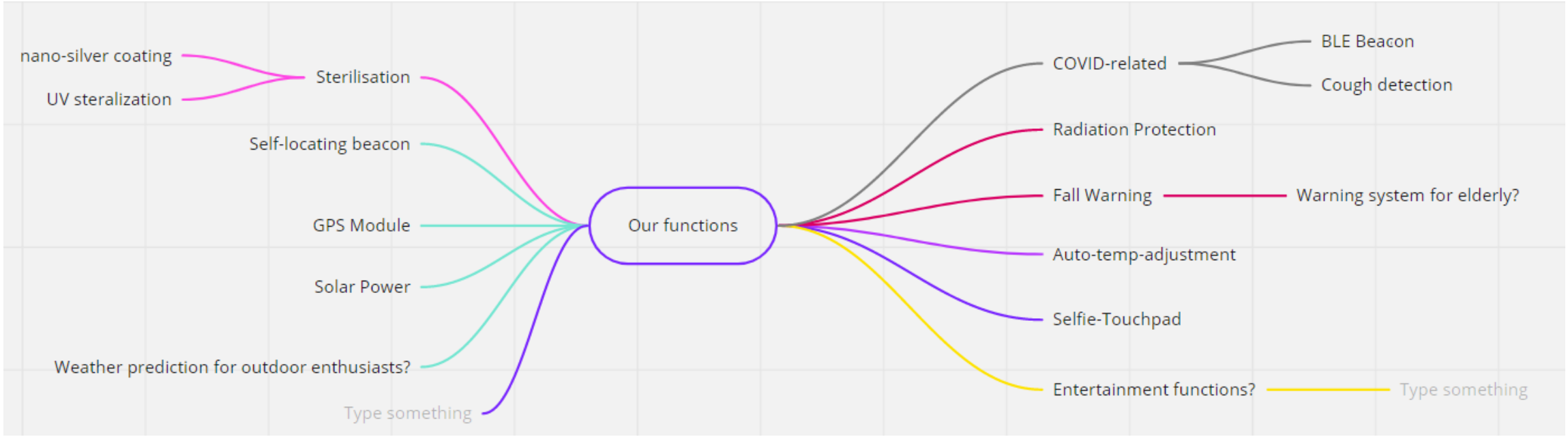
Battery life

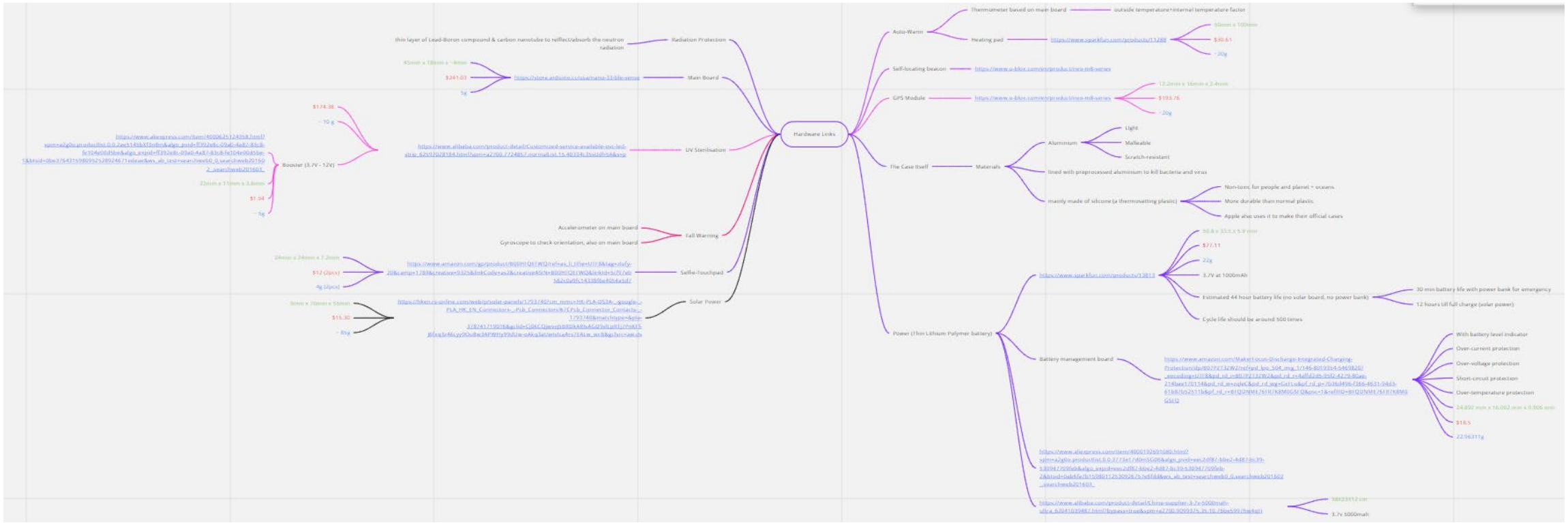
- ~ 40 hours
- Solar power (12 hour to full charge)
- + 30 min emergency power bank



Everyone loves selfies




nano-silver coating
UV steralization
Sterilisation
Self-locating beacon
GPS Module
Solar Power
Weather prediction for outdoor enthusiasts?
Type something
Our functions
COVID-related
BLE Beacon
Cough detection
Radiation Protection
Fall Warning
Warning system for elderly?
Auto-temp-adjustment
Selfie-Touchpad
Entertainment functions?
Type something


Hardware Links
Radiation Protection
thin layer of Lead-Boron compound & carbon nanotube to reflect/absorb the neutron radiation
Main Board
45mm x 18mm x ~4mm
$241.03
5g
UV Sterilisation
$174.38
~ 10 g
Booster (3.7V - 12V)
22mm x 11mm x 3.8mm
$1.94
~ 5g
Fall Warning
Accelerometer on main board
Gyroscope to check orientation, also on main board
Selfie-Touchpad
$12 (2pcs)
4g (2pcs)
Solar Power
3mm x 70mm x 55mm
$15.30
~ 85g
Auto-Warm
Thermometer based on main board
outside temperature+internal temperature factor
Heating pad
$0.61
~ 20g
Self-locating beacon
GPS Module
12.2mm x 16mm x 2.4mm
$193.76
~ 20g
The Cave Itself
Materials
Aluminium
Light
Malleable
Scratch-resistant
lined with preprocessed aluminium to kill bacterie and virus
mainly made of silicone (a thermosetting plastic)
Non-toxic for people and planet = oceans
More durable than normal plastic
Apple also uses it to make their official cases
Power (Thin Lithium Polymer battery)
$77.11
22g
3.7V at 1000mAh
Estimated 44 hour battery life (no solar board, no power bank)
30 min battery life with power bank for emergency
12 hours till full charge (solar power)
Cycle life should be around 500 times
Battery management board
With battery level indicator
Over-current protection
Over-voltage protection
Short-circuit protection
Over-temperature protection
$18.5
22.96.311g
3.7v 5000mah

Market
Research

Market Research

Nuevue

No fall-warning, or any of our other advanced functions

www.nuevue.com

CASETiFY

Only has uv sterilization functions, not very portable

https://www.casetify.com/en-HK/protects/uv-sanitizer

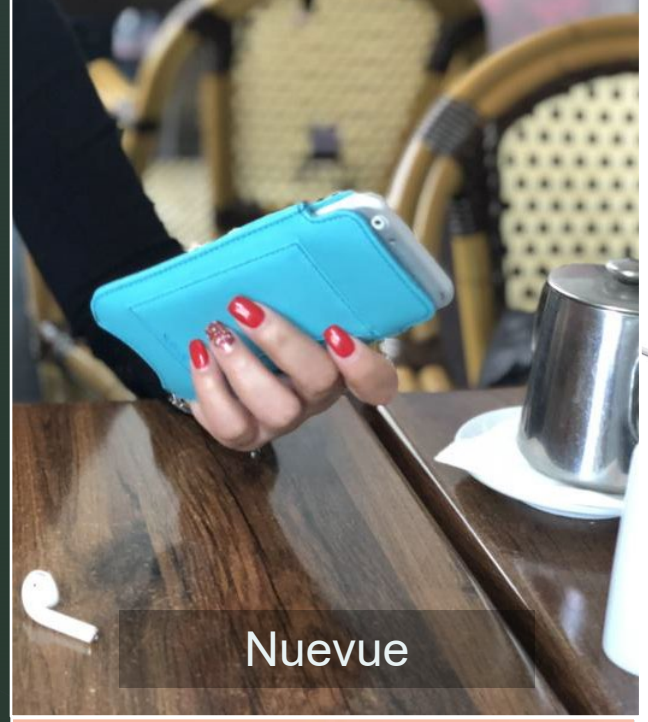
ETHS COPPER CASE

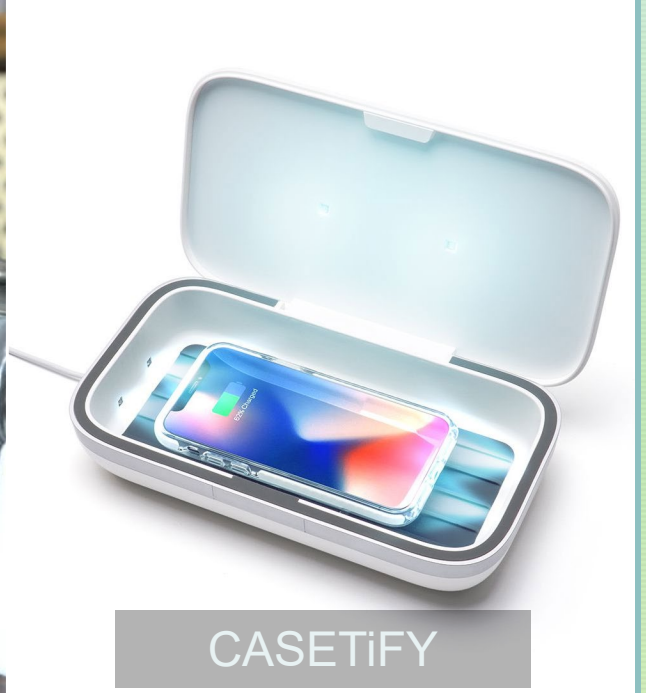
A literal copper phone case, no other special functions

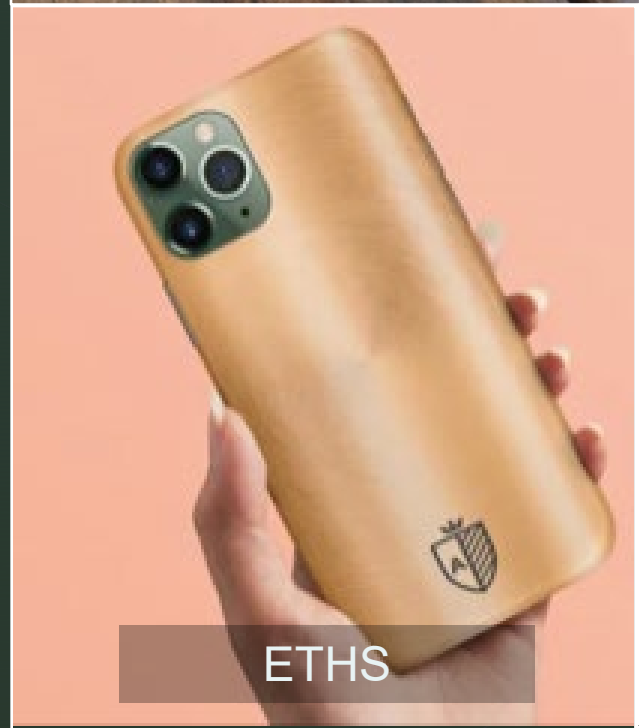
https://evanstonroundtable.com/Content/Default/Top-Stories-Right/Article/ETHS-Alumni-Create-Self-Sanitizing-Copper-Cell-Phone-Case/-3/224/17926

ABA phone case

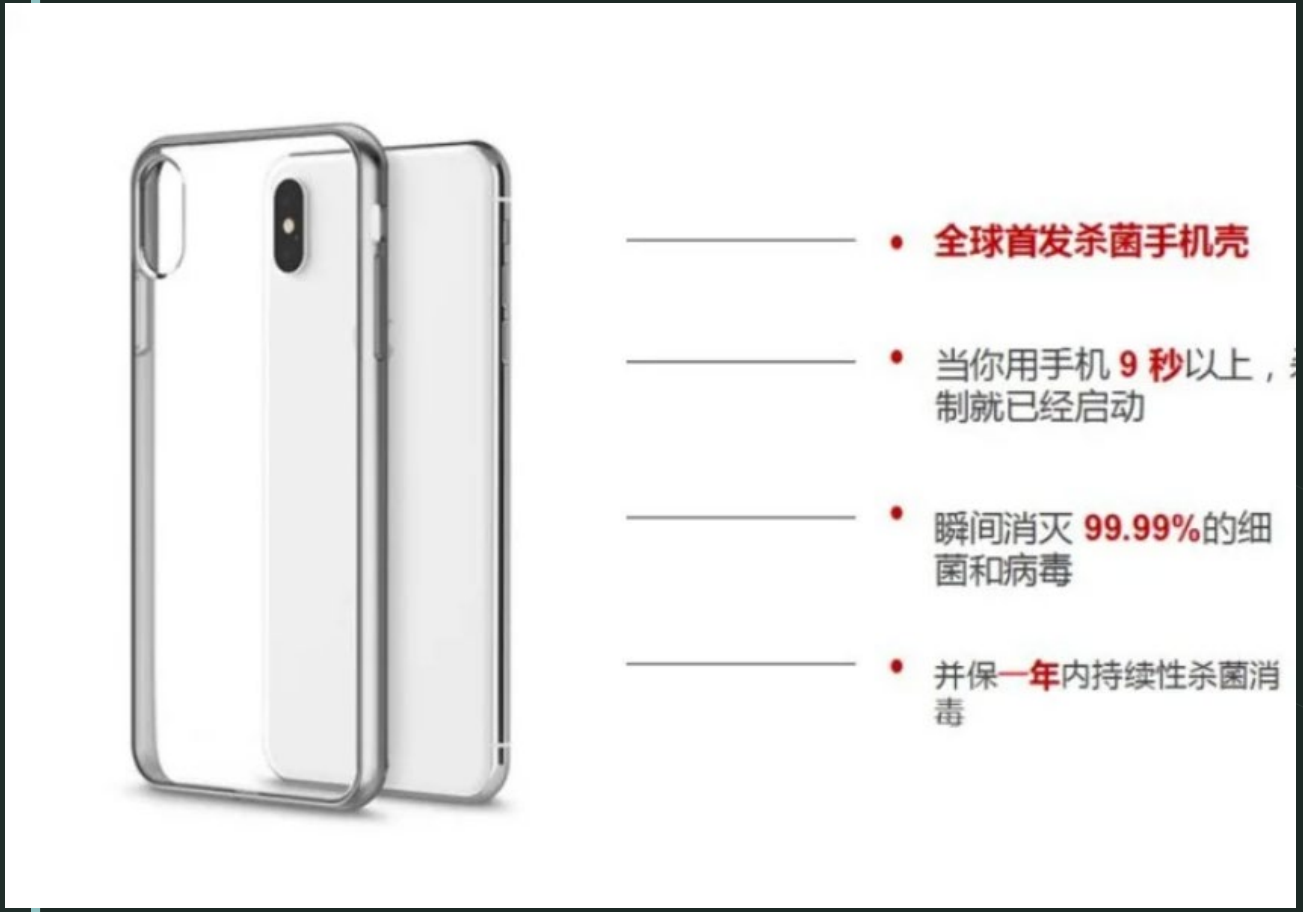
https://ek21.com/news/tech/73647/







ABA Phone Case vs Duality



- Our duality phone case can use for 5 years on more
- Cannot sterilize the main face of the phone, where people touch the most
- Our duality phone case can sterilize our phone just in five seconds or shorter
- Our duality phone case has many function such as sterilizing, fall warning, solar power and so on.
- The price of our phone case (only the cleaning components) is < $200 HKD. However, the phone case on the left takes about $600 HKD.

More than encased
THANK YOU