A New Design For Our Sensor's Case

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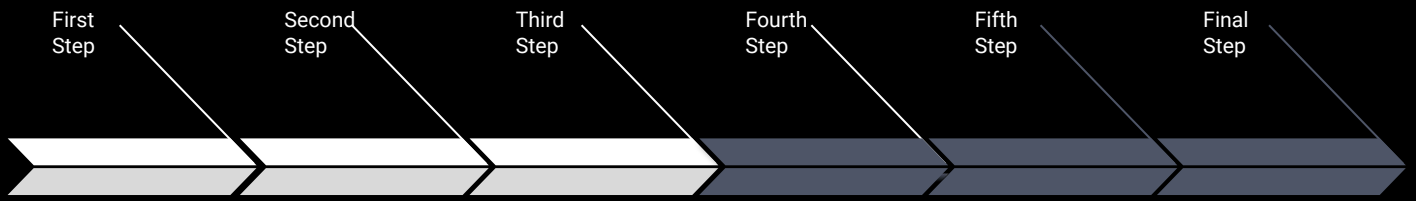
Project timeline



Studying

We studied the current case and pointed out several flaws that we wanted to improve and state our case's objective.

Measurements

We had to take the measurements of all of our device's parts to create possible designs

Design Sketching

We have successfully worked on a sketch on a 3D platform that enabled us to visualise the case

3D Printing

3D printing the case as a model our design

Design Testing

Test the standards of our model and make sure it passes

Bringing the Case to Life

Create industrial-grade cases for future students to use!

Studying our Current Case:

Our current case is a simple rectangular case that hosts the raspberry pi, screen, battery, and sensors.

Flaws in the current case:

- ★ Problems inserting and removing the portable battery
  - Trouble charging and turning it on.
- ★ Screen is perpendicular when on a table
  - Can’t see screen when sitting upright.
- ★ Hard to handle when taking data
  - Difficult to hold in conjunction with other sensors
- ★ Sensors sit loosely inside the case
  - Improper ventilation and positioning leading to potentially inaccurate readings.
- ★ Hard to access ports
  - Difficulty inserting new plugs and cables

New Case Objectives:

Having an improved battery position.

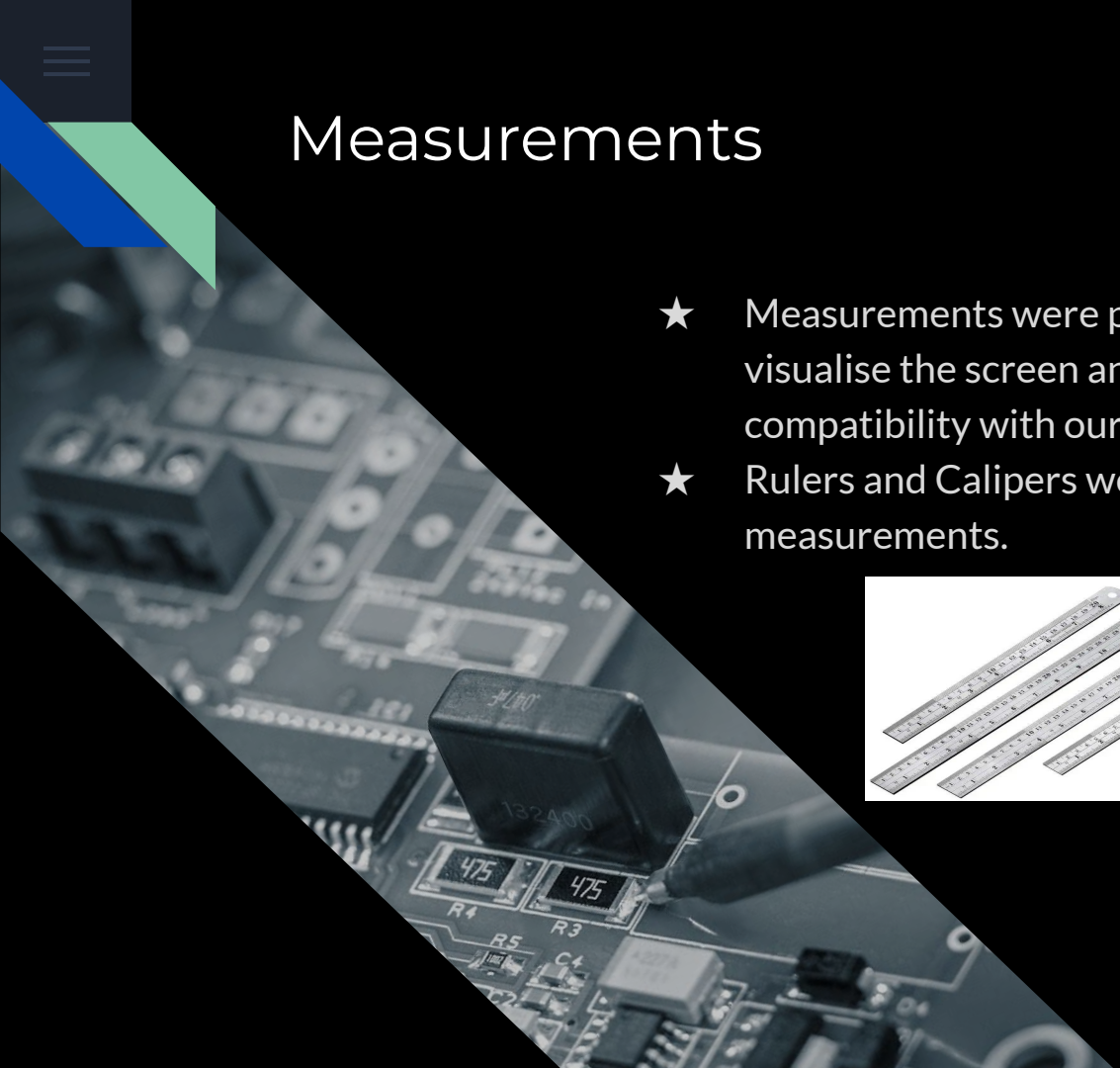
A better view of the screen when resting on surfaces.

Creating improved port placement and accessibility .

More secure sensor placement.

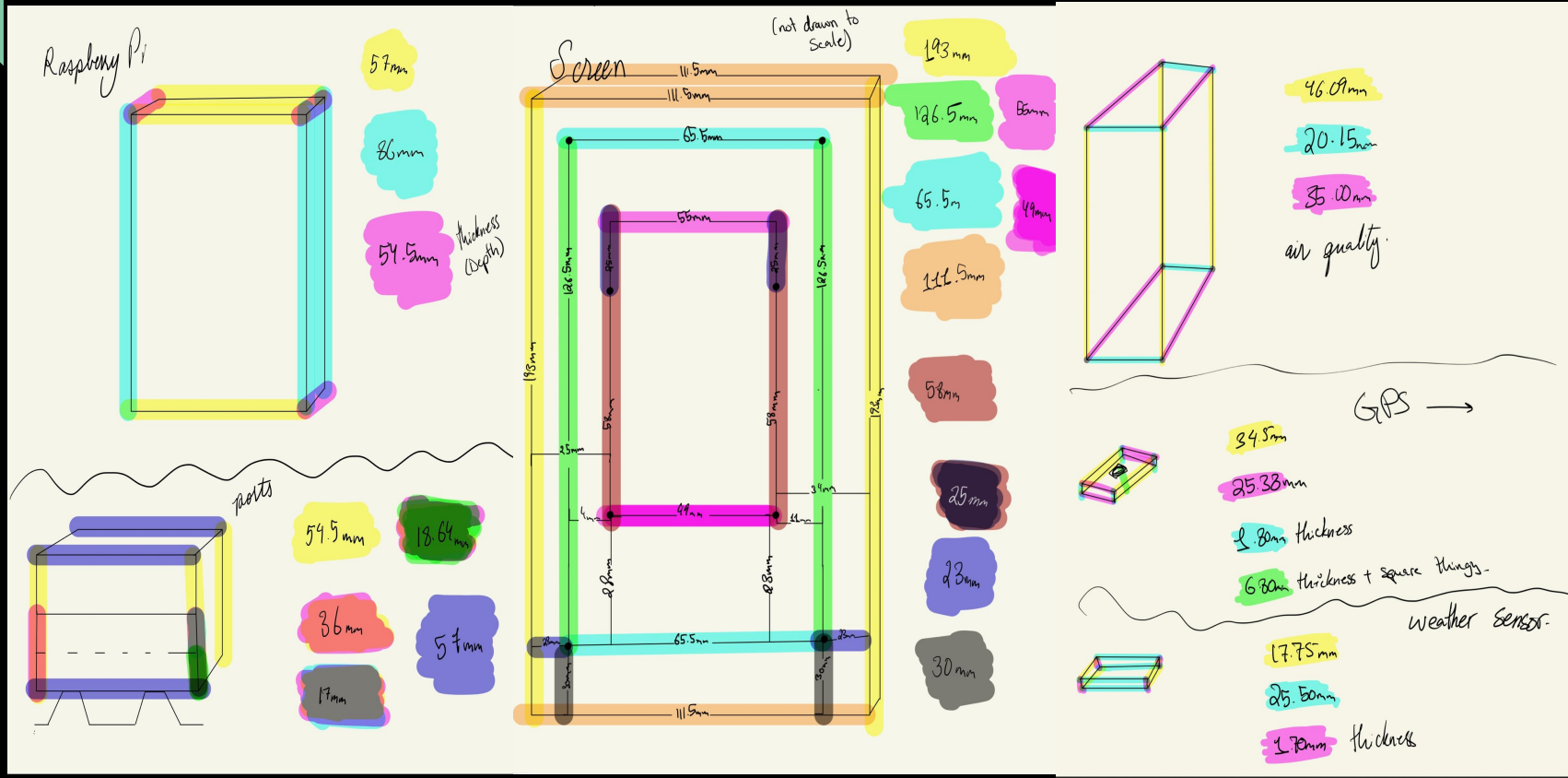
Easier to handle when holding

Measurements

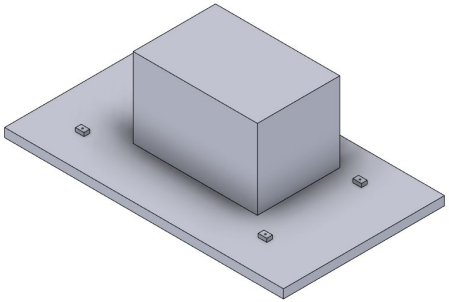


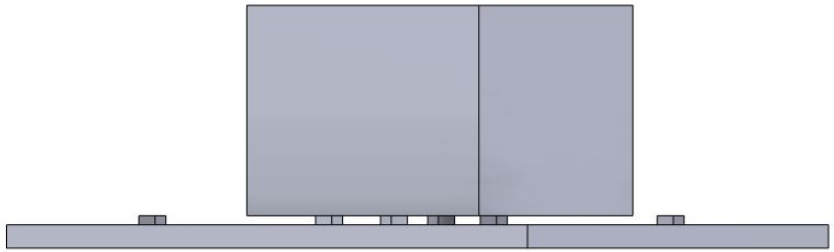
- ★ Measurements were precisely taken to help us visualise the screen and raspberry pi's compatibility with our designs!
- ★ Rulers and Calipers were used for taking these measurements.

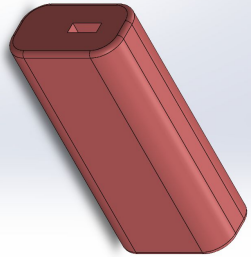
Some of our measurements:

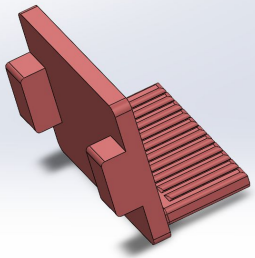


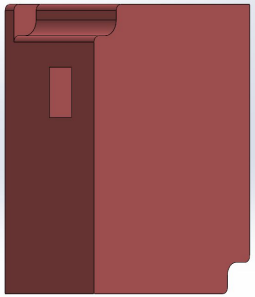
Implementation of Key Parts in CAD

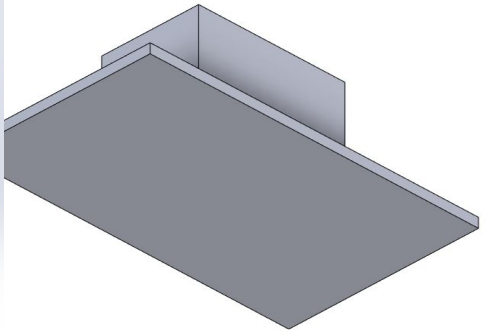












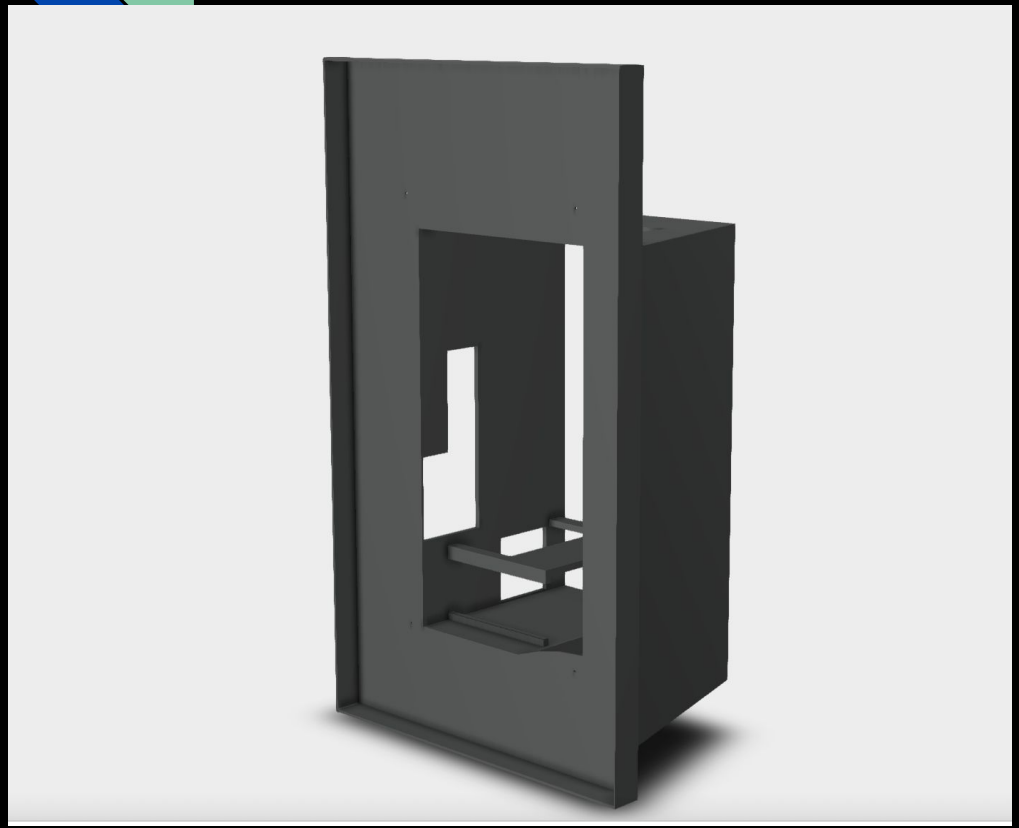
Sketching:

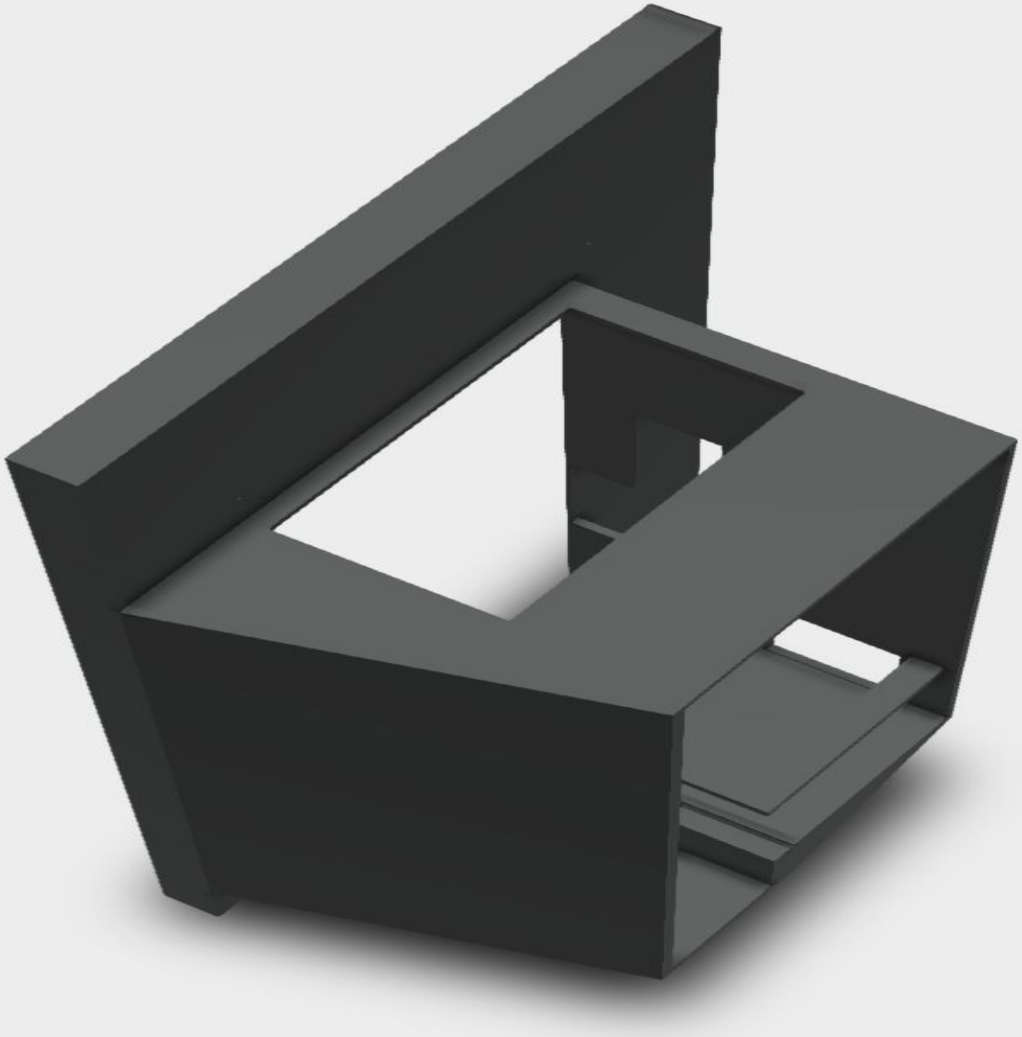
We've used multiple 3D designing apps as we were sketching designs for our case!

Some of the softwares used were:

- SOLIDWORKS
- OnShape
- Fusion 360

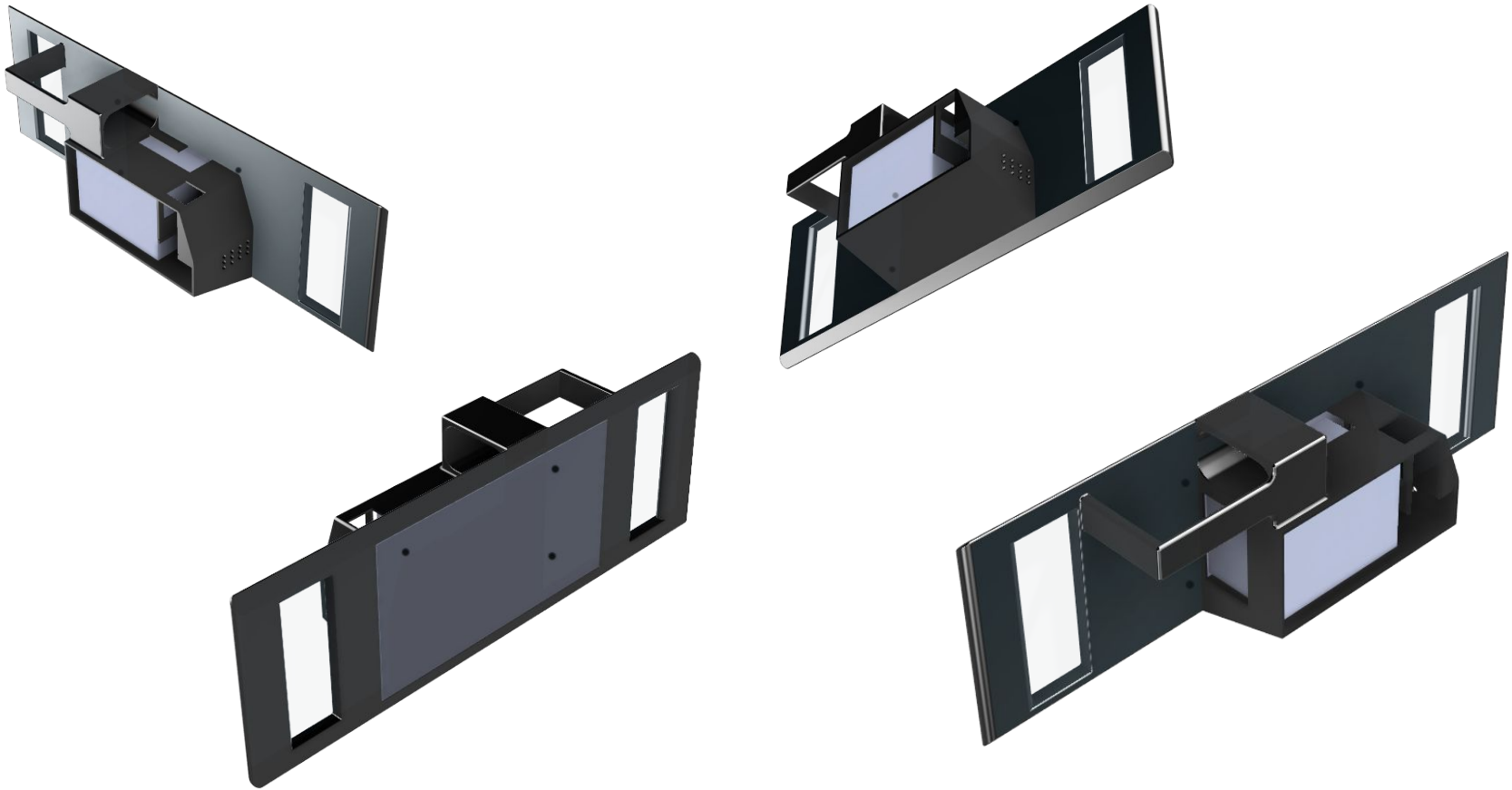
Design in Progress

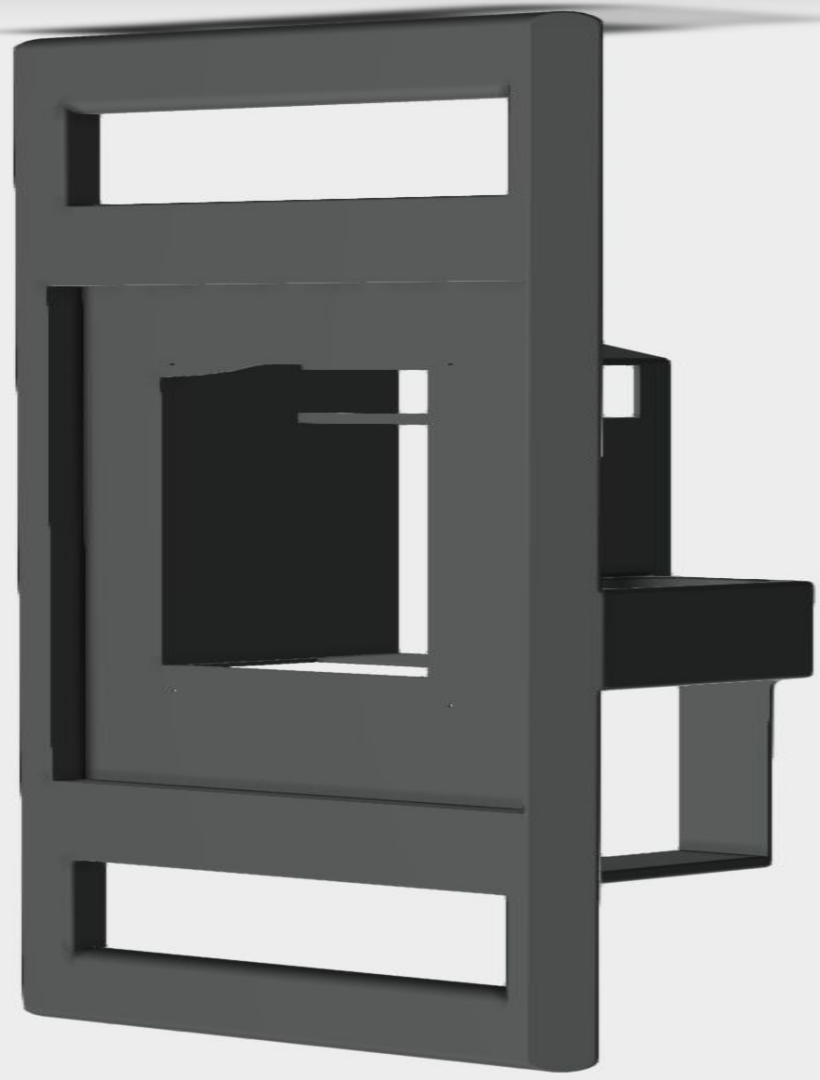




OUR NEW DESIGN

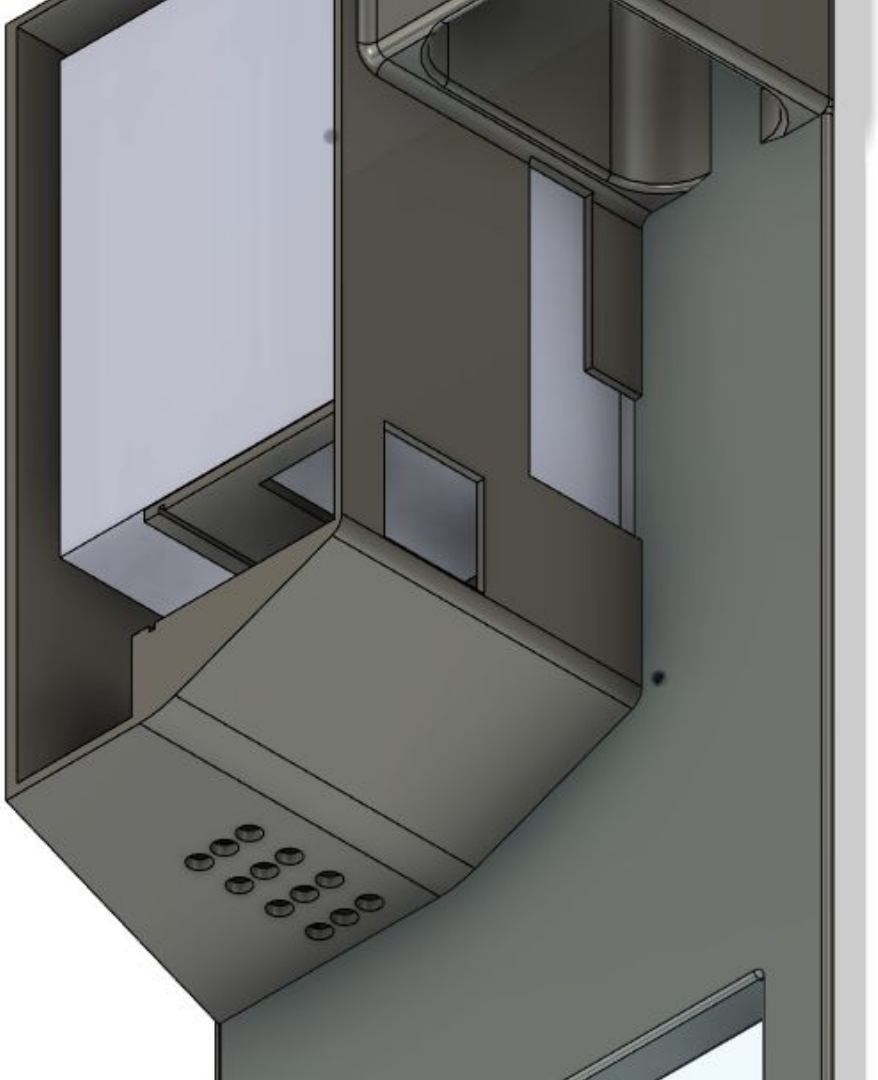
Case 2.0



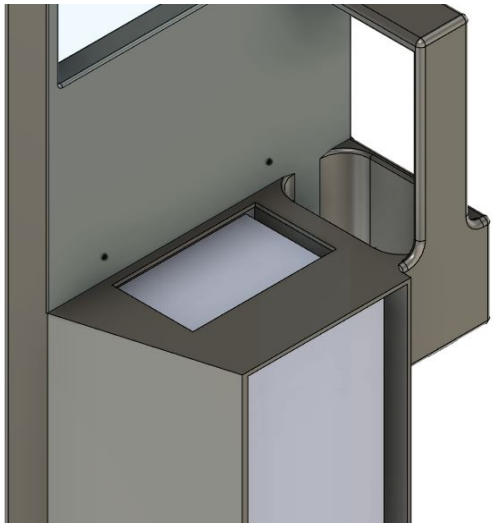


With grips for easily handling the device when collecting data

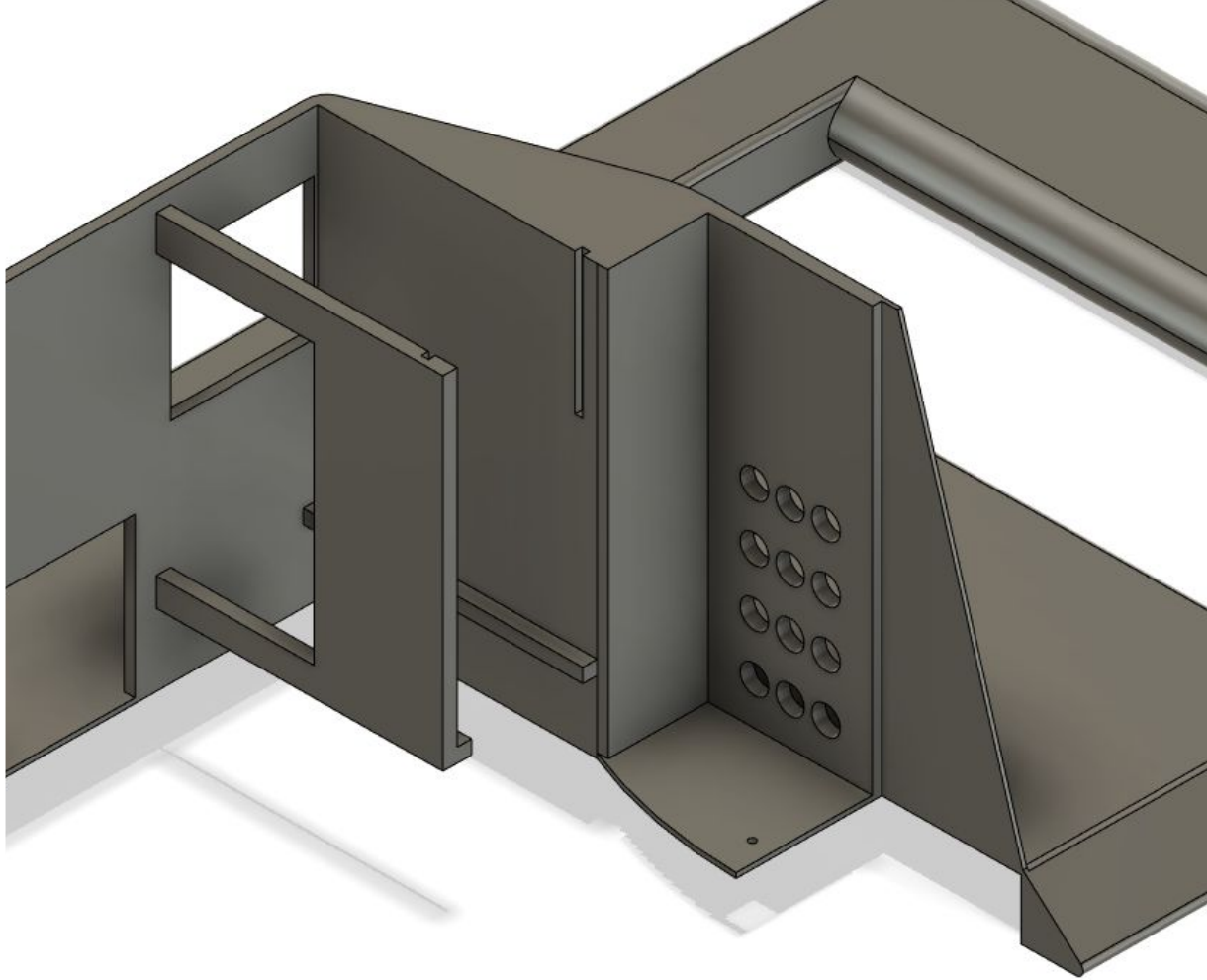
With a slant side to help position the screen comfortably on surfaces while using the device!

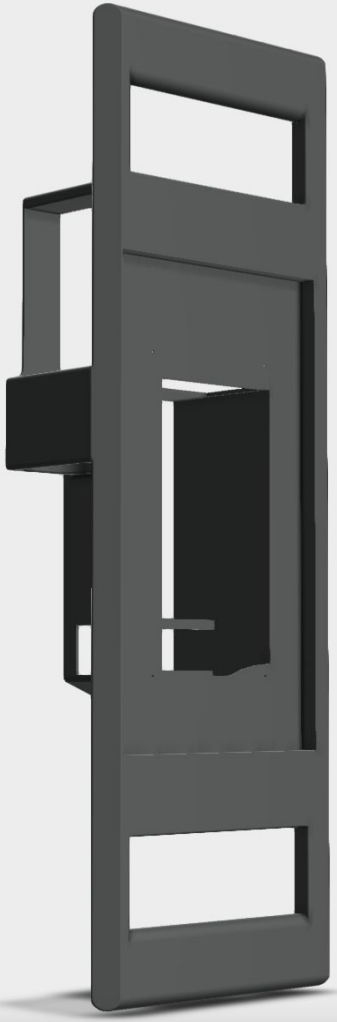


With ports to allow for hot plug access and maximum control over insertion

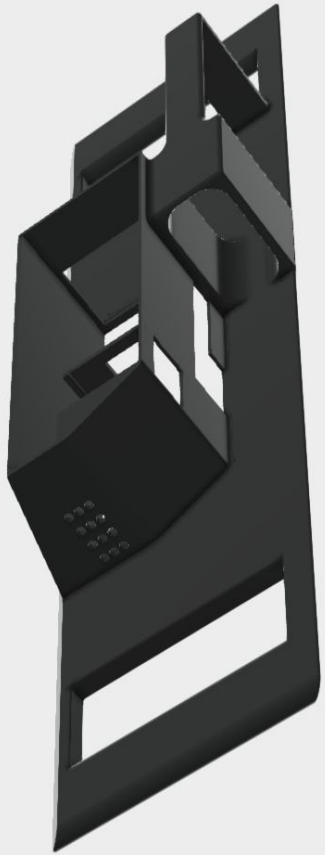


And dedicated spots for Air Quality Sensor and Pressure, Humidity, and Temperature sensor.



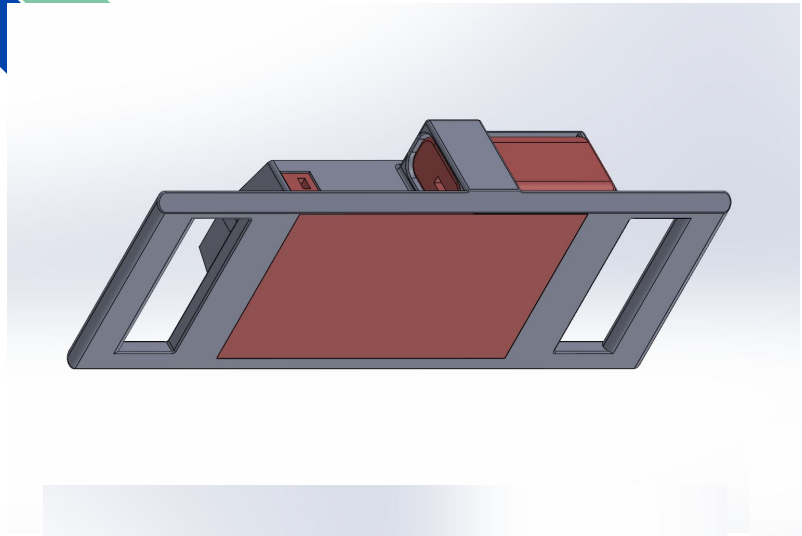


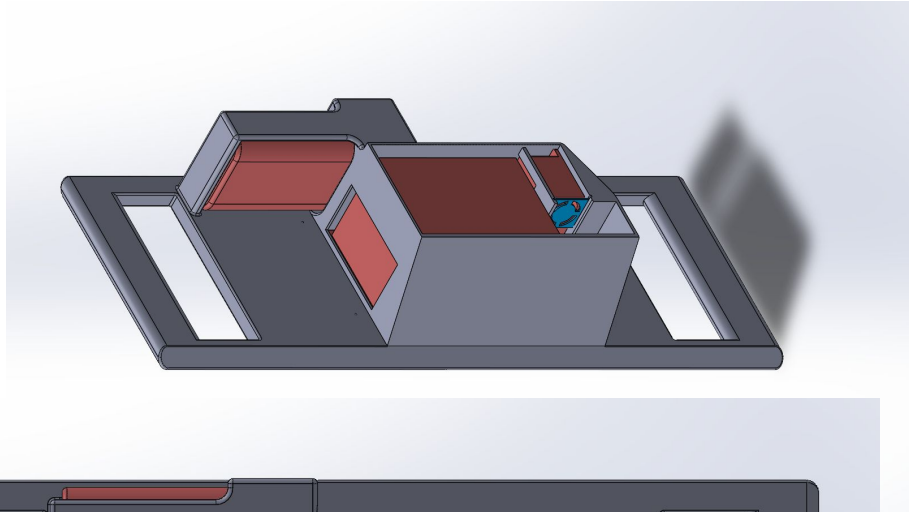
A better battery holder to facilitate insertion and removal of the battery. Charging, and turning on the battery does not even require removing it!

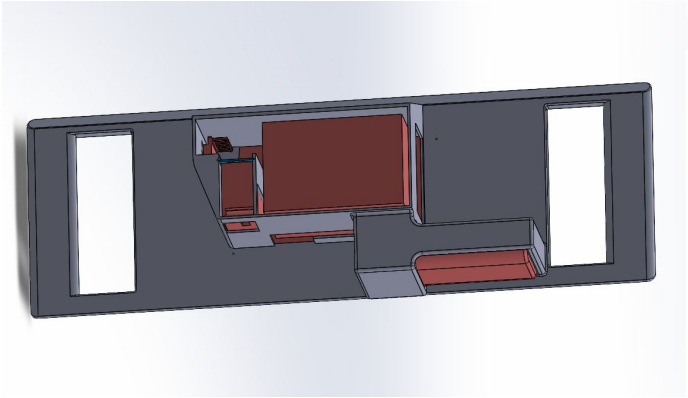


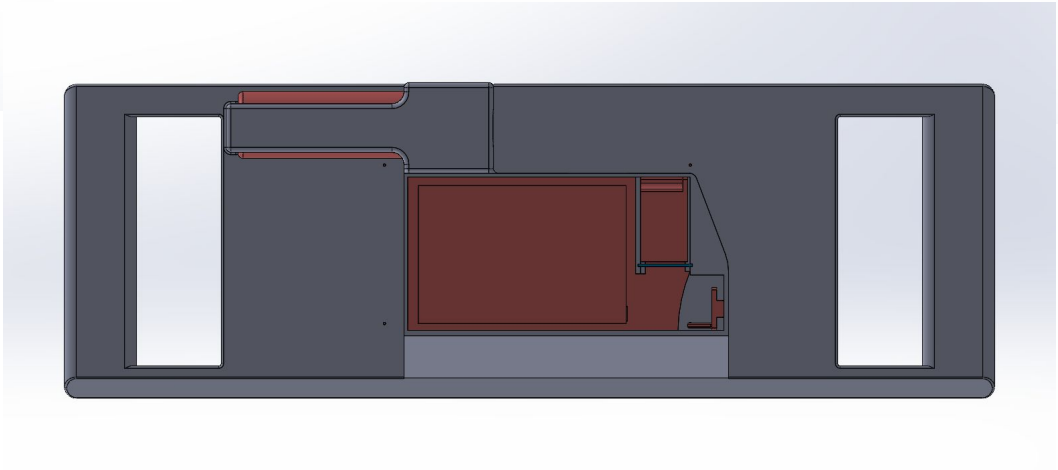
Link to view: https://autode.sk/3F5rhJW

Assembly Check









Thank you!