ELECTROCAP

Mid - Program Pitch Deck

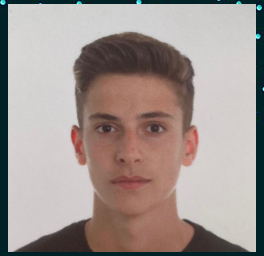
Smart Home Stock (SHS)

TÉCNICO LISBOA

Team members

Ricardo Fiúza (Leader)
Hardware Engineer

Rafaela Pereira (Co-leader)
Communication App-Prototype



Renato Simões
Prototype Designer

Vera Amaral
Website Designer and Manager

Henrique Simões
Software Engineer

Leonor Mira
Image/Video Designer

Advisors and Mentors

António Grilo
Scientific advisor

Teresa Vazão
Coordinator

Ricardo Santos
Mentor

PROBLEM DEFINITION

Problem definition

- Not knowing efficiently and effectively, what kind of items (and their respective quantity) people have inside their homes.
- Unnecessary purchases.
- Items running out unexpectedly.
- Unnecessary food waste.

Solution beneficiaries

Solution beneficiaries

Household member and Grocery Shopper

- Improved organization and awareness of available food supplies.
- Streamlined shopping experience with a more accurate and personalized shopping list.

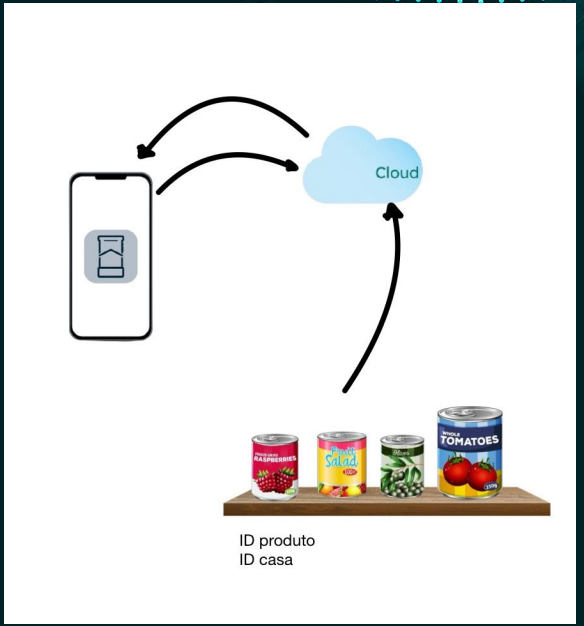
Environment

- Reduction in food waste contributes to environmental sustainability.

Technological solution

Technological solution

- Hardware: determines which products and respective quantities are in stock.
- Cloud Server (Database): Receives and stores every product information.
- Mobile App: user's interface.
  - Displays stock items and their quantities.
  - Warns of low quantity of a certain item.
  - Automatic Shopping List.
  - Average used food per meal.



Solution requirements

Solution requirements

- Must be able to accurately monitor the quantity of each stored food item.
- Use of weight sensors and camera to determine the amount of food consumed in each meal.
- Should integrate with a mobile app.
- The client needs to provide the measurements of their pantry shelves so that the scale can be custom-made

Competitors & previous work

Competitors and previous work

LG

SAMSUNG

PantryOn
Now You Have Everything

TECHNICAL CHALLENGES

Technical Challenges

- Sensors accurately measuring and the estimation of quantity of food items used in each meal.
- Safeguarding user data stored specially sensitive information.
- Allowing identification of food.
- Ensuring stable and reliable communication between hardware and the mobile app.
- Creating an intuitive and user-friendly app interface to encourage consistent usage.
- Algorithms that estimate the quantity of food used per meal.

PARTNERS

PARTNERS

As of today, the Smart Home Stock (SHS) team, doesn't have any partnership

TESTING AND VALIDATION METRIC

Testing and Validation Metrics

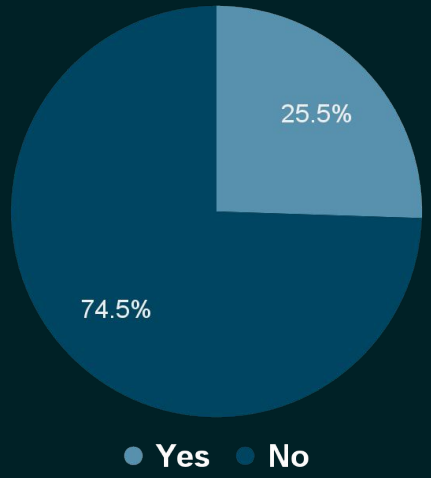
To test and validate our idea, we decided to create a **form.**

With the more than **400 responses**, we realized the problem we are trying to solve indeed exists, and furthermore, we obtained some ideas that we could implement into our system.

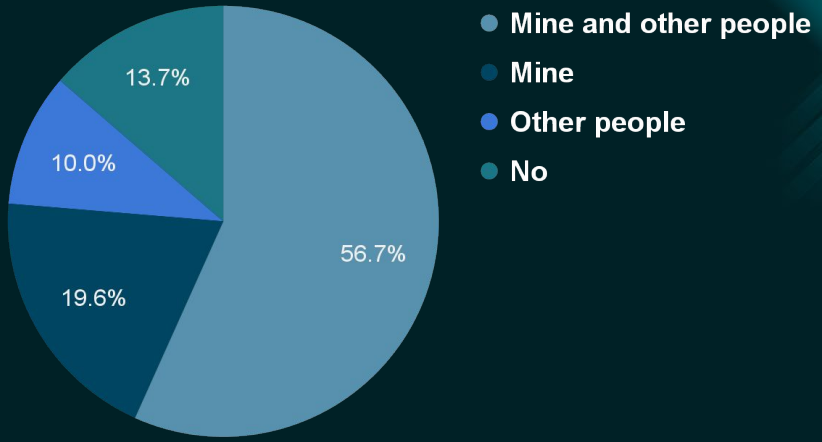
Testing and Validation Metrics

Data Analytics | N° of answers: 439

Responsibility for someone older or dependentendent



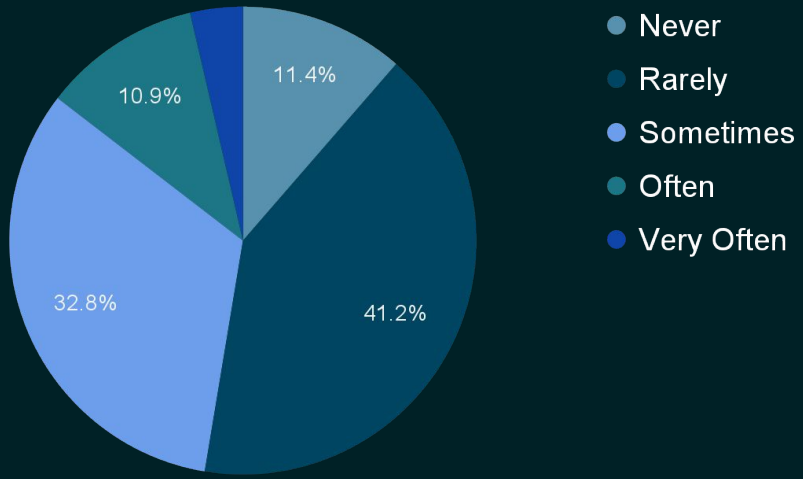
Usefulness of using an automated system at home



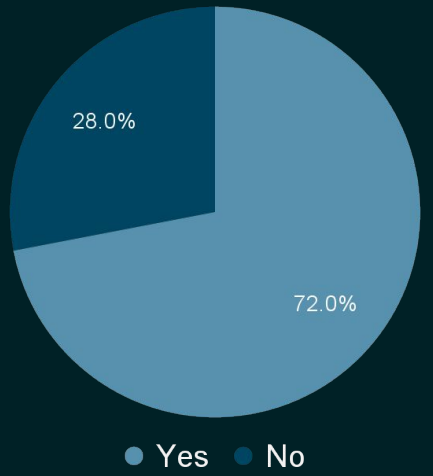
Testing and Validation Metrics

Data Analytics | N° of answers: 439

How often did you forget what you need?



Make a shopping List



Division of Labor

Prototype team

Ricardo Fiúza	Rafaela Pereira	Renato Simões
Search for Partners (Responsible)	Wireless communication between ESP32 CAM and Firebase (Responsible)	Object Identification with ESP32 CAM (Responsible)
Hardware Development and Management (Responsible)	Object Identification with ESP32 CAM	Wireless communication between ESP32 CAM and Firebase
Prototype Modelling	Prototype Modelling	Prototype Modelling (Responsible)

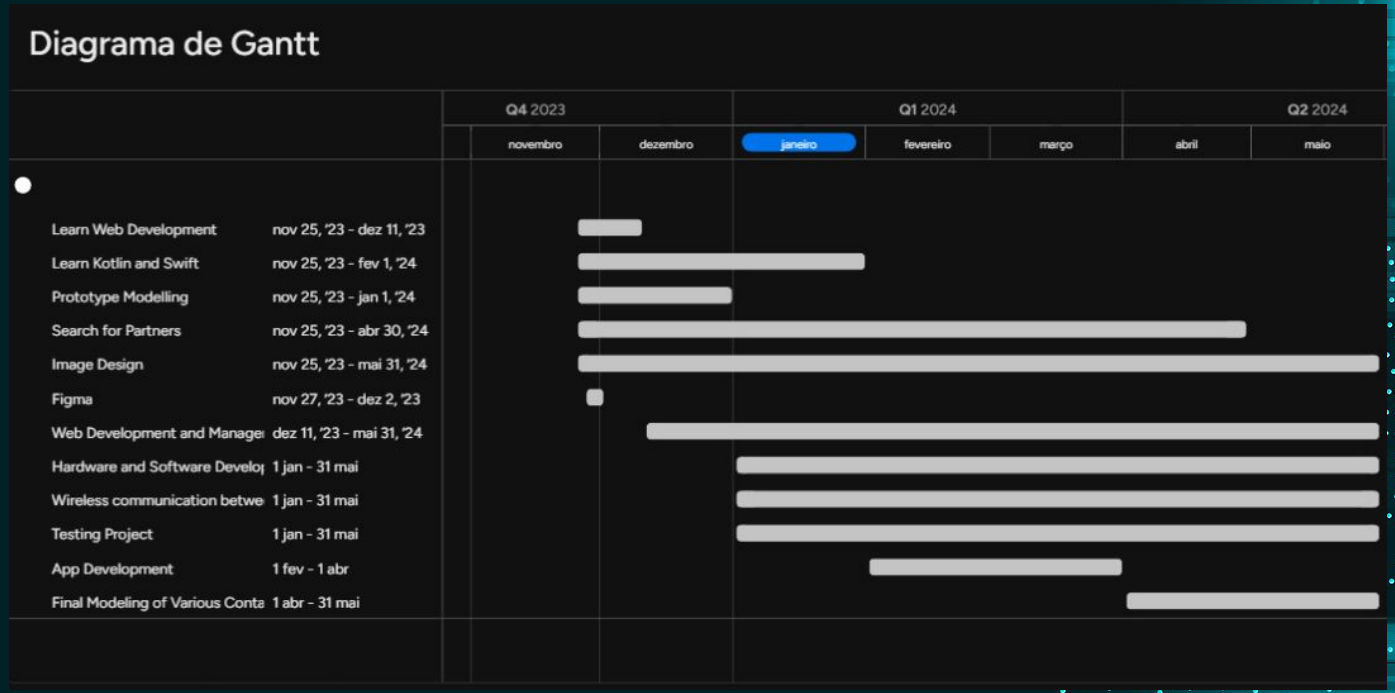
Division of Labor

Software and design team

Vera Amaral	Henrique Simões	Leonor Mira
Update Management (Responsible)	App Development and Management (Responsible)	Image Design (Responsible)
App Design	App communication with Firebase (Responsible)	App Design
App Development	Update Management	App Development

ORIGINAL SCHEDULE

Original Schedule



MID-PROGRAM STATUS

Mid-program statuts

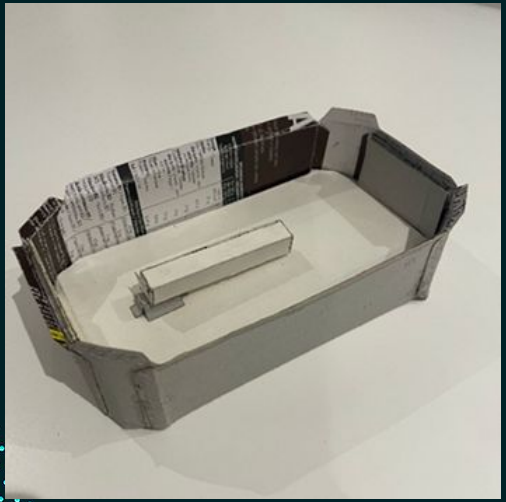
- Replace the initial technology idea.
- Instead of using a container/scale system for each product, we'll use a set of larger scales, each occupying a shelf in the pantry, where various products would be placed on top of them.
- Replace the previously planned load cell with a half bridge load cell.
- Use an ESP32 with a camera to enable food recognition without the need for scanning.

ACHIEVED RESULTS

Achieved results

First Idea

- Prototypes:



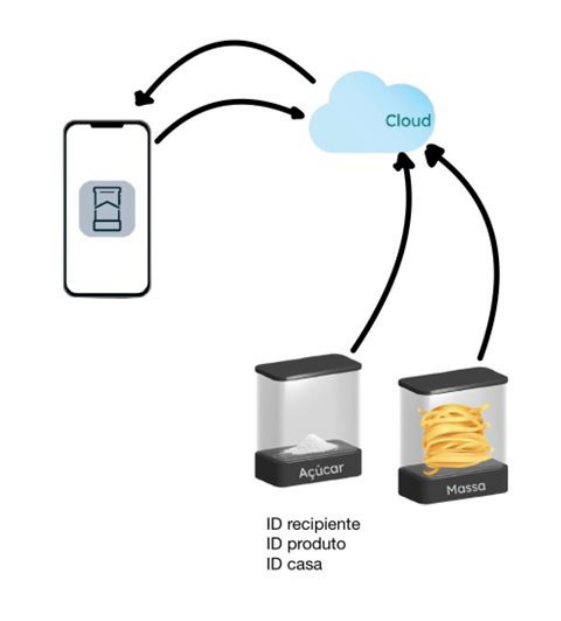
Interior of the base

Base with lid

Achieved results

First Idea

- Communication:

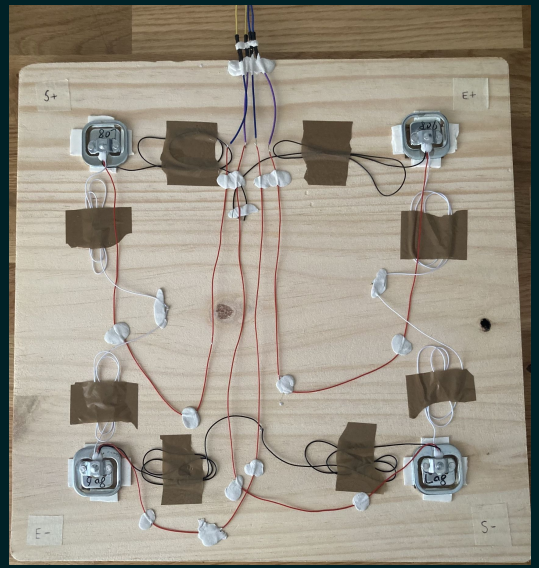


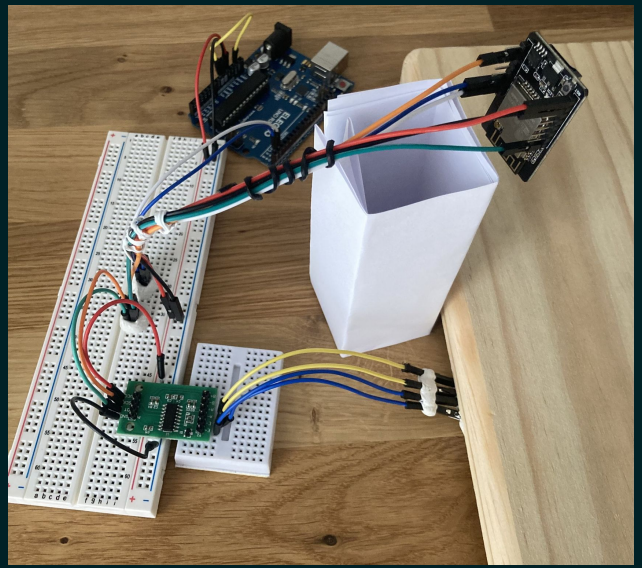
- Material used for the product:
  - ESP32 Wroom NodeMcu Wifi CP2102
  - HX711
  - Load Cell (10kg)

Achieved results

Second Idea

- Prototypes:

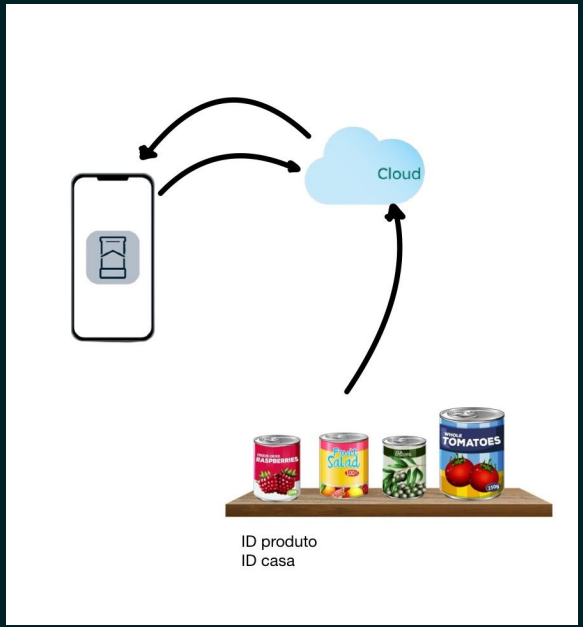




Achieved results

Second Idea

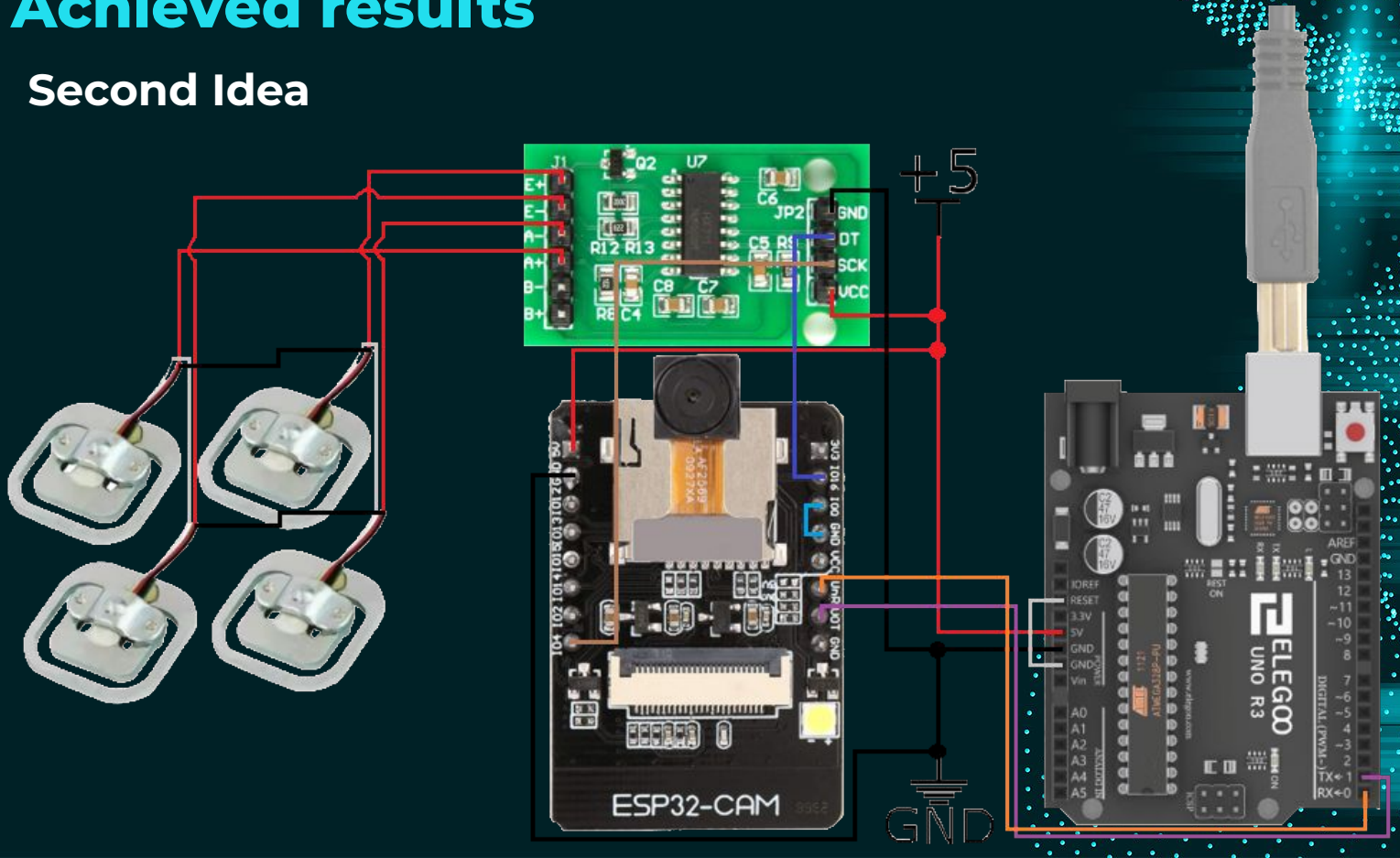
- Communication:



- Material used for the product:
  - ➢ OV2640 - ESP32-CAM
  - ➢ HX711
  - ➢ Half Bridge Load Cell (50kg)
  - ➢ Wooden Board
  - ➢ Arduino UNO R3

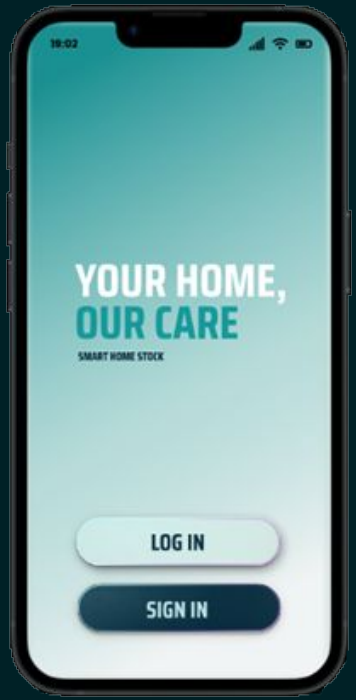
Achieved results

Second Idea



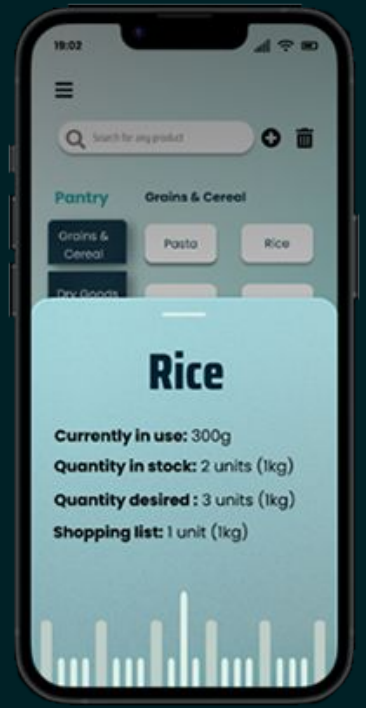
Achieved results

- Figma application design:



Achieved results

- Figma application design:



CHALLENGES FACED BY THE TEAM

Challenges faced by the team

- Price versus convenience in the first idea:
  - On one hand, there was fear in a product that might be too expensive for consumers.
  - On the other hand, finding a solution that allowed the use of a single scale for multiple containers reduced the automation and independence of the product.
- Learning HTML and other programs.
- Difficulty in calibrating the load cells.

DEVIATIONS FROM ORIGINAL SCHEDULE

Deviations from original schedule

The main causes for our deviation from original schedule:

1. **Unclear** project scope and objectives;
2. **Underestimation** of task complexity;
3. **Technical** roadblocks and **unforeseen** issues;
4. **Limited access** to equipment, software or expertise;
5. **Personal** commitments and workload;

CONTRIBUTION OF EACH MEMBER

Contribution of each member

Prototype team

Ricardo Fiúza	Rafaela Pereira	Renato Simões
Prototype Modelling	Prototype Modelling	Prototype Modelling
Block diagram of hardware	Block diagram of hardware	Block diagram of hardware
Projection of the hardware part of the system	Projection of the hardware part of the system	Projection of the hardware part of the system

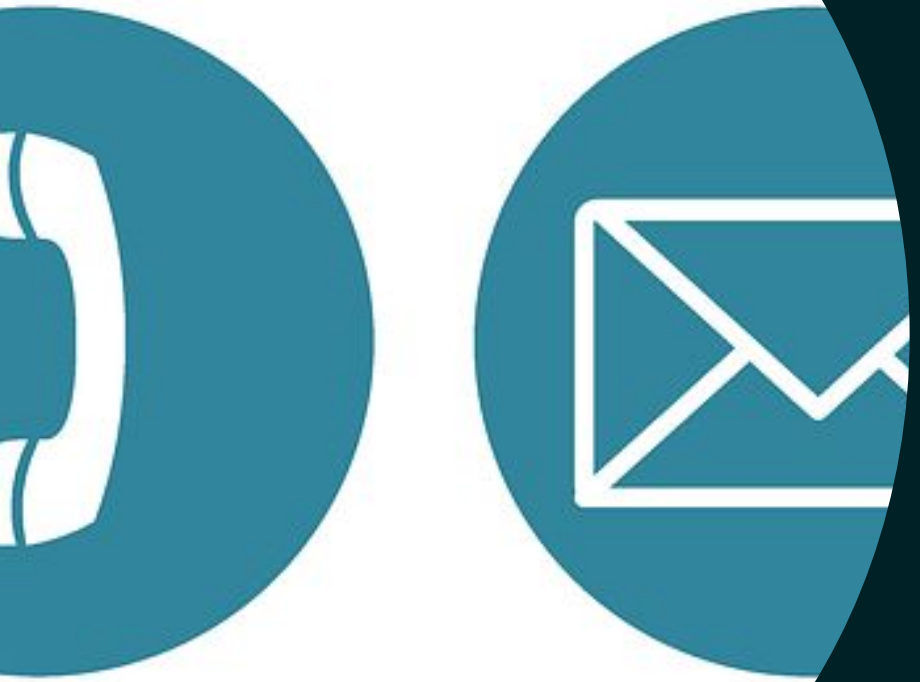
Contribution of each member

Software and design team

Vera Amaral	Henrique Simões	Leonor Mira
Web Development and Management	Web Development and Management	Web Development and Management
Figma application design	Figma application design	Figma application design
Figma website design	Figma website design	Figma website design

CORRECTED SCHEDULE

Corrected Schedule



Contact Information

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