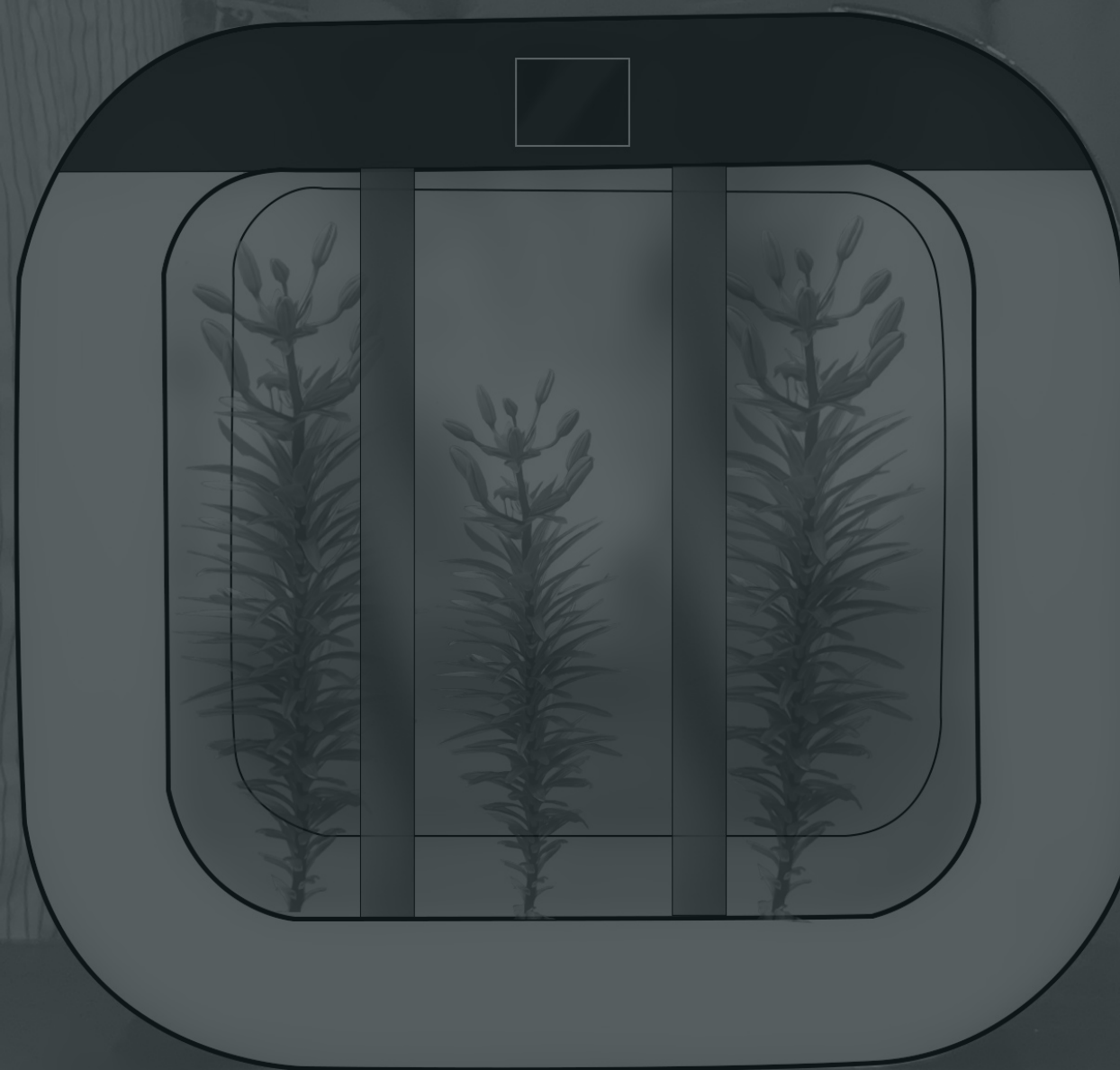


EscarGO

a snail nursery at home



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Mechanical Electronic Systems Engineering
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The Problem

3

Genetic Modification



Improve colour, taste, smell



Origin of food
Long term effects

Digital Revolution



Social media
Mobile phones

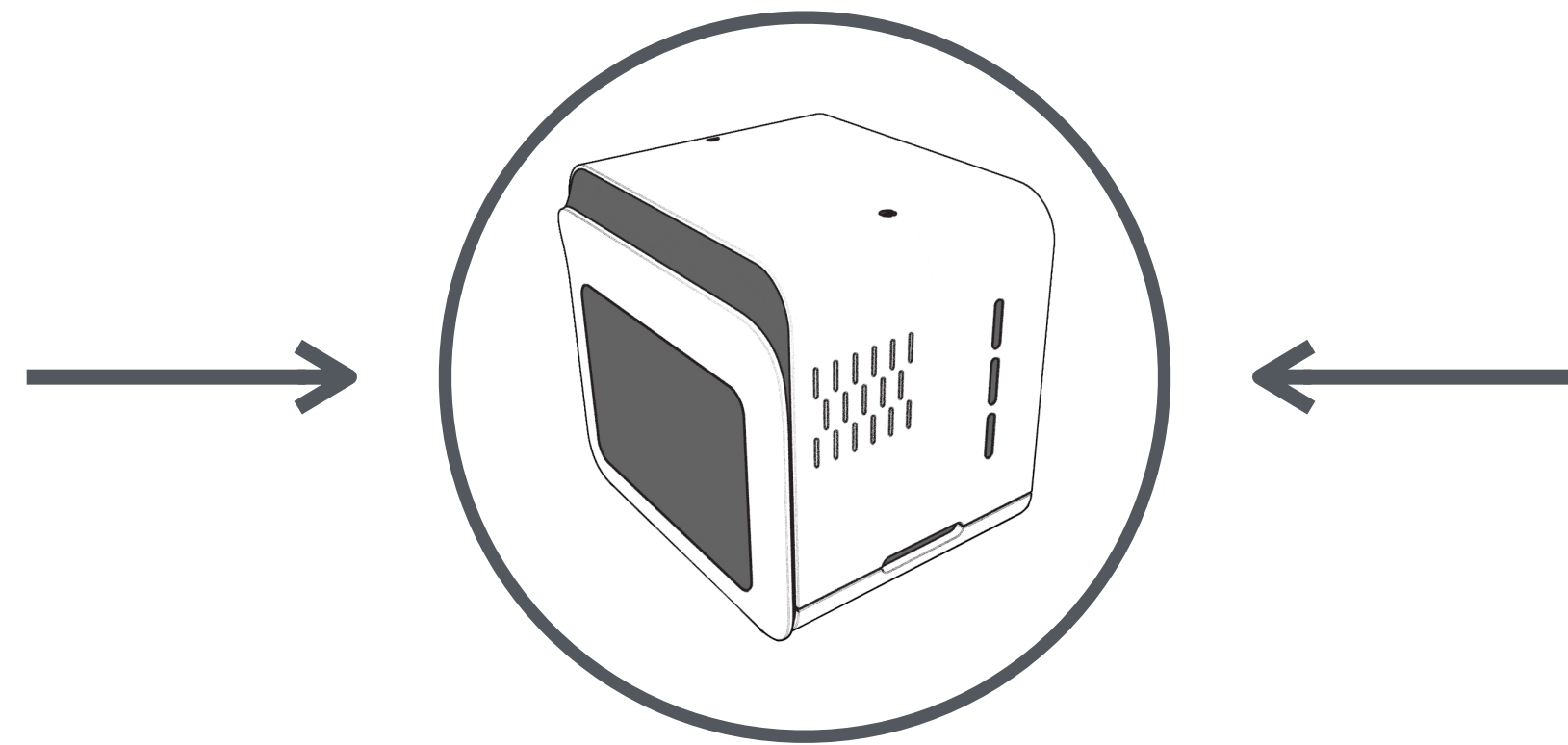


Social isolation



The Proposed Solution

The EscarGO



Unique & innovative product
Educational purpose
Consumption purposes



The Proposed Solution

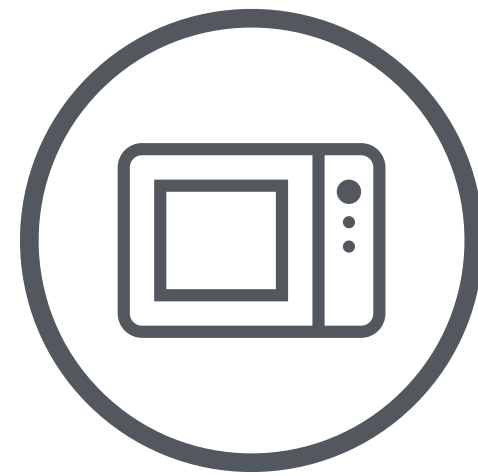


Given Requirements

6



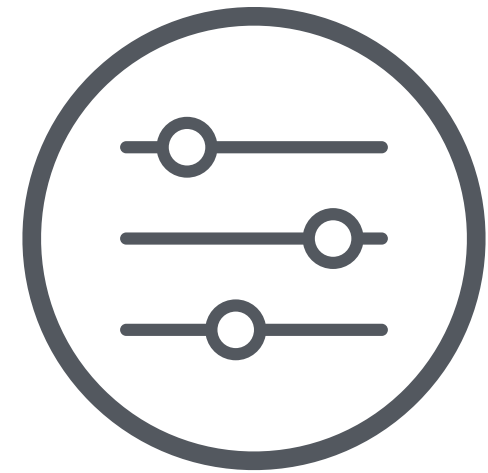
Pleasing Design



Low Cost
Hardware Solutions



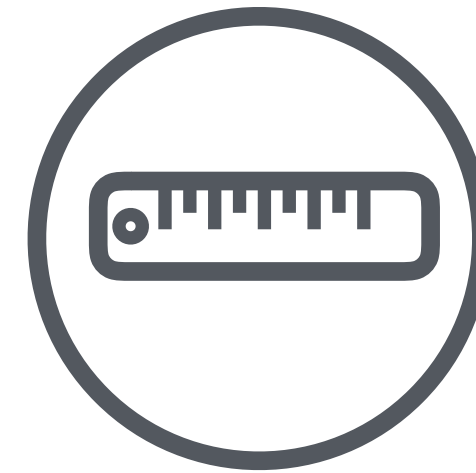
European Union
Directives



Controllable
Environmental
Conditions



Short Budget



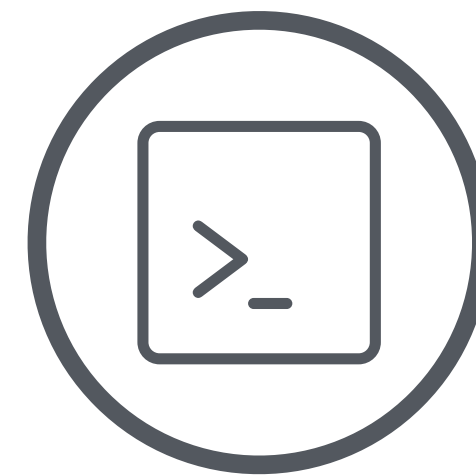
International System
Of Units



Sustainable
Material Use



Tight Schedule

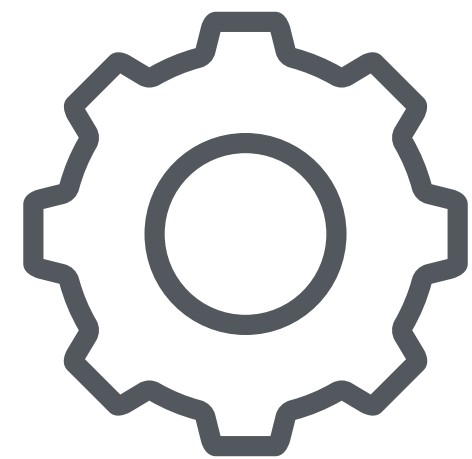


Open Source
Software And
Technologies



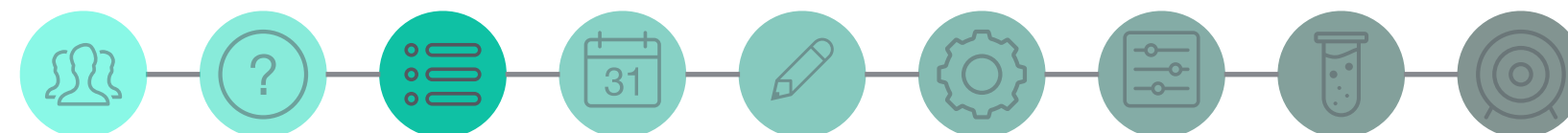
Discovered Requirements

7

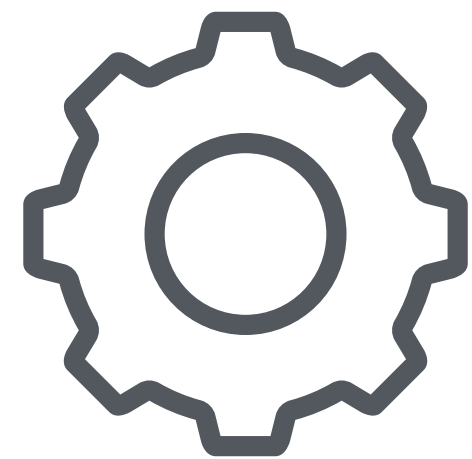


State Of The Art

*Description and comparison of
five existing products,
techniques and Cornu
aspersum*

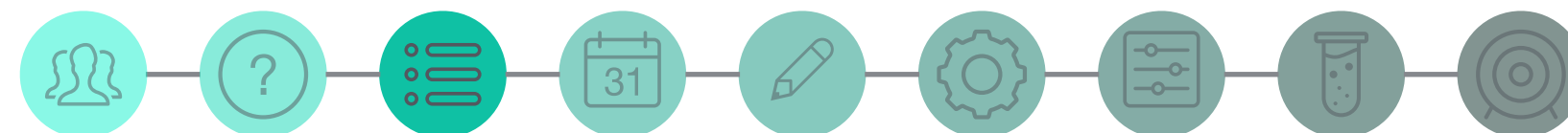


Discovered Requirements



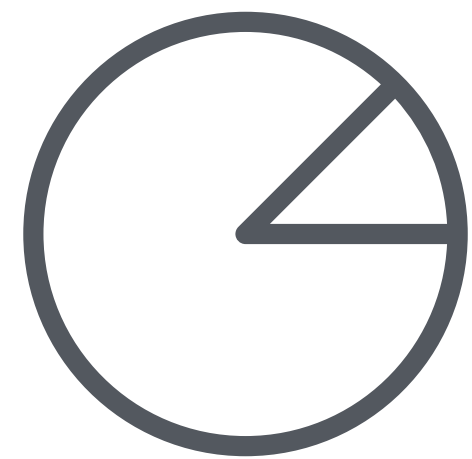
State Of The Art

- No direct competitor
- Curtain system
- Population density: 50 snails



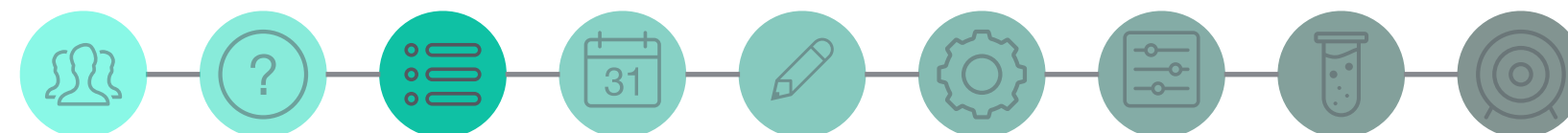
Discovered Requirements

9



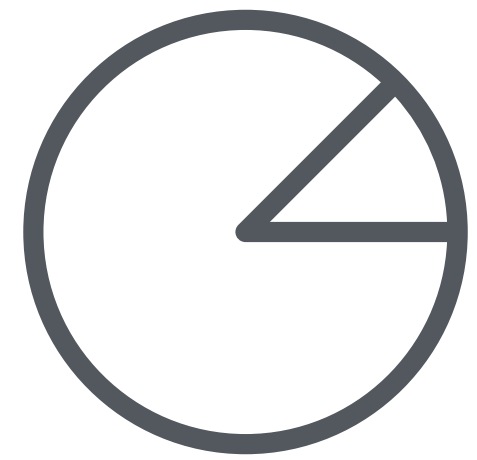
Marketing Plan

Set of actions undertaken to encourage people to buy a product or service



Discovered Requirements

10



Marketing Plan

- Product's size: 400 x 375 X 300 mm
- Number of snails



Discovered Requirements

11



Sustainability

Concept which includes the environmental, economic and social concepts



Discovered Requirements

12



Sustainability

- Curtains technique
- Material selection final product
- Material selection prototype



Discovered Requirements

13



Ethics And Deontology

Set of rules and duties that govern a profession



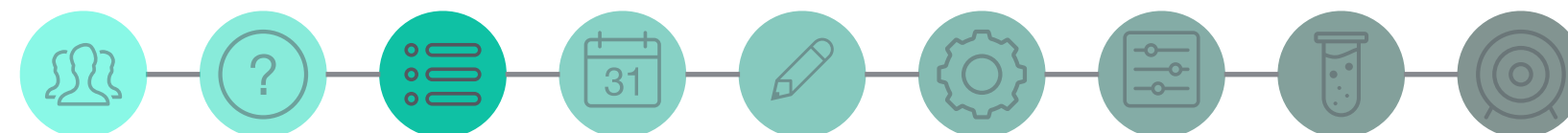
Discovered Requirements

14



Ethics And Deontology

- Real benefits
- Sustainable materials





15

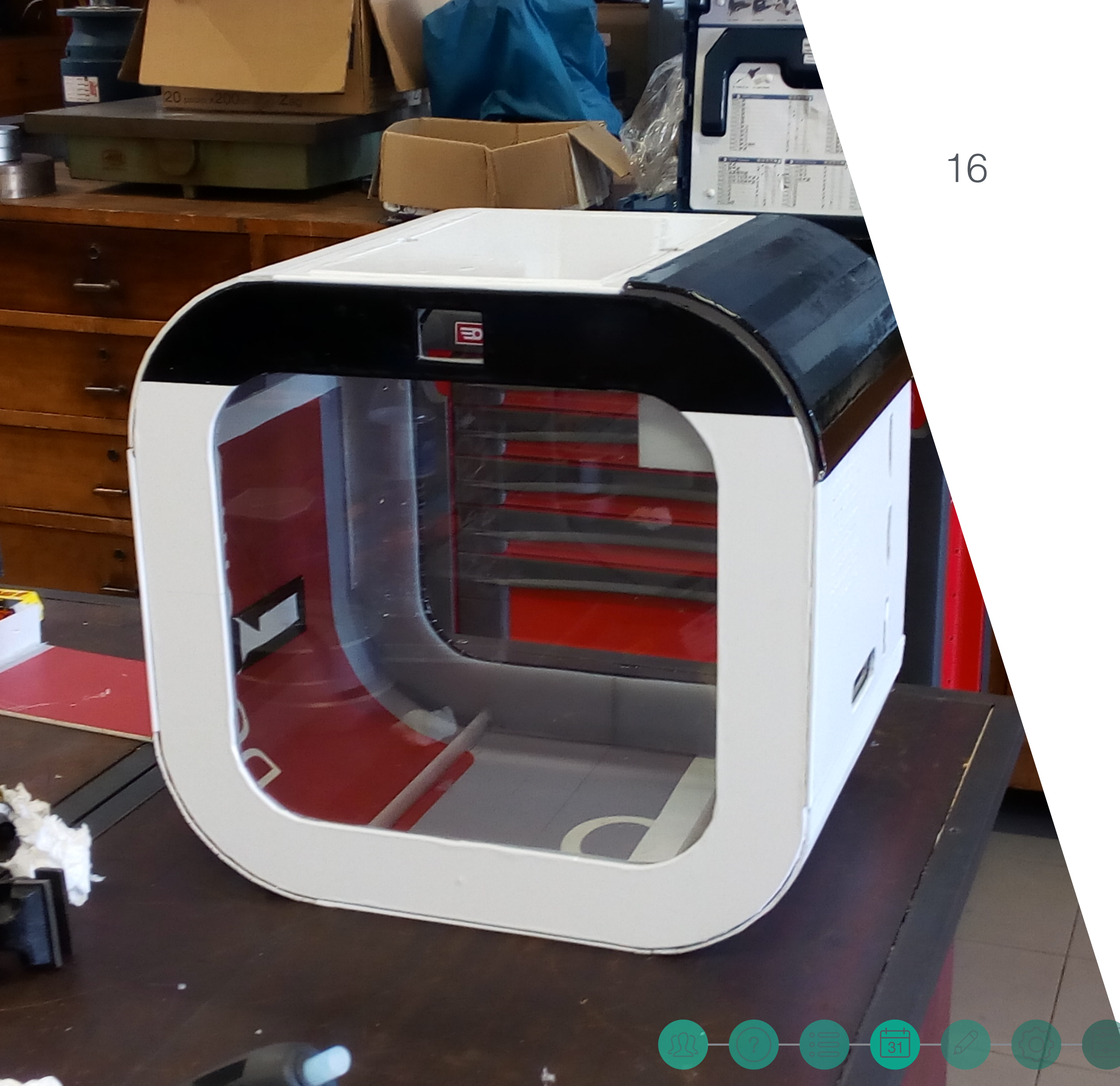
Task, People & Dates



John Maclean

Electronics (start)
Programming (start)
Soldering
General control of spelling & grammar





16

Task, People & Dates



Ramon Quero

Write Wiki: Marketing Plan
Website
Prototype
Video



Task, People & Dates



Lauri Borghuis

Write Wiki: State of Art
Project Management
Sustainability
Ethics
Project Development
Soil tests
Paper



Task, People & Dates



Juliette Portefaix

Write Wiki: State of Art
Project Management
Sustainability
Ethics

Electronic test
Electronics (continuation)
Programming (continuation)



Task, People & Dates



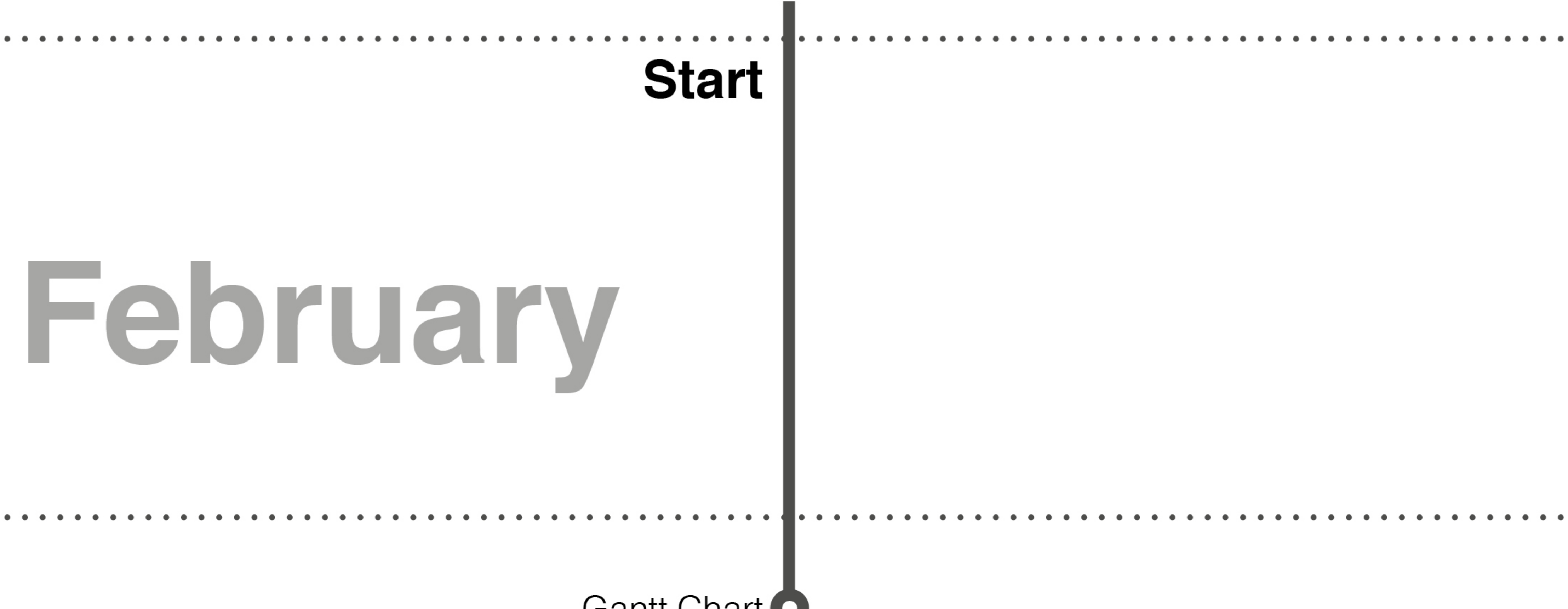
Benjamin Calon

Write Wiki: Marketing Plan
Presentations
Leaflet
Poster
Design
Prototype
User Manual

19



Task, People & Dates



April

Task, People & Dates

Interim Presentation

Complete List of Materials

Upload Refined Interim Report

List of Materials

May

Arduino code

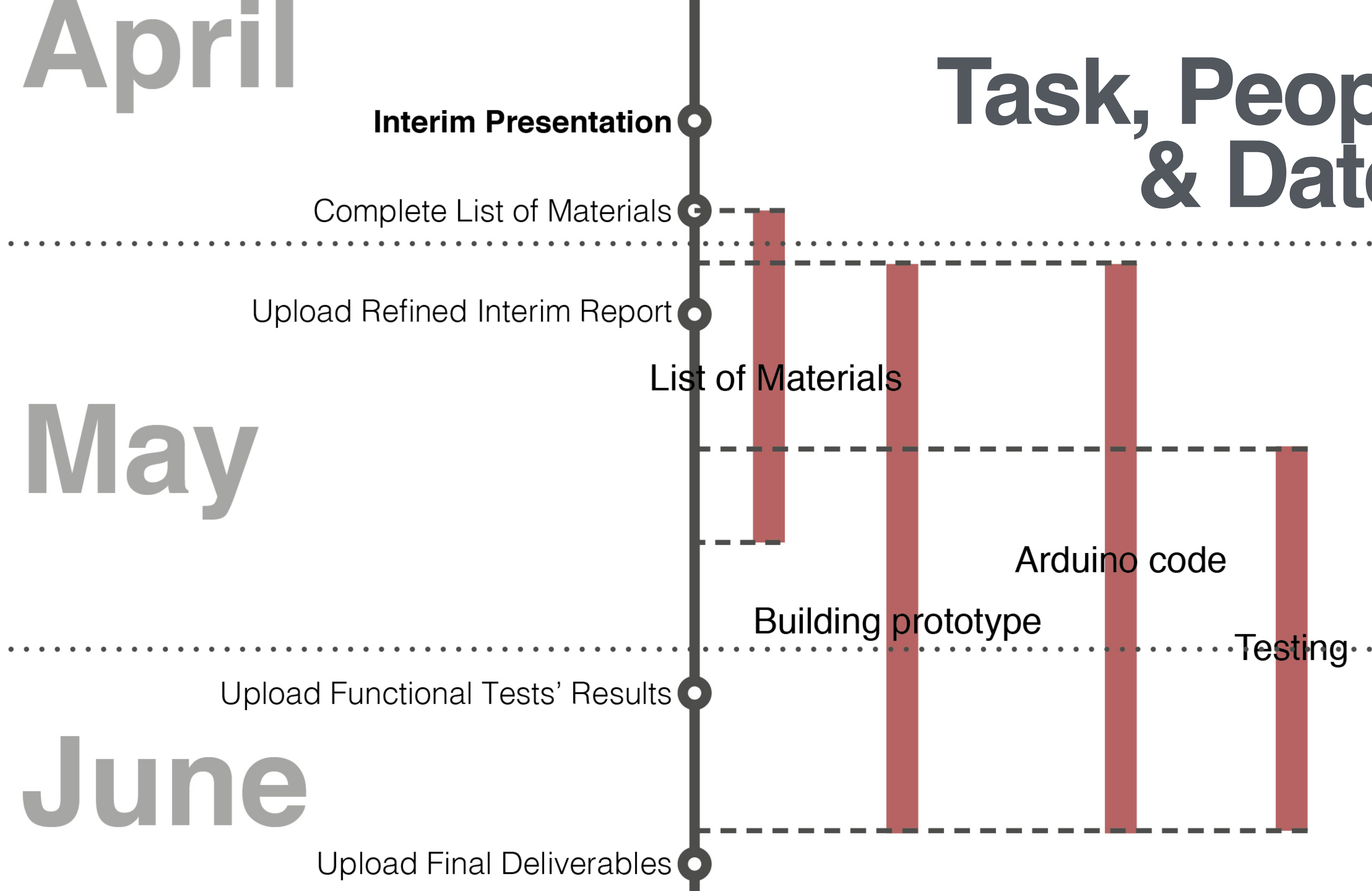
Building prototype

Testing

Upload Functional Tests' Results

June

Upload Final Deliverables



20

June

Upload Functional Tests' Results

Upload Final Deliverables

Final Presentation

Hand in a CD

Prototype and User Manual & certificate

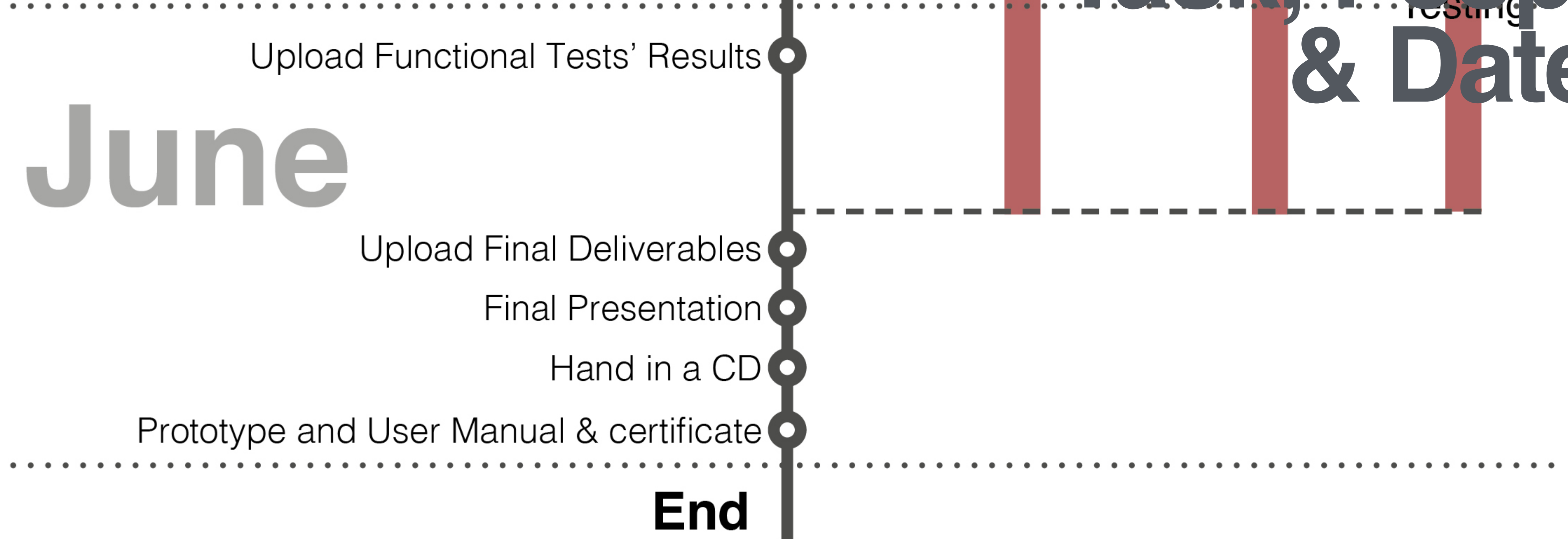
End

Building prototype

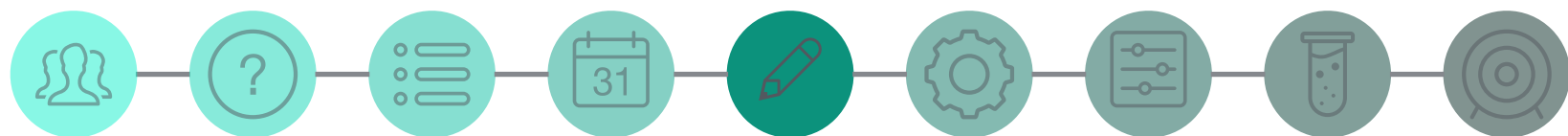
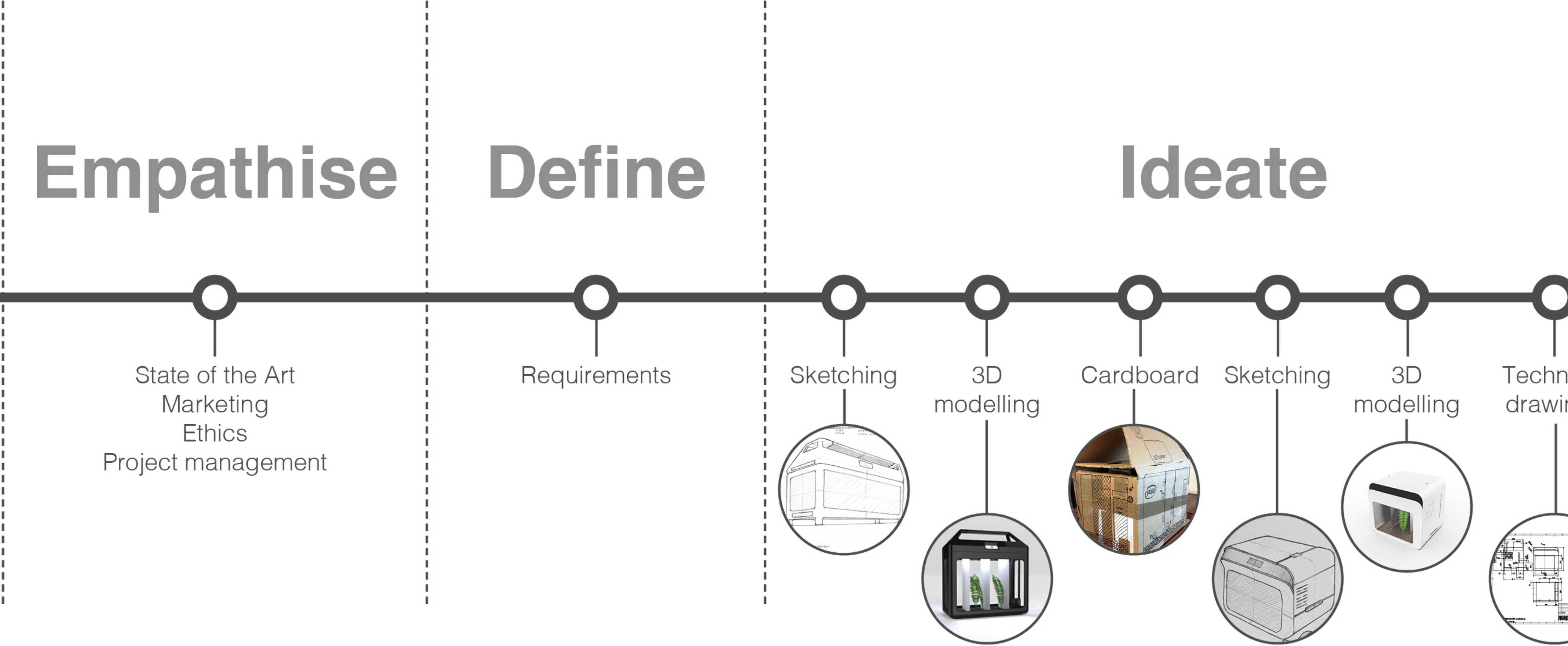
Arduino code

Testing

Task, People
& Dates



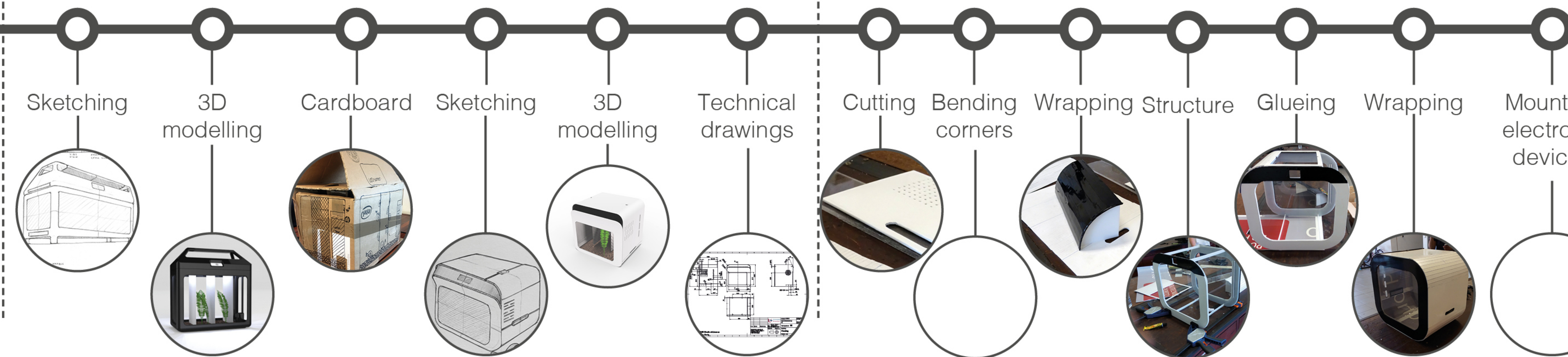
Design Structure



Design Structure

Ideate

Prototype



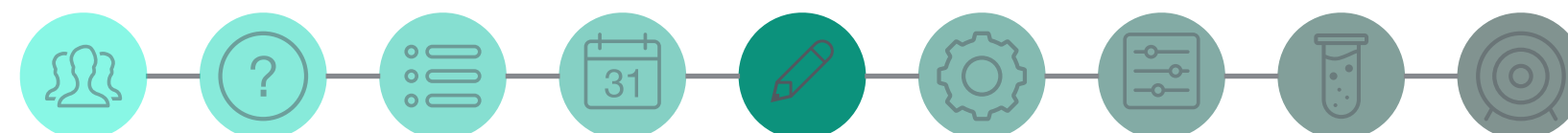
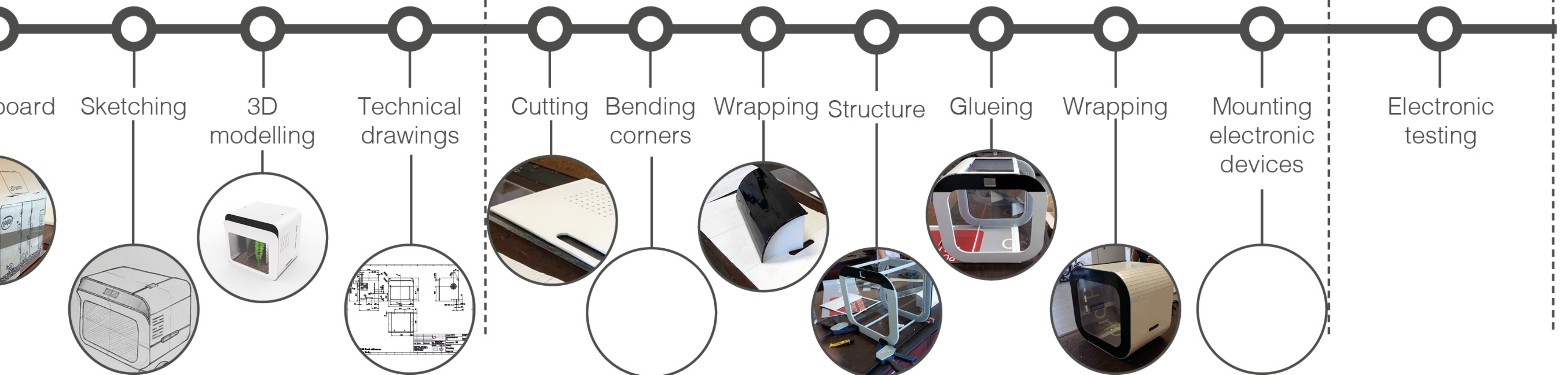
Design Structure

21

Design

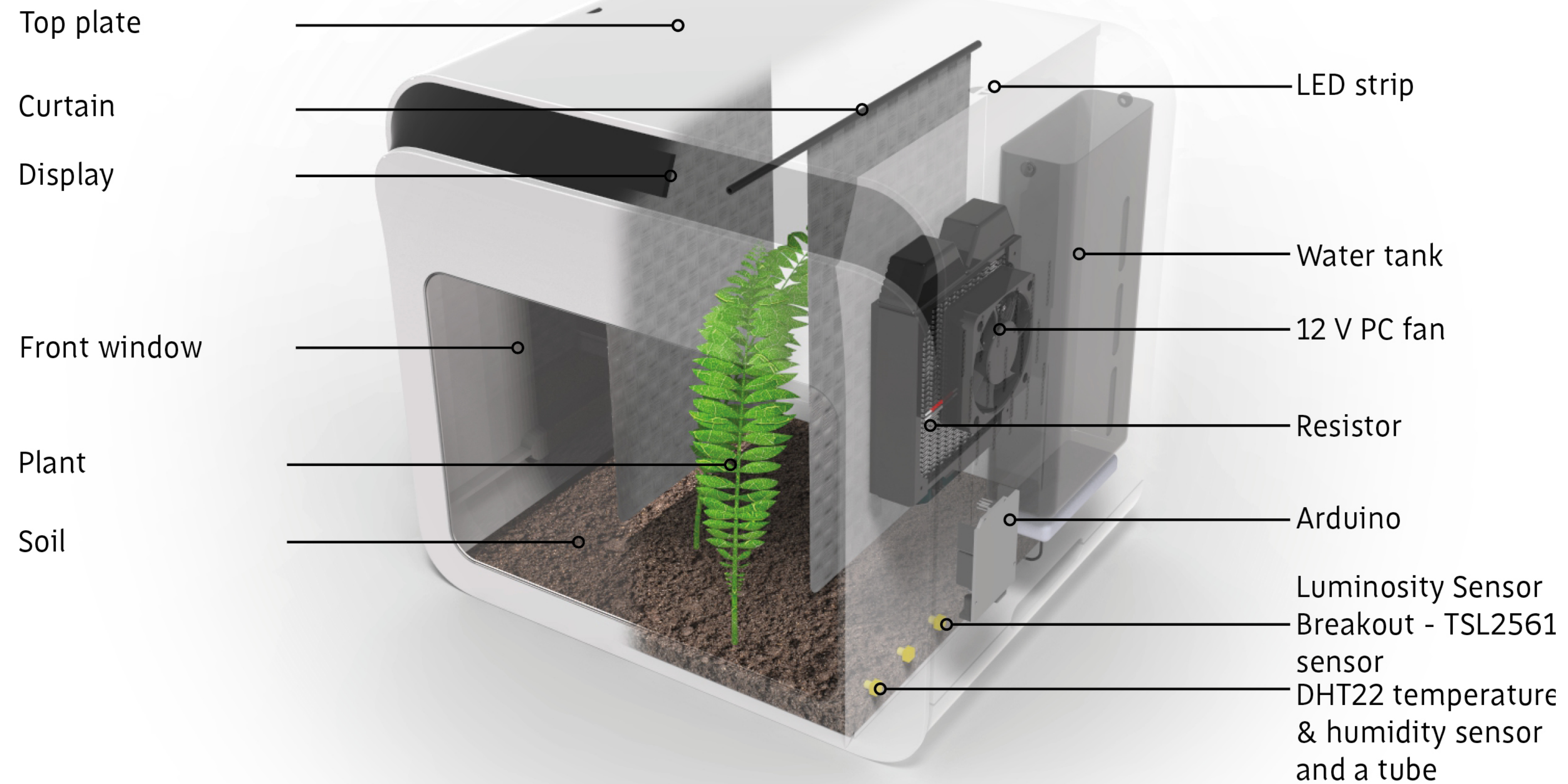
Prototype

Test

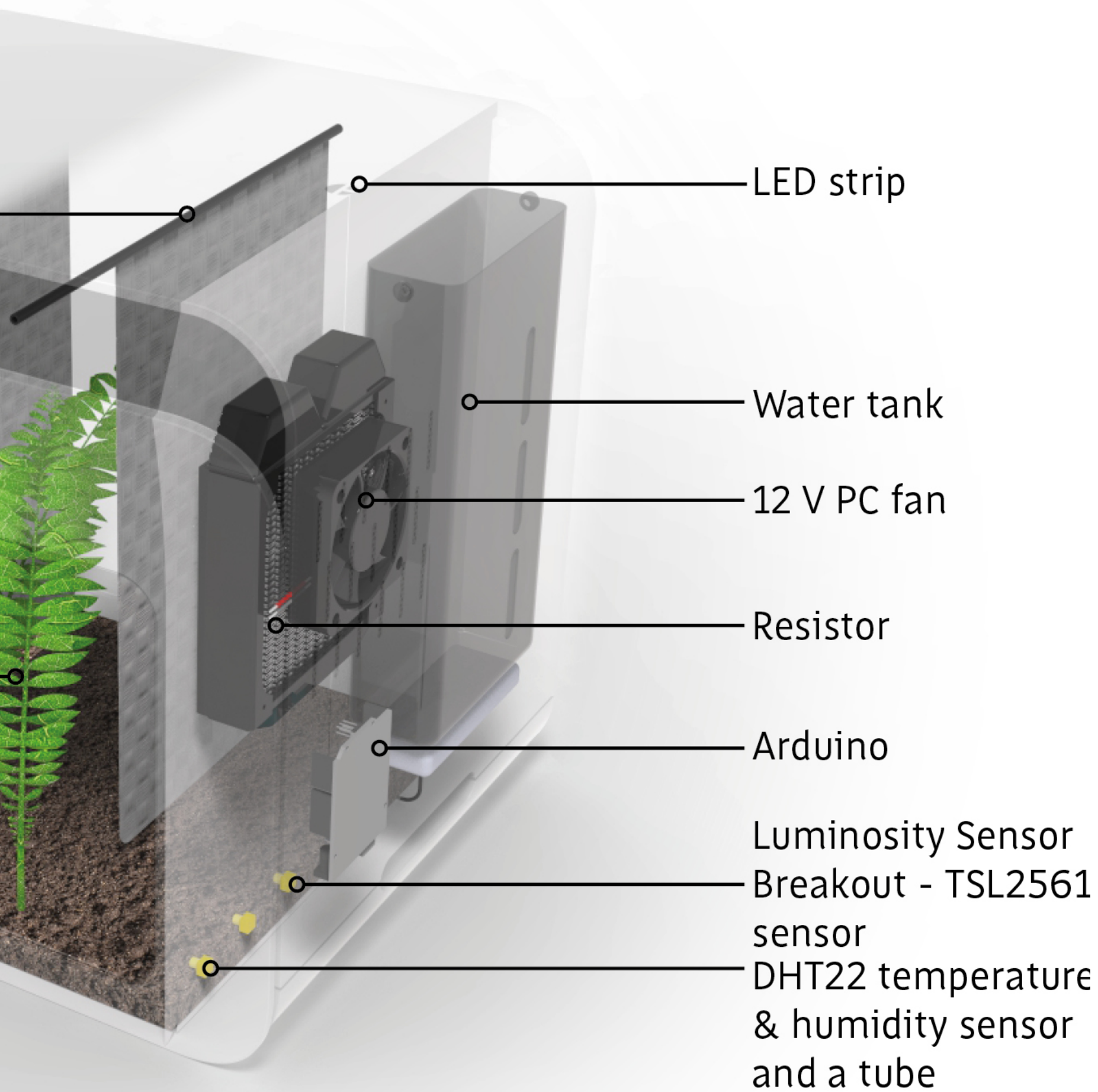


Control System

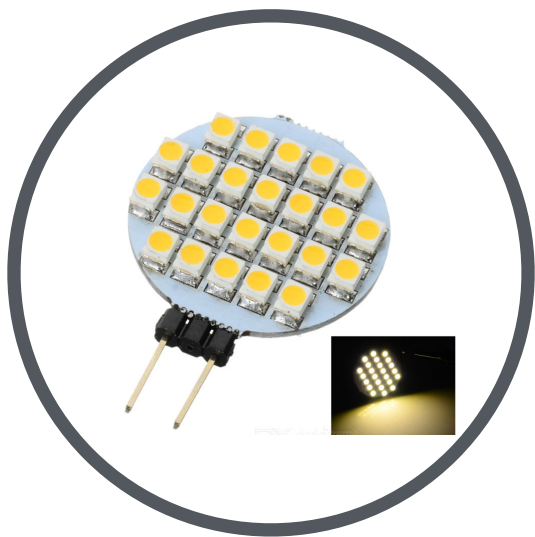
22



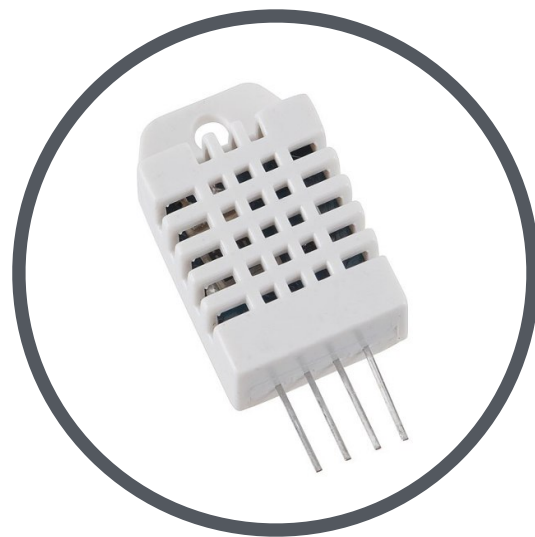
Control System



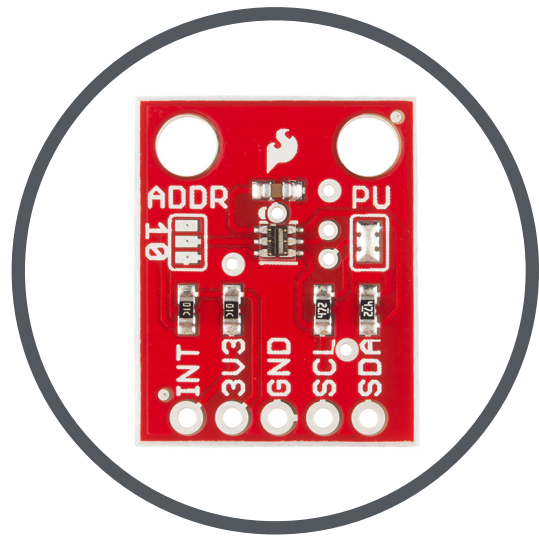
Fan



LED

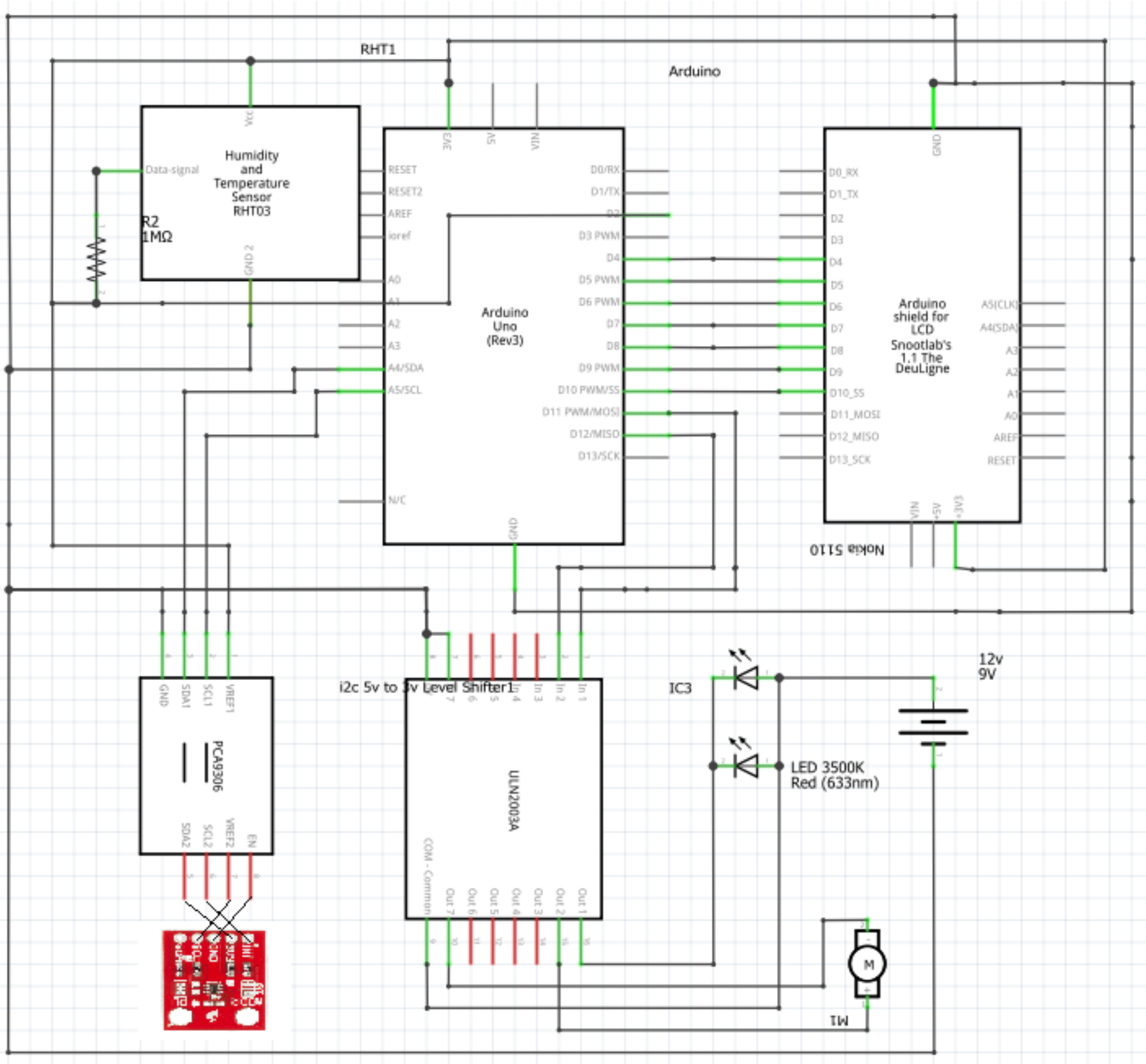


DHT22
to measure the
humidity and temperature
level



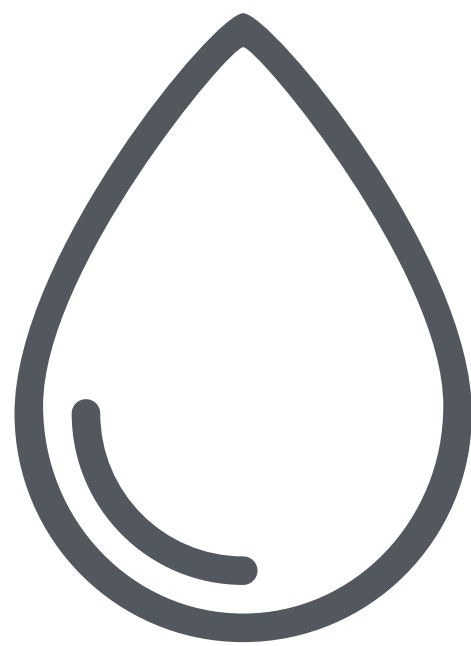
TSL2561
to measure the light level

Control System



Functionalities

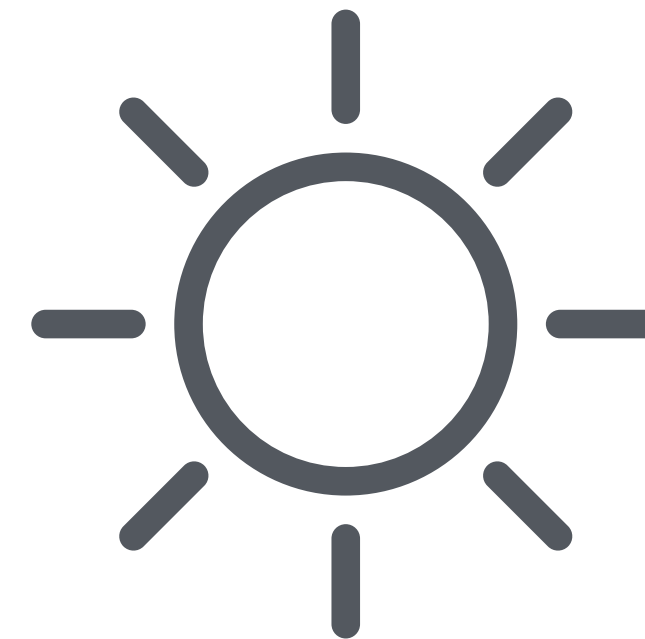
- Good living conditions for optimal growth
- By:
 - Controlling humidity
 - Controlling temperature
 - Controlling light



Optimal relative humidity:
between 75 and 90 %



Temperature of
between 15 and 25 °C

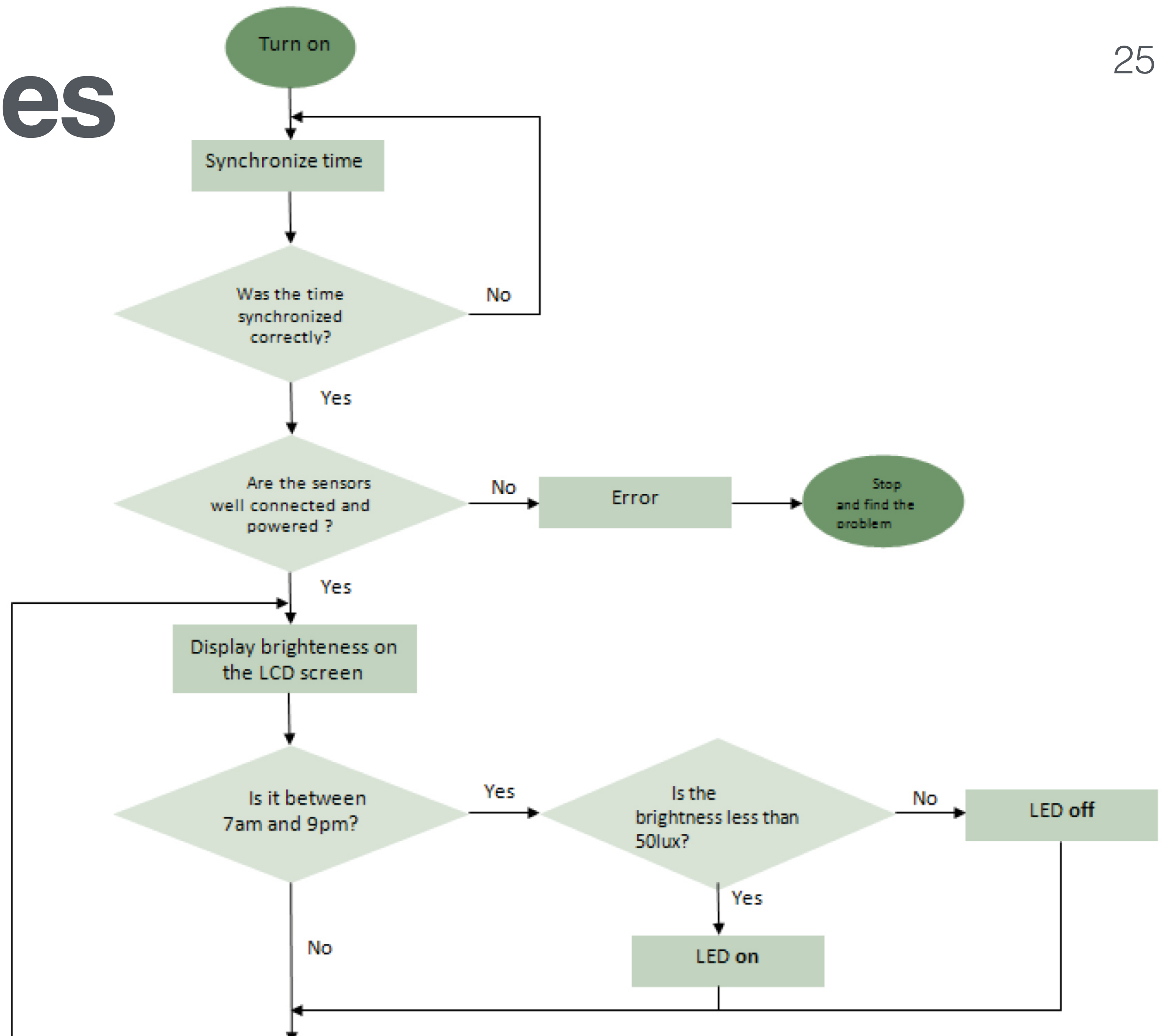


16 hours of light per day

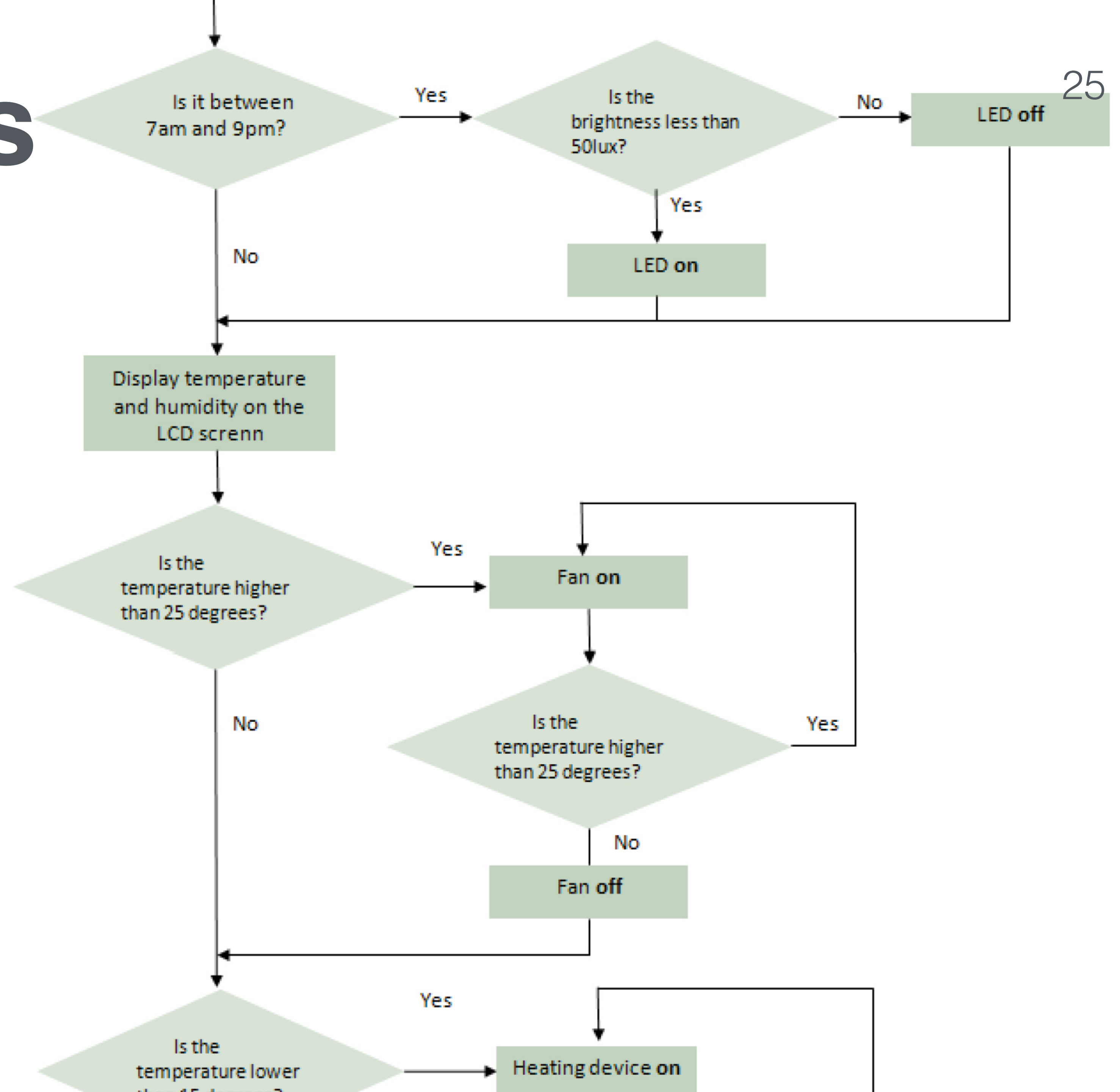


Functionalities

25

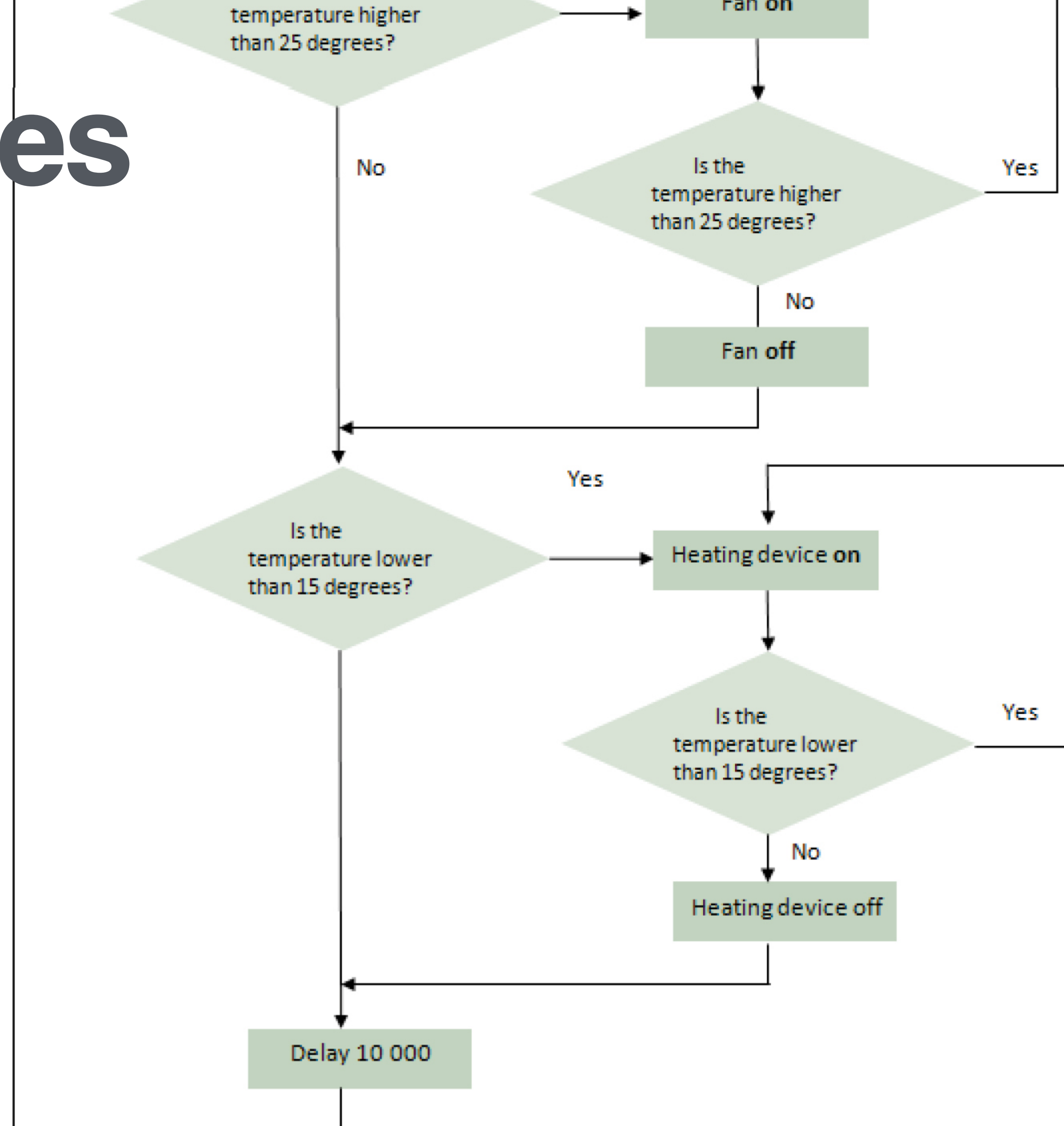


Functionalities



Functionalities

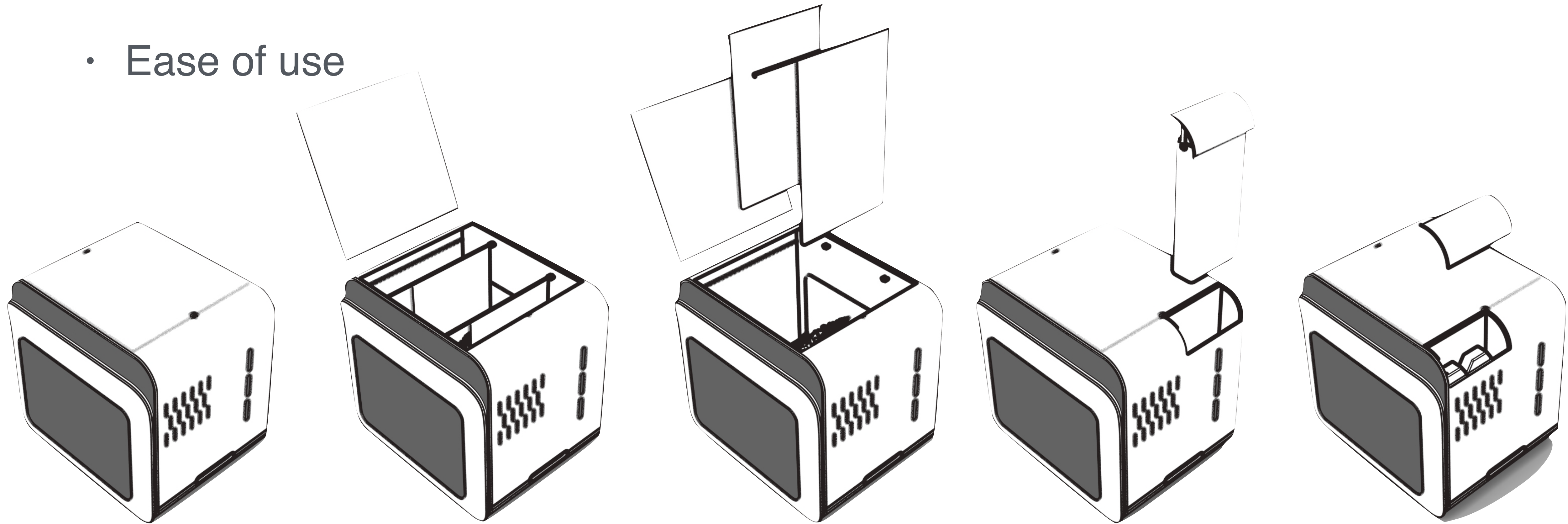
25



Functionalities

26

- Ease of use



Ready for use

Feeding

Cleaning

Adding water

Electronics



Test & Results: Electronics

- Purpose: if the system works and improvement
- First: test each component separately
- Then: assembly test
- Test LED system

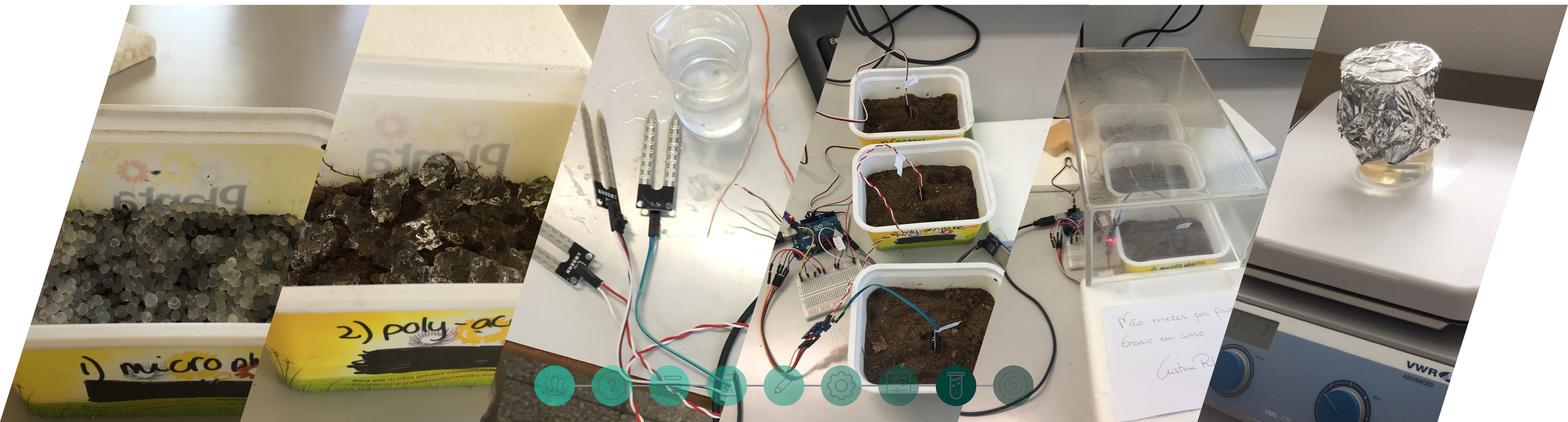
```
if (hour() >= 7 && hour() <= 23 && event.light < 50)
{
    digitalWrite(11, HIGH); // LED on
}
else {
    digitalWrite(11, LOW);  // LED off
}
```



Test & Results: Soil

28

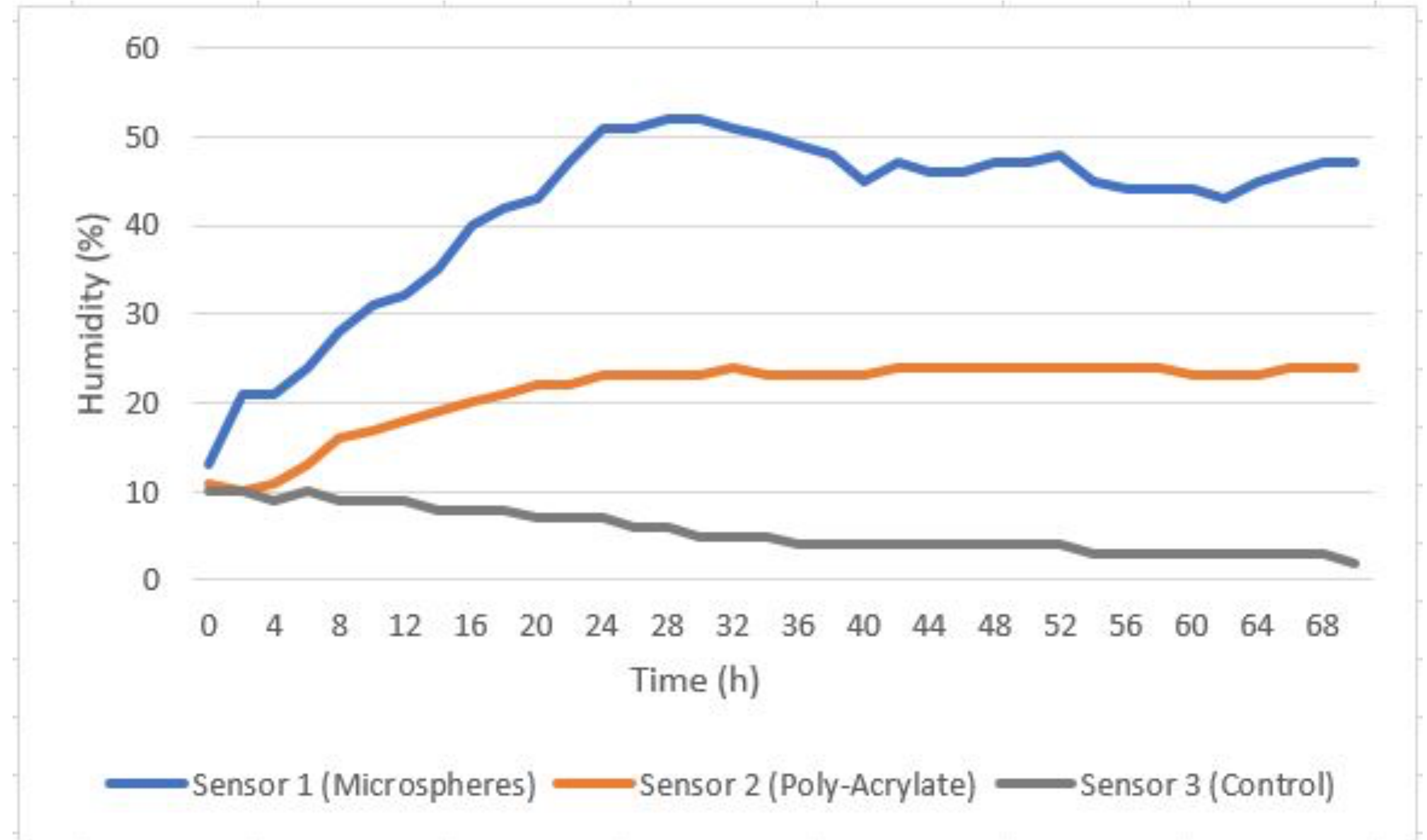
- Increase soil humidity
- Calcium alginate microspheres
- Sodium poly-acrylate
- Test at same time



Test & Results: Soil

29

- Microspheres: the highest humidity
- Poly-acrylate: lower humidity
- Not 80% relative humidity



Conclusion



Future improvements:

- Working water tank + microspheres
- Control for time function
- Test with snails

To sum up:

- Brining families together
- Educating children
- EscarGO is the result of multidisciplinary research



“The journey, Not the destination matters...”

T.S. Eliot

