SmartHomes

deti

IES GROUP PROJECT

P2 - LEI

68264: Bruno Lopes
108712: Diogo Falcão
108011: Fábio Matias
107927: Rúben Garrido

Introduction

- The SmartHomes application is designed to address the problem of efficient and sustainable home resources management.
- Therefore, it provides a solution for homeowners to monitor and control their electricity and water.
- This solution is made for it to work in all and any devices plugged into the house (unlike HomeKit), as it is not dependent on the devices but on the physical interfaces they are plugged into.

Team Roles

Team Manager

Bruno Lopes

Architect

Diogo Falcão

Product Owner

Fábio Matias

DevOps Master

Rúben Garrido

Personas

Sara Mathews

·**Age**: 39 years old
·**Job**: Doctor

·Sara seeks innovative ways to reduce her carbon footprint and strive for a greener, more sustainable future for all

Peter Williams

·**Age**: 28 years old
·**Job**: Software Engineer

·Peter wants to manage his home, tracking energy and water consumption.

John Lennon

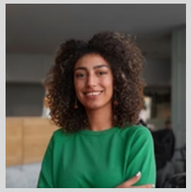
·**Age**: 56 years old
·**Job**: Lawer

··He has various homes and the goal is to have an app to control all of them at once.

Anna Franklyn

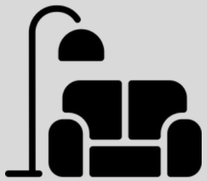
·**Age**: 34 years old
·**Job**: Restaurant Owner

·Anna wants to keep track of her devices costs and reduce them.



Epics

Homes



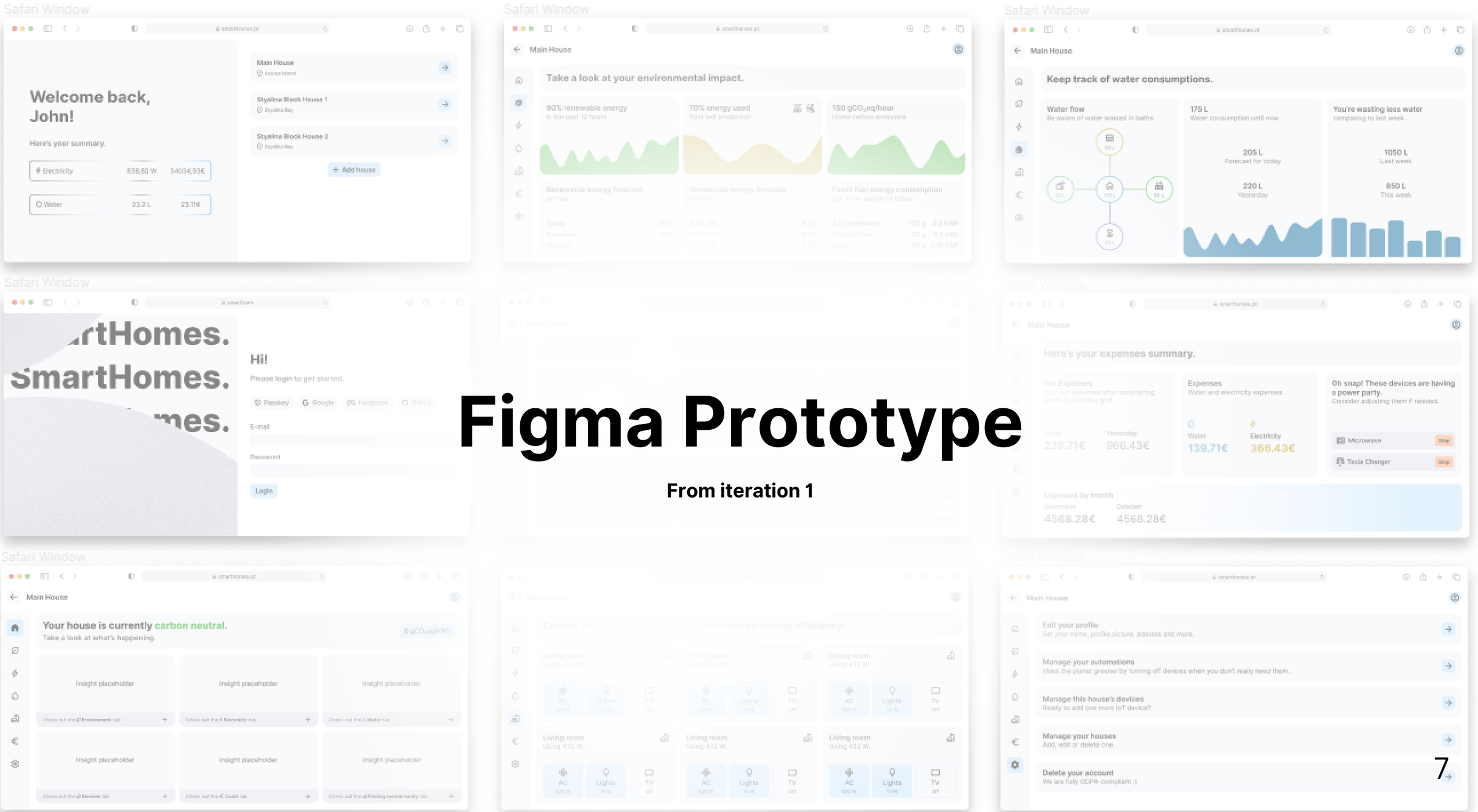
Houses Divisions

Smart Devices

Energy and Water Management

User stories

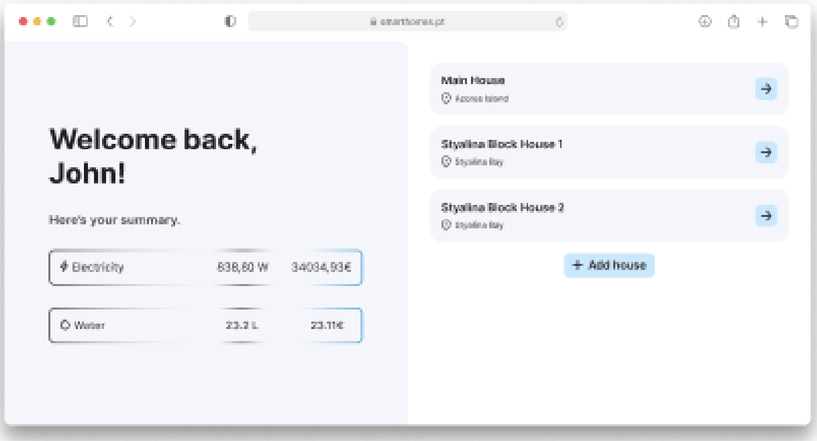
- As Anna, I want to register several houses and their electrical system in one app.
- As John, I need to control every bit of water used in a drought in its region.
- As Peter, I would like to oversee electronic devices connected to the house grid.
- As Ana, I would much like to get notified about the percentage of the grid energy that can supply the house.
- As John, I want to turn off electronic devices with just a few taps through the app.
- As Petter, I need to have a place where I can get a summary of all my electricity and water related costs.



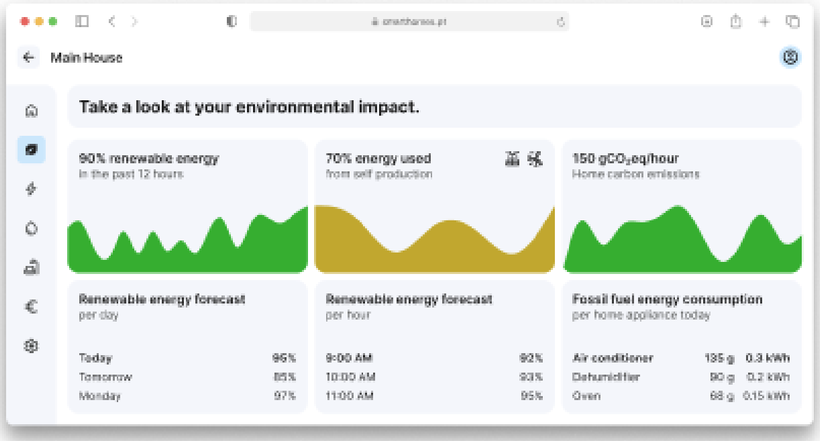
Figma Prototype

From iteration 1

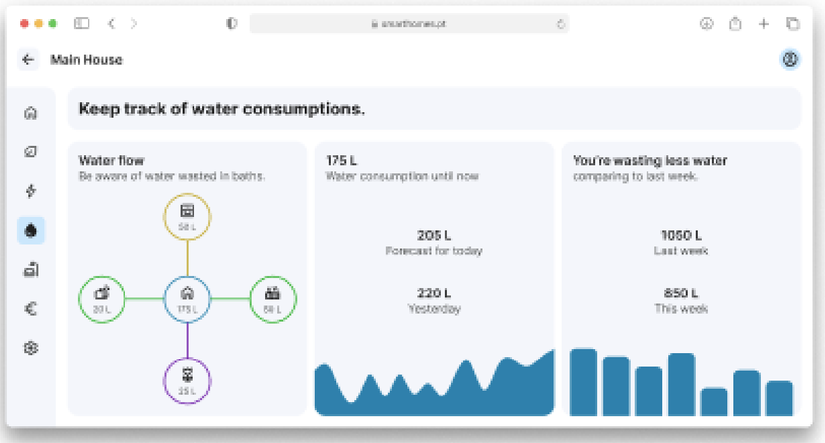
Safari Window



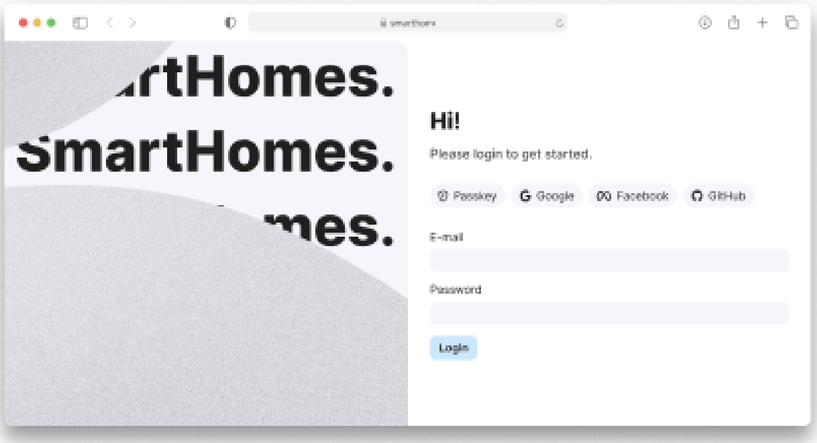
Safari Window



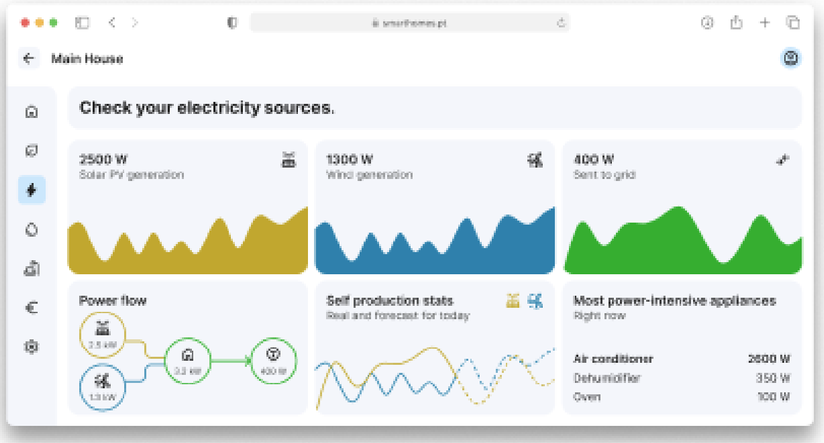
Safari Window



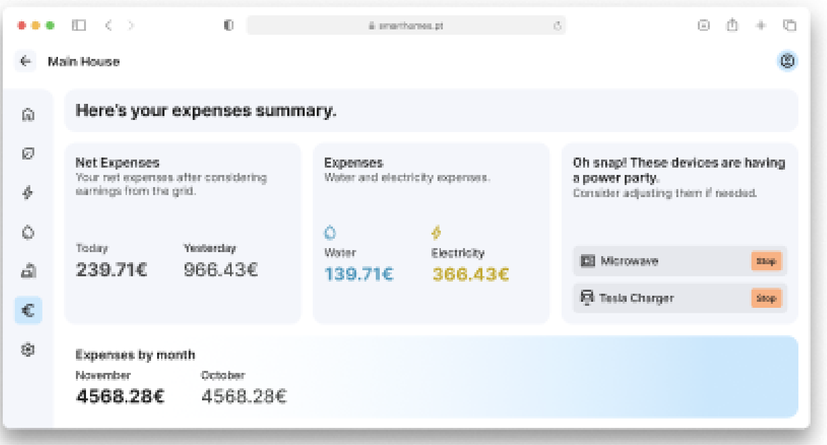
Safari Window



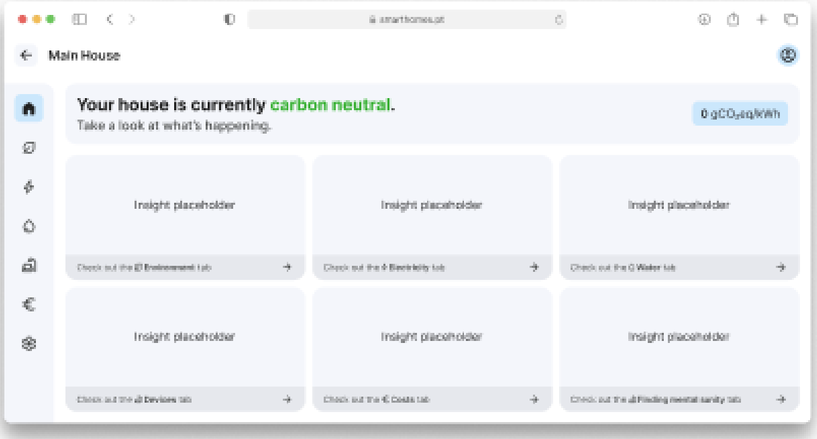
Safari Window



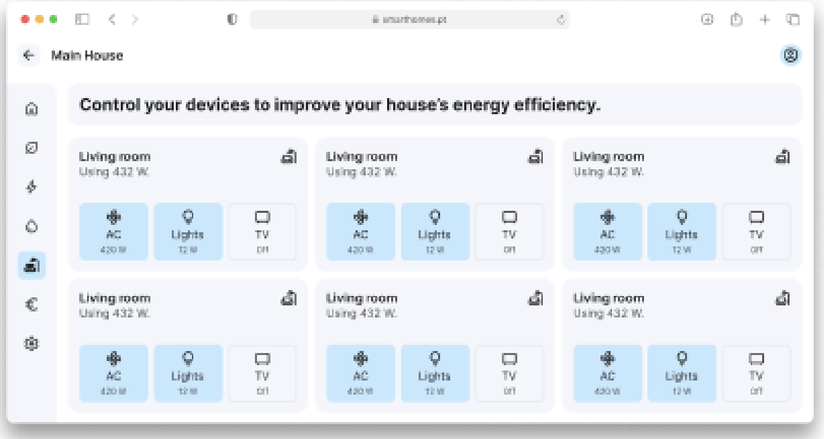
Safari Window



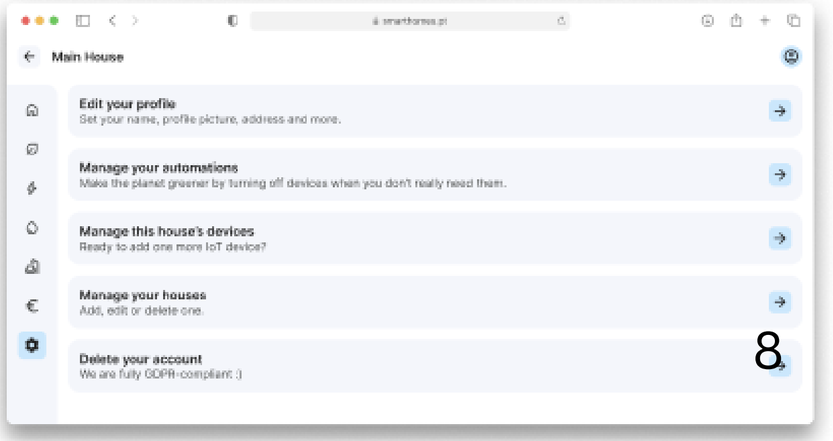
Safari Window



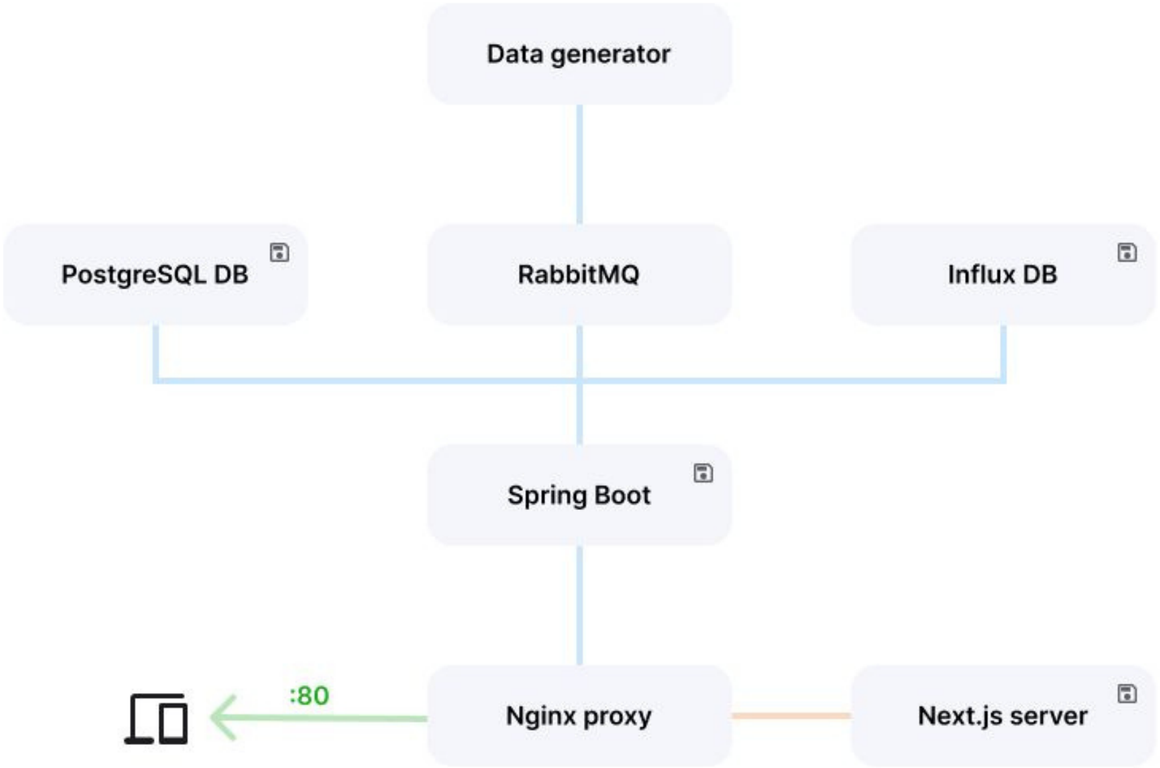
Safari Window



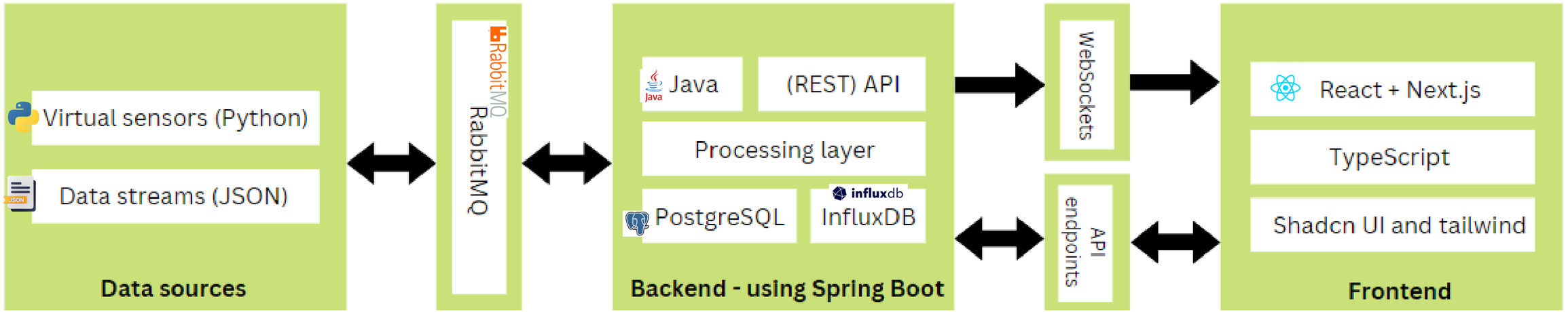
Safari Window



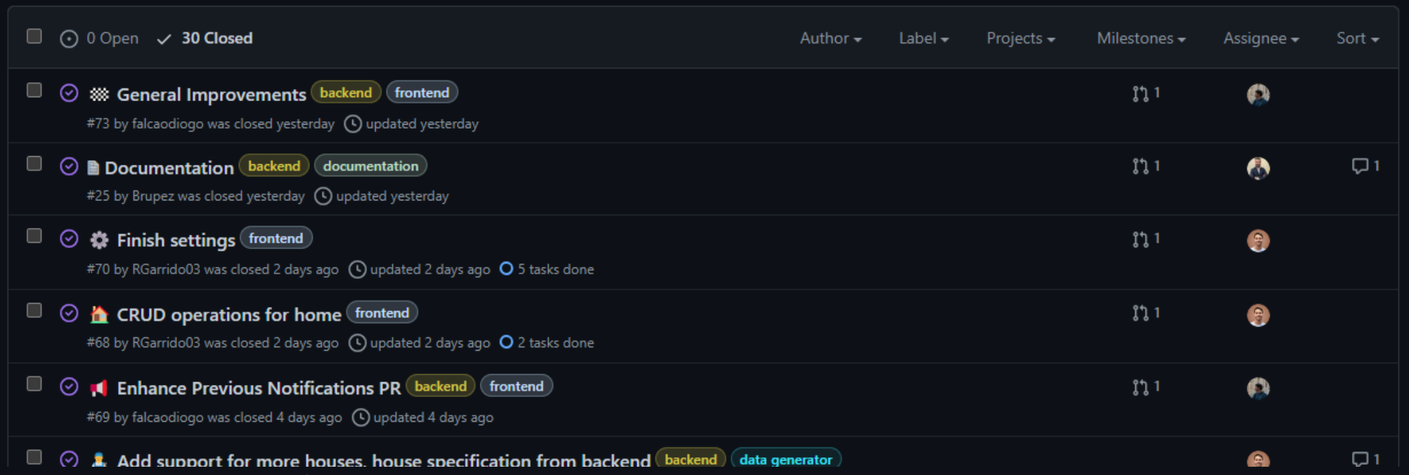
Containers organization

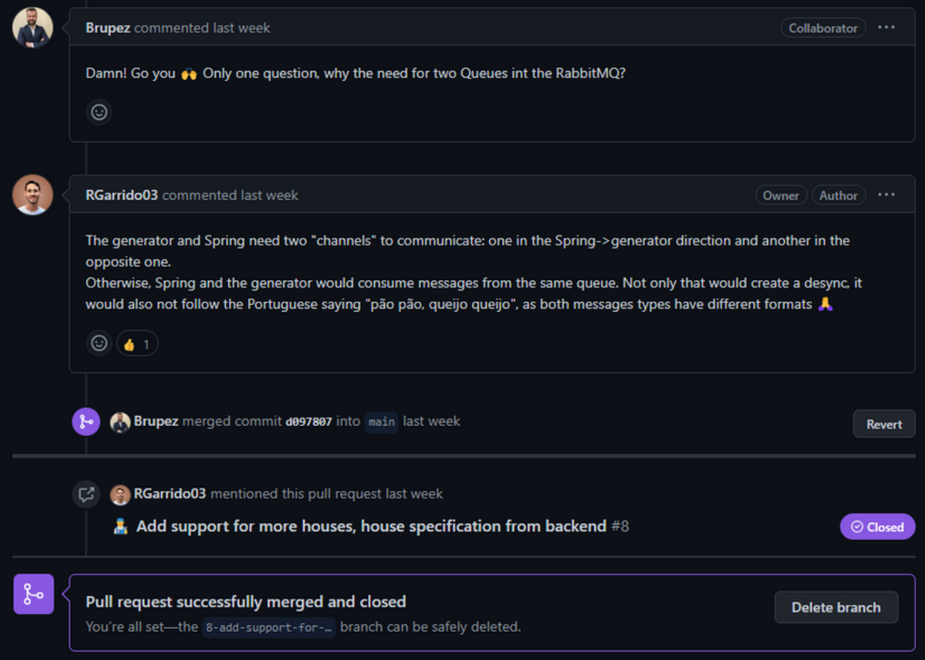


ARCHITECTURE


Virtual sensors (Python)
Data streams (JSON)
Data sources
RabbitMQ
RabbitMQ
Java
(REST) API
Processing layer
PostgreSQL
influxdb
InfluxDB
Backend - using Spring Boot
WebSockets
API endpoints
React + Next.js
TypeScript
Shadcn UI and tailwind
Frontend

GitHub Board

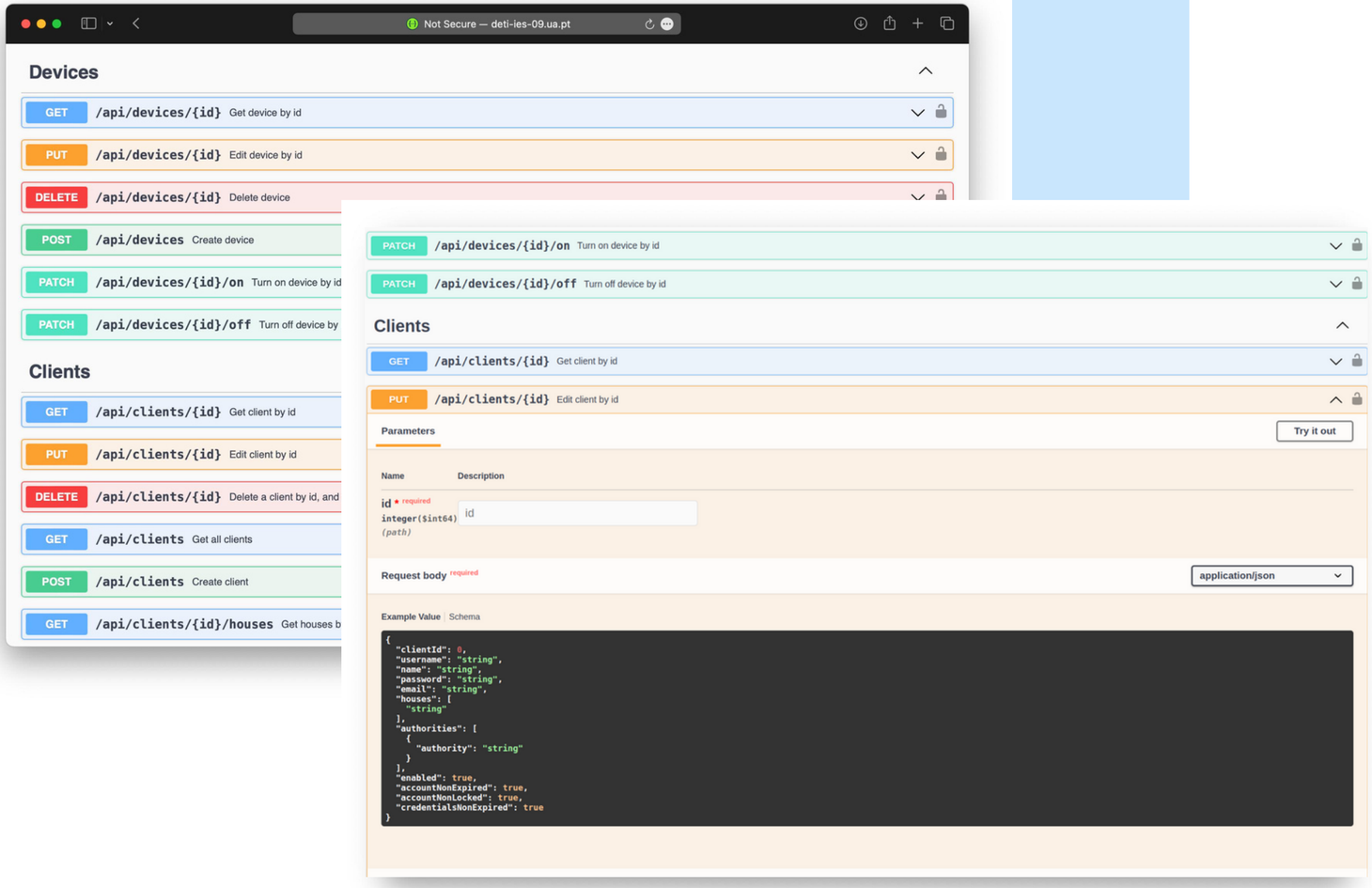




14	Devices page #49	Brupez	Iteration 2
15	Register houses and devices #51	RGarrido03	Iteration 2
	Add item		
	Iteration 3 18 Nov 30 - Dec 13		
16	As John, I need to control every bit of water used in a drought in its region.		Iteration 3
17	As Peter, I would like to oversee electronic devices connected to the house grid.		Iteration 3
18	As John, I want to turn off electronic devices with just a few taps through the app.		Iteration 3
19	Home page #31	falcaodiogo	Iteration 3
20	Environment page #32	Brupez	Iteration 3
21	Water page #33	Brupez	Iteration 3
22	Settings page #35	SlicF	Iteration 3
23	Costs Page #36	Brupez	Iteration 3
24	Websocket #37	falcaodiogo	Iteration 3
25	Complete authentication in frontend #38	RGarrido03	Iteration 3
26	Complete authentication in backend #39	RGarrido03	Iteration 3
27	GitHub Actions #40	RGarrido03	Iteration 3
28	Fetch grid data from REN / ENTSO-E #6	SlicF	Iteration 3
29	Devices page #34	Brupez	Iteration 3
30	32 environment page #59	Brupez	Iteration 3
31	Add Notification Support #60	falcaodiogo	Iteration 3
32	Add notification support #63	falcaodiogo	Iteration 3
33	Add support for more houses, house specification from backend #8	RGarrido03	Iteration 3
	Add item		
	Iteration 4 7 Dec 14 - Dec 20 Current		
34	As Ana, I would much like to get notified about the percentage of the grid energy that can supp...		Iteration 4
35	As Petter, I need to have a place where I can get a summary of all my electricity and water relate...		Iteration 4
36	Documentation #25	Brupez	Iteration 4
37	CRUD operations for home #68	RGarrido03	Iteration 4
38	Enhance Previous Notifications PR #69	falcaodiogo	Iteration 4
39	Finish settings #70	RGarrido03	Iteration 4
40	General Improvements #73	falcaodiogo	Iteration 4
	Add item		

SWAGGER

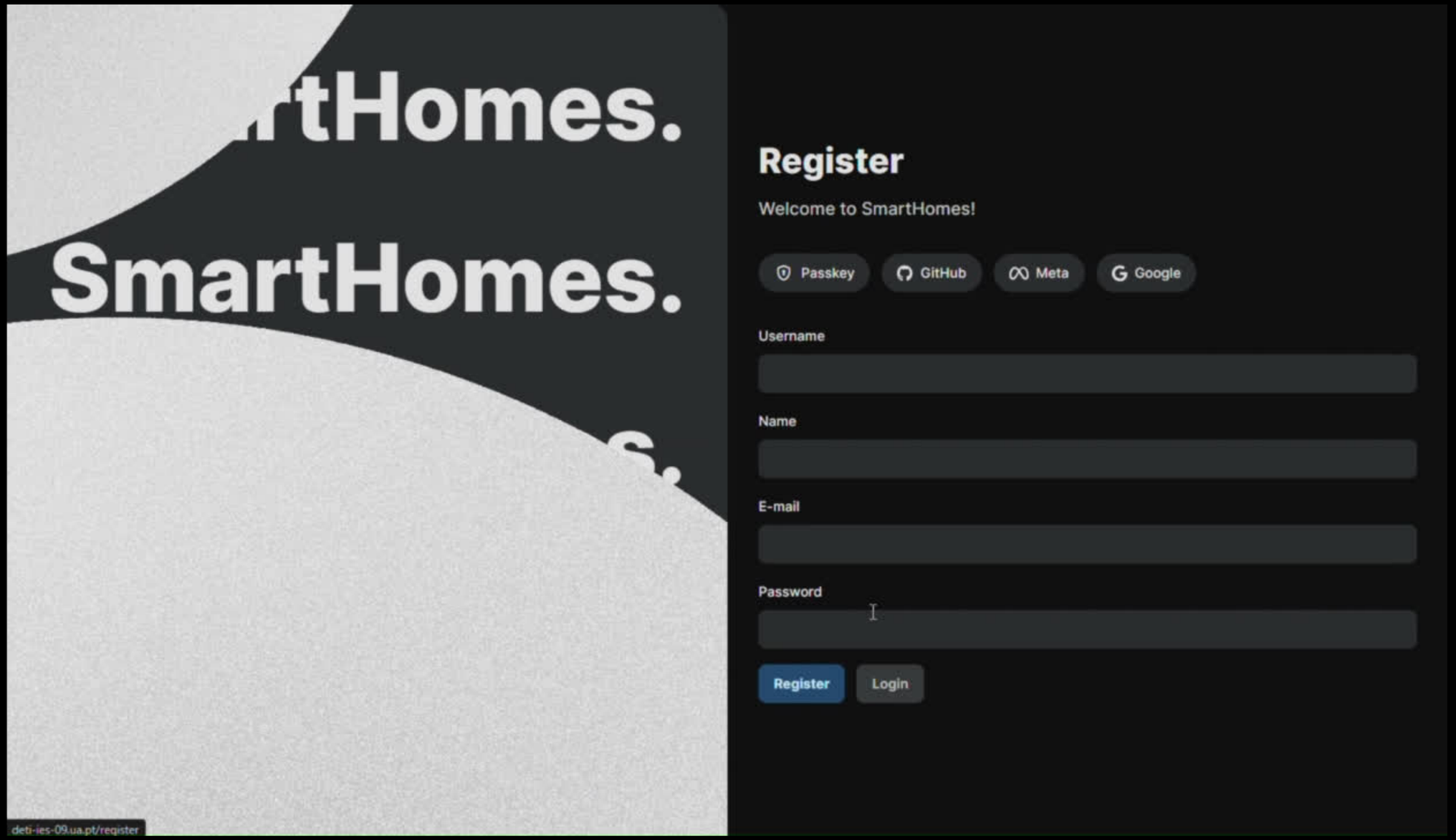
Rest API Documentation
Swagger UI



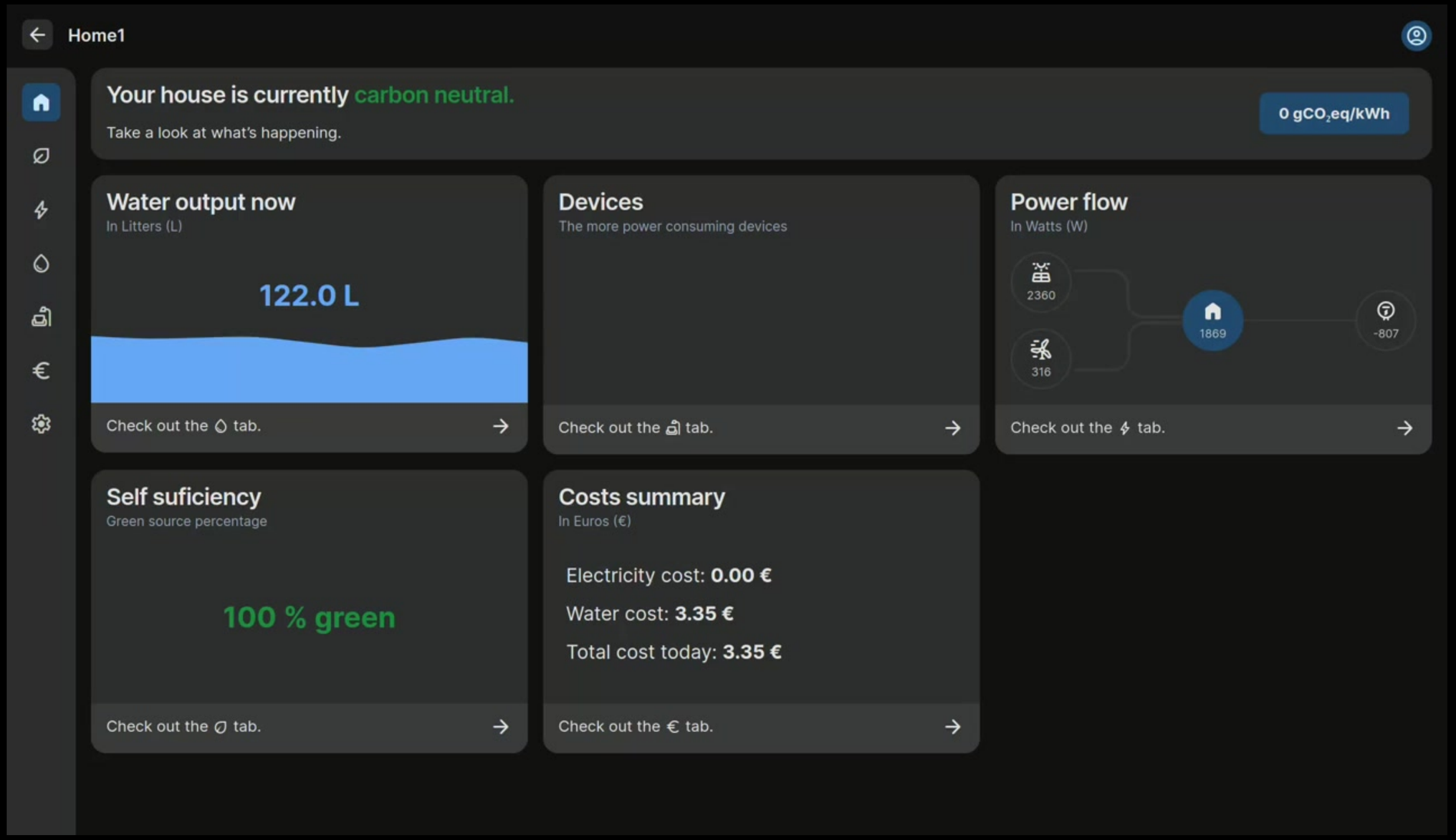
http://deti-ies-09.ua.pt/api/docs/index.html

DEMOS

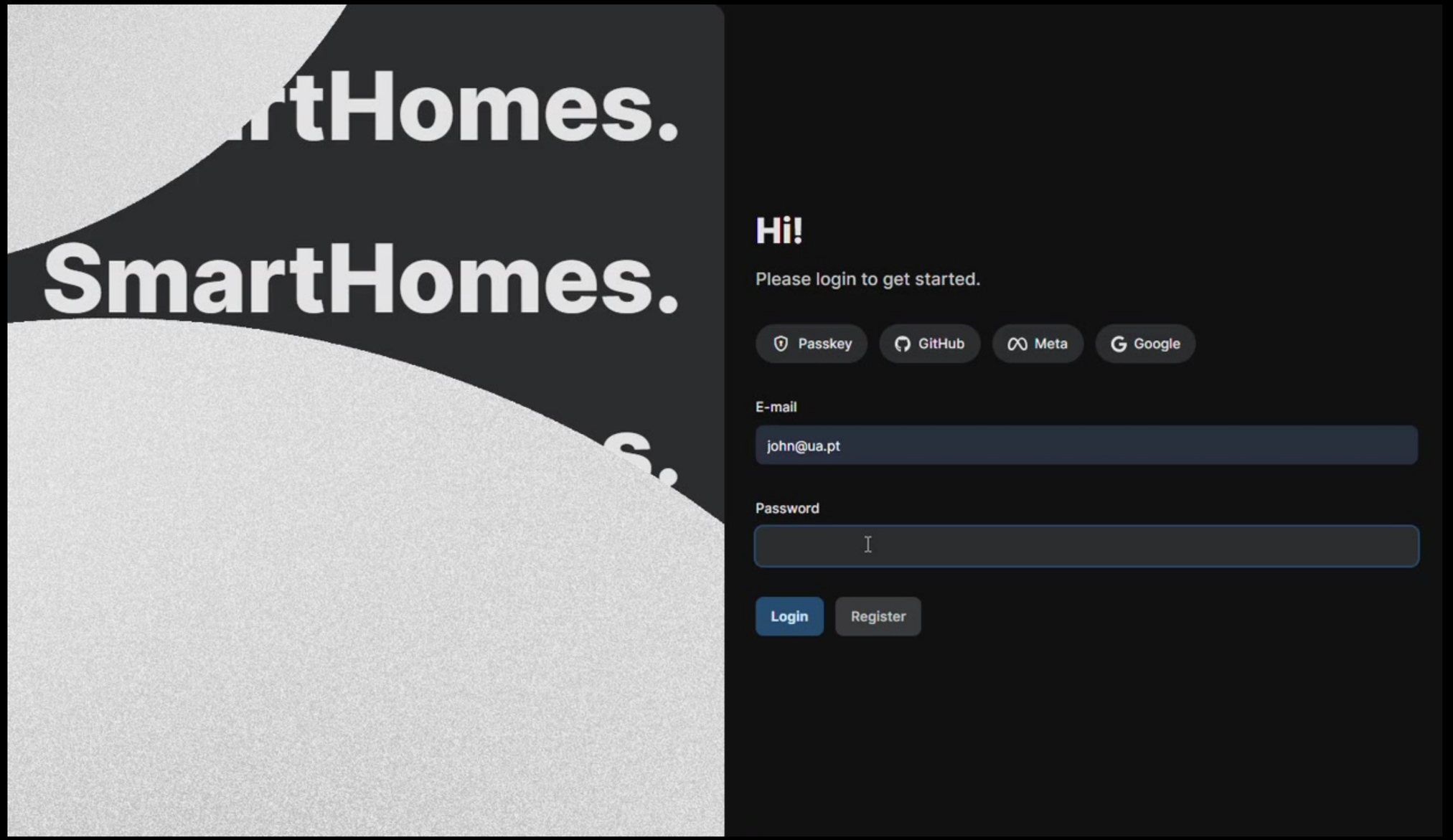
As Anna, I want to register several houses and their electrical system in one app.



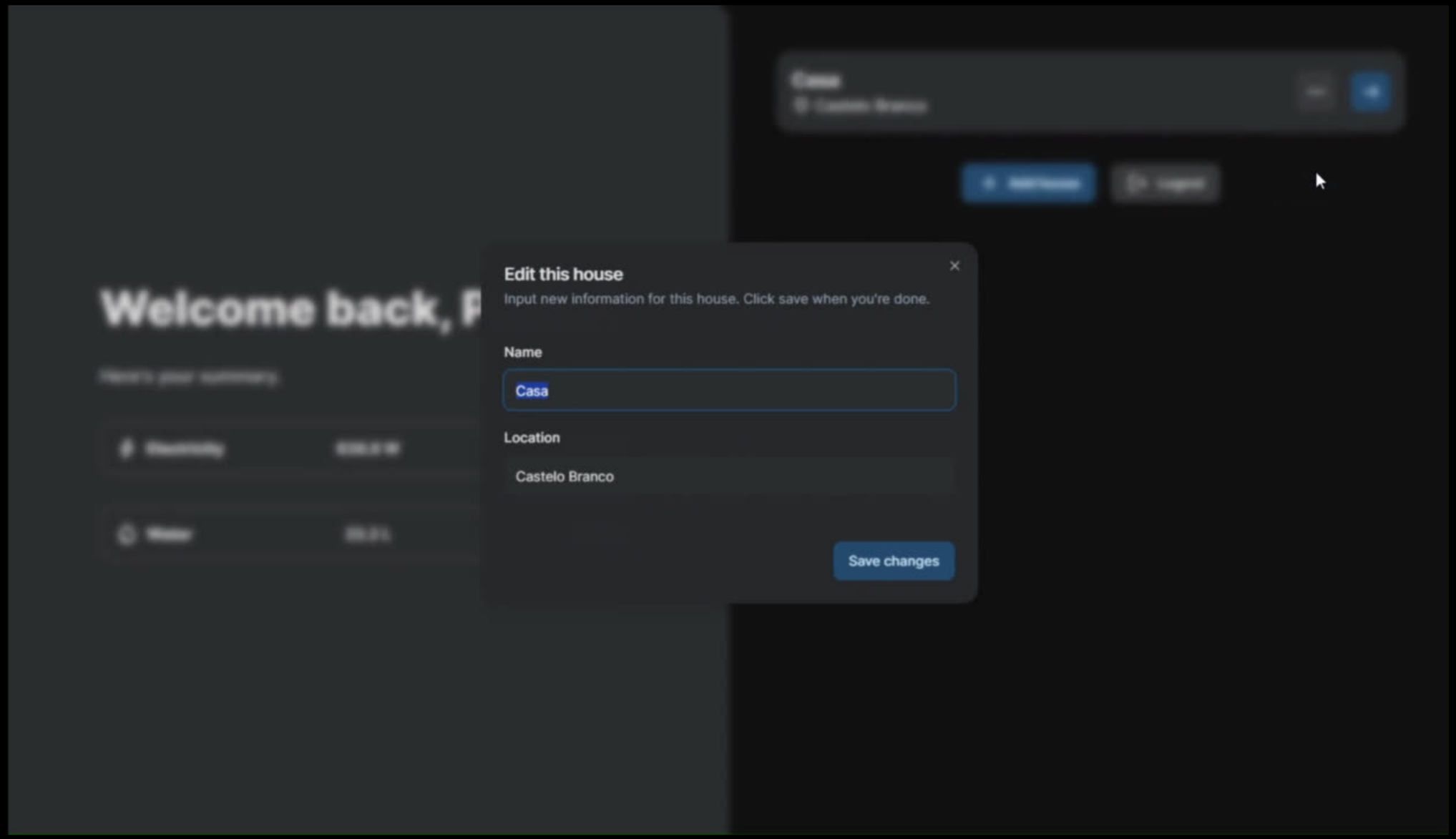
As Anna, I want to register several houses and their electrical system in one app.



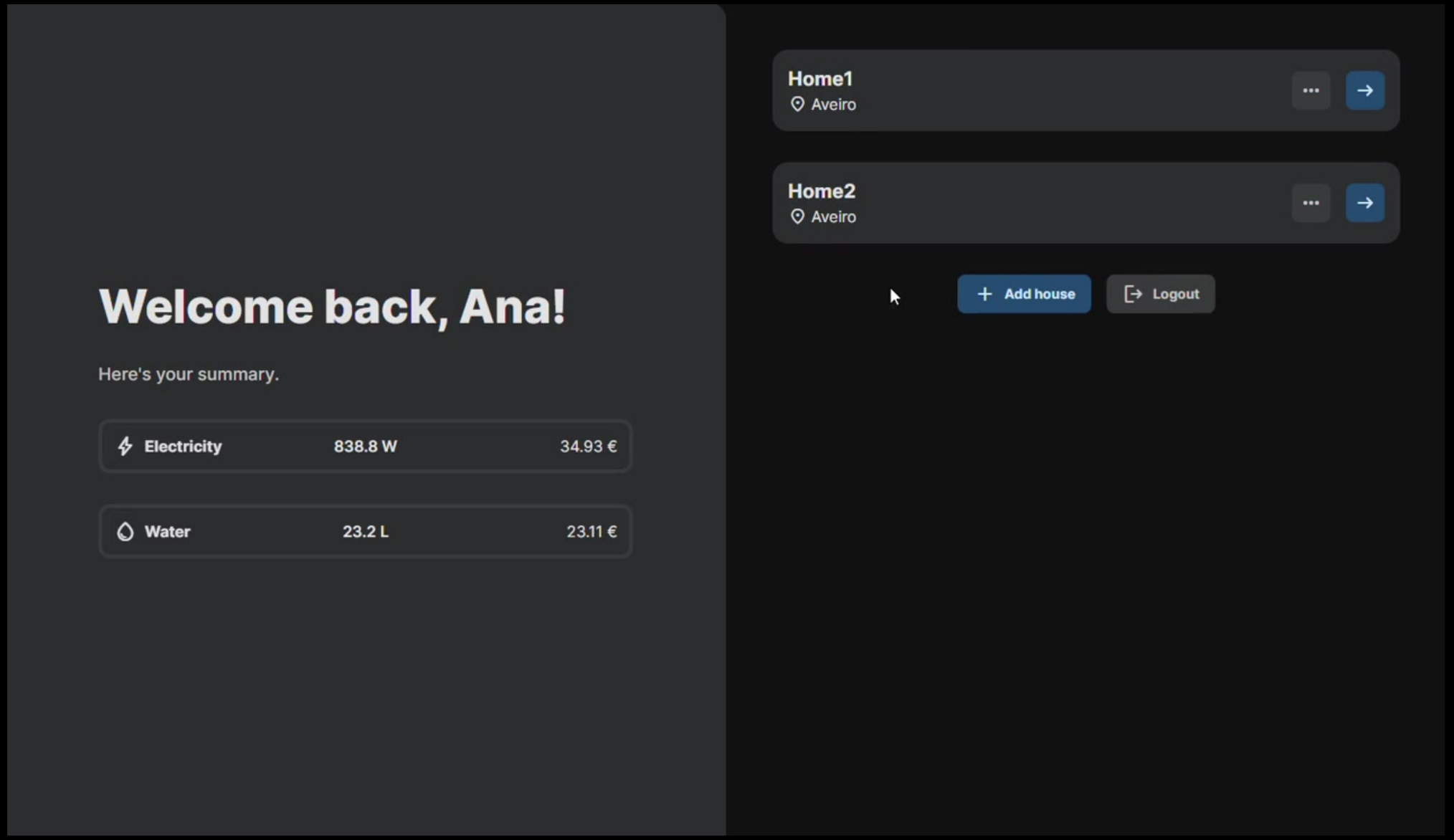
As John, I need to control every bit of water used in his house.



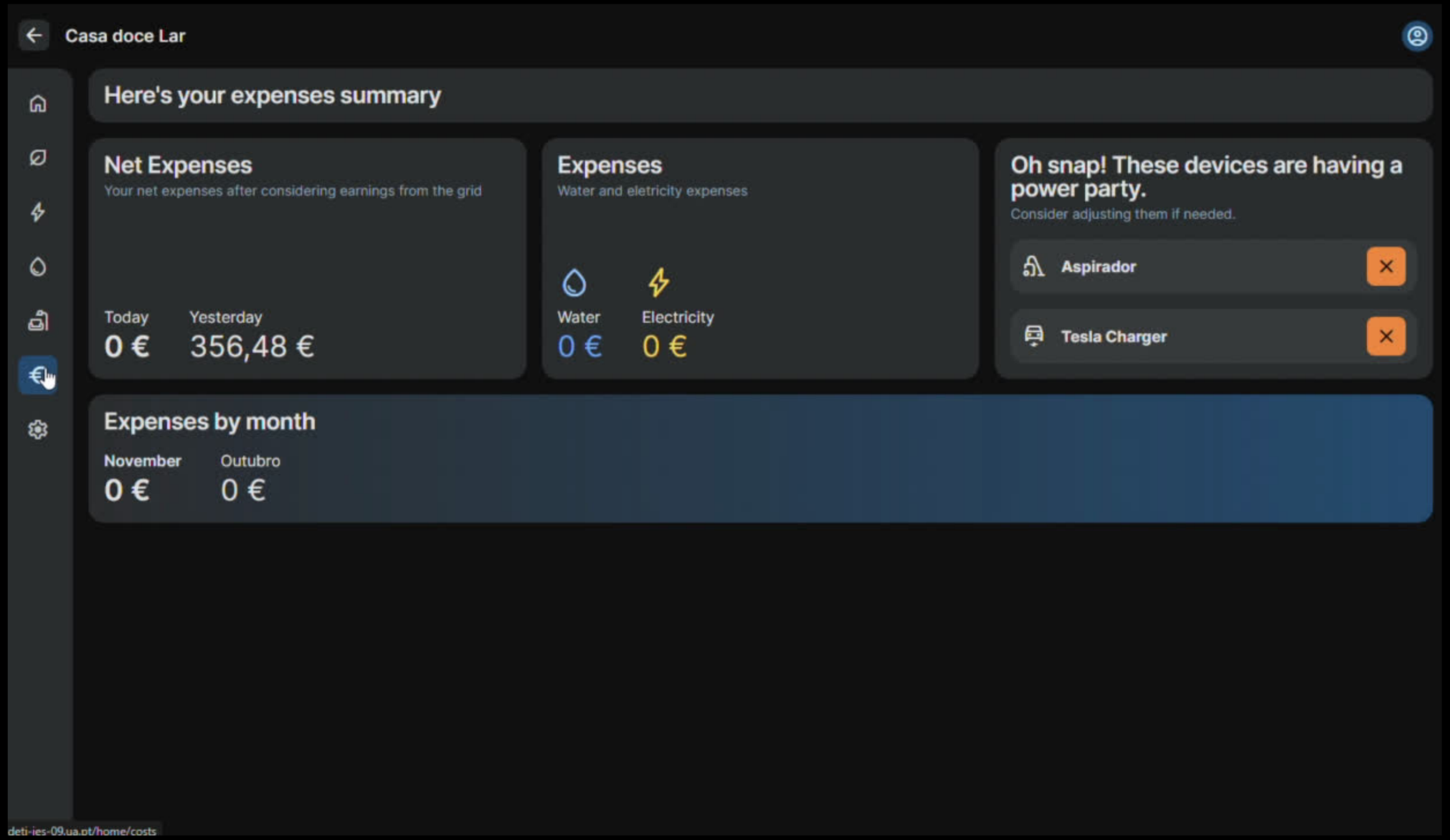
As Peter, I would like to oversee electronic devices connected to the house grid.



As Ana, I would much like to get notified about the maximum percentage of the grid energy that can supply the house.



As Petter, I need to have a place where I can get a summary of all my electricity and water related costs.



THANK YOU

Have any question?

68264: Bruno Lopes
108712: Diogo Falcão
108011: Fábio Matias
107927: Rúben Garrido

SmartHomes

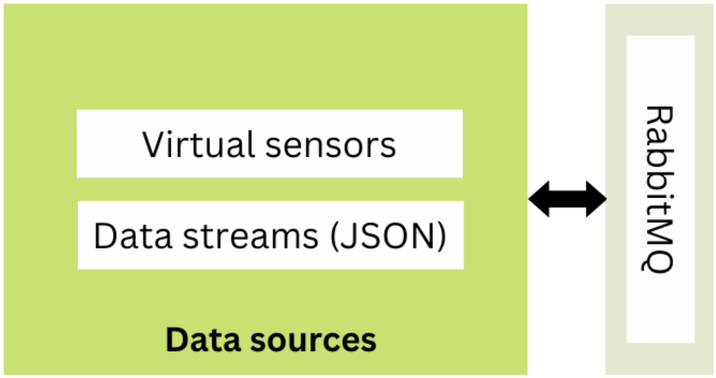
deti

IES GROUP PROJECT

P2 - LEI

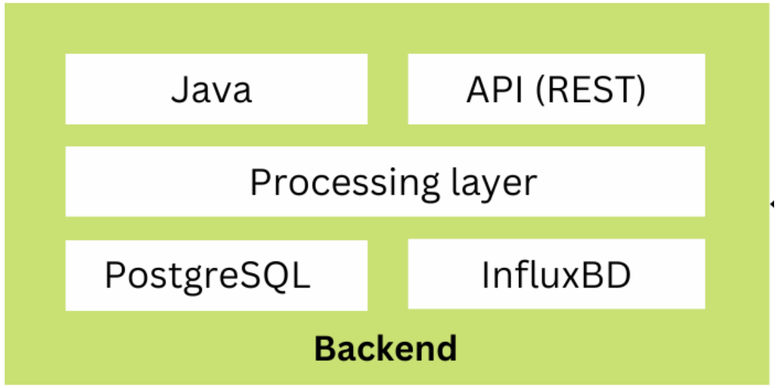
68264: Bruno Lopes
108712: Diogo Falcão
108011: Fábio Matias
107927: Rúben Garrido

- **Data sources generate diverse data streams from sensors and devices using Python functions in JSON format.**
- **Messages Queues efficiently buffers and distributes data messages between sources and backend layers.**

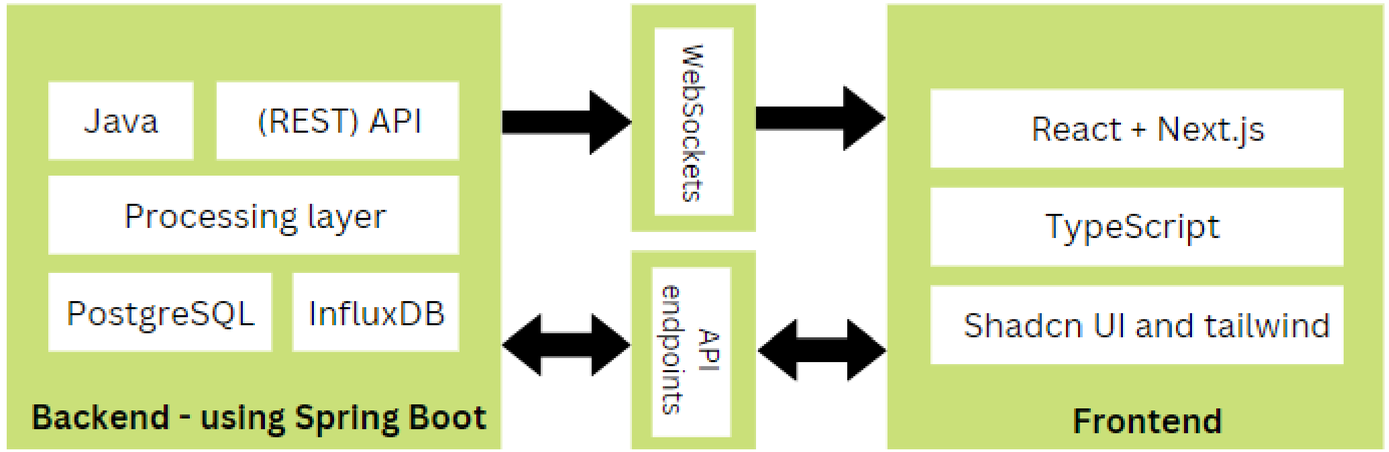


DATA SOURCES + QUEUES

- **Backend processing handles ingestion, processing, and storage of incoming data streams effectively.**
- **PostgreSQL stores static information, while InfluxDB manages complex time-series data.**



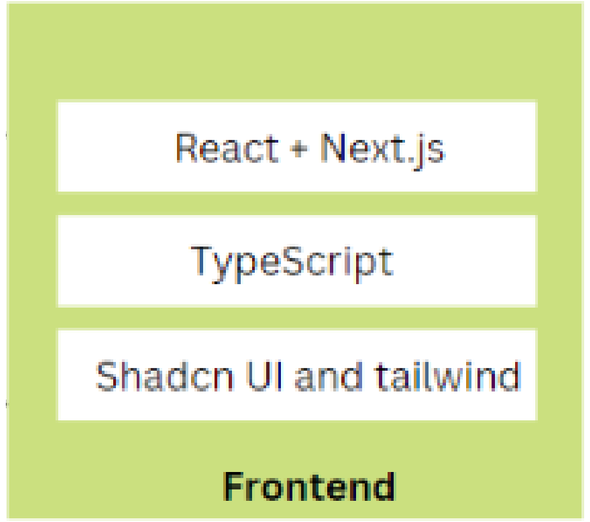
BACKEND



- **Serves as an interface with RESTful endpoints for data retrieval and manipulation, using JSON payloads and WebSockets.**

API
+ WEBSOCKET

- **Presents user-friendly data interfaces using React, TypeScript, PNPM, and Next.js with shadcn/ui and Tailwind CSS for styling.**



FRONTEND