

# 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

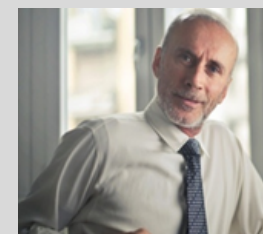
• Peter wants to manage his home, tracking energy and water consumption.



## John Lennon

- **Age:** 56 years old
- **Job:** Lawyer

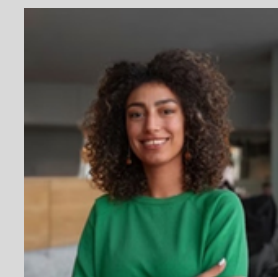
• He has various homes and the goal is to have an app to control all of them at once.



## 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**



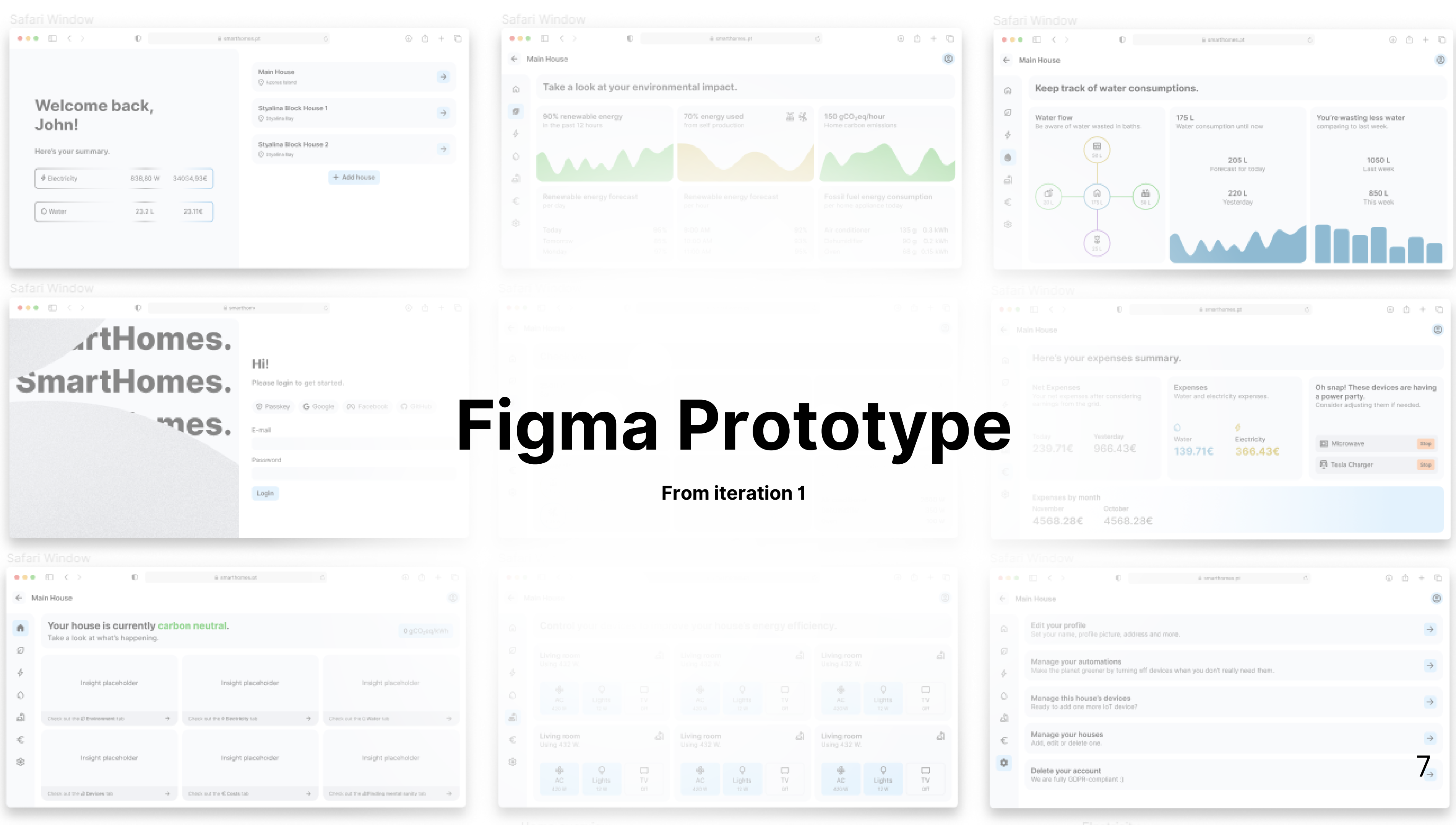
**Smart Devices**

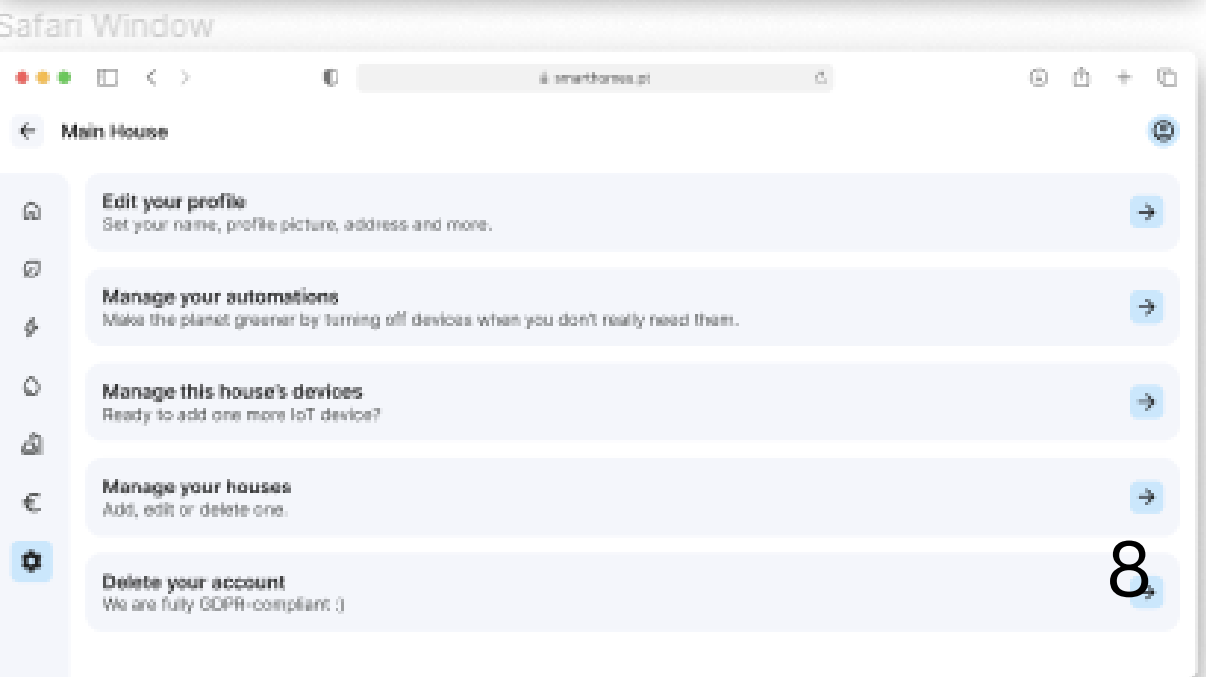
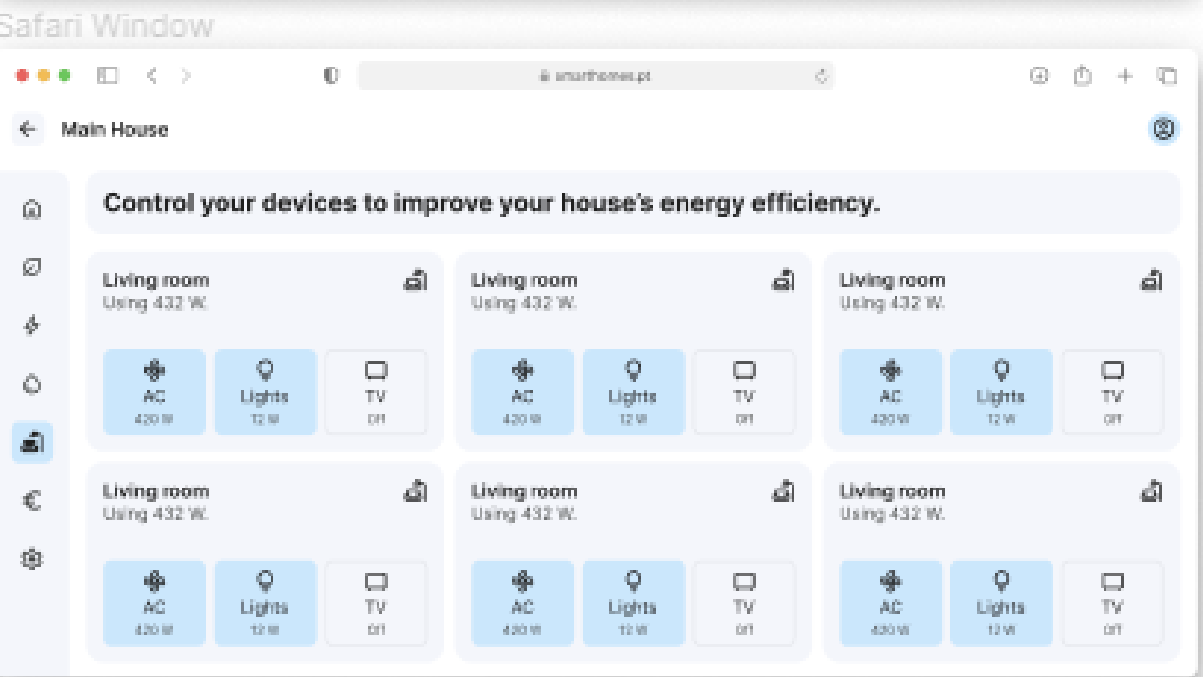
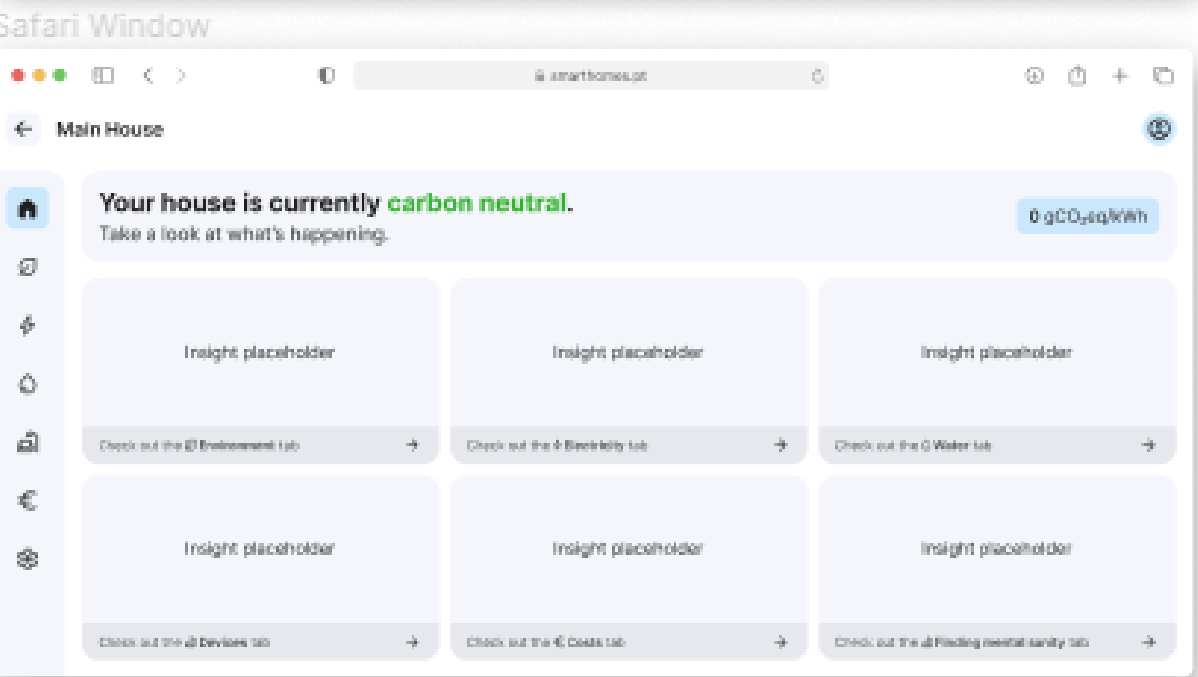
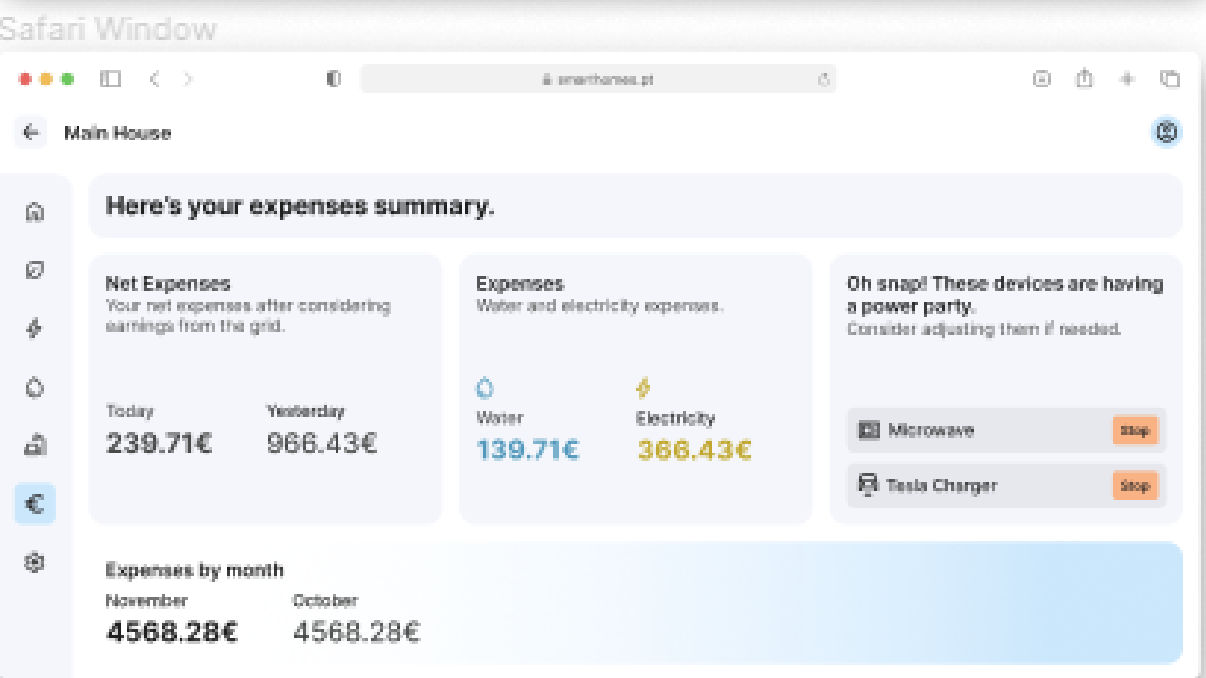
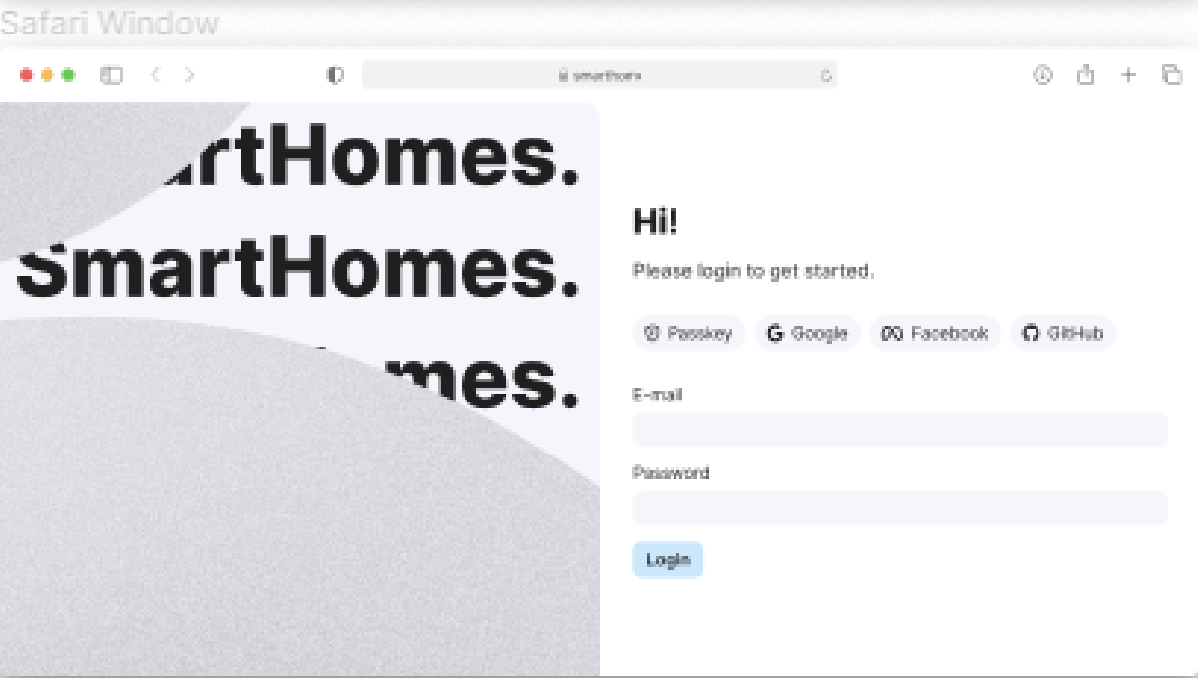
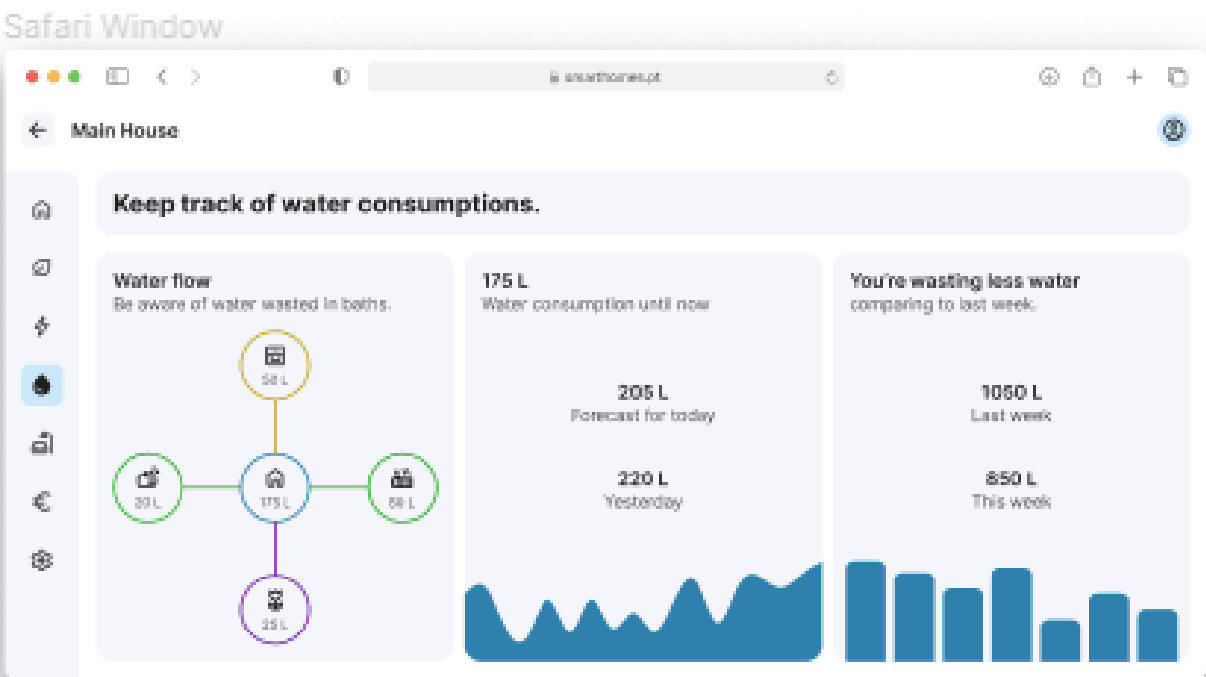
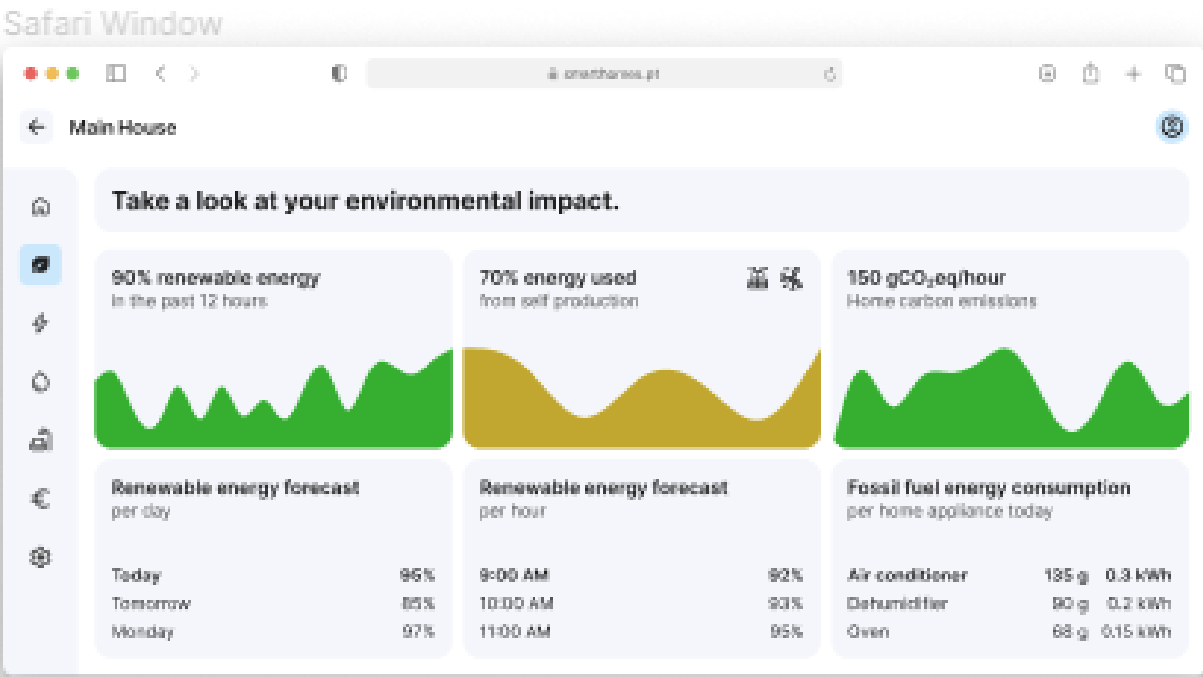
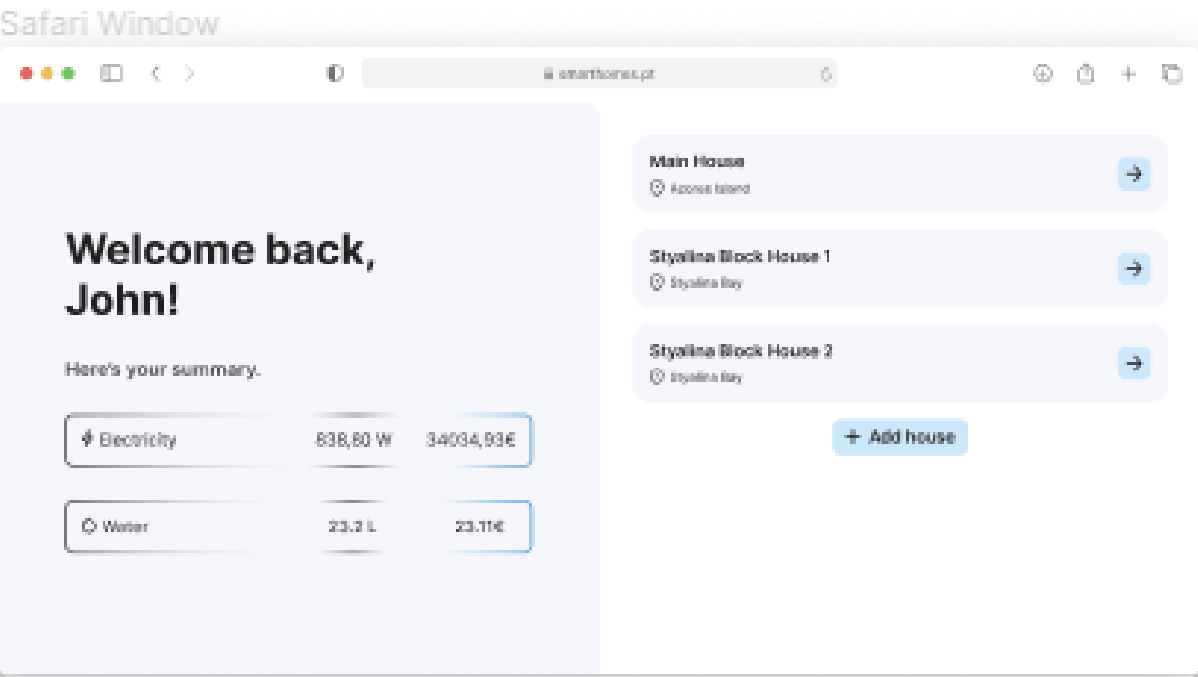


**Energy and Water  
Management**

# User stories

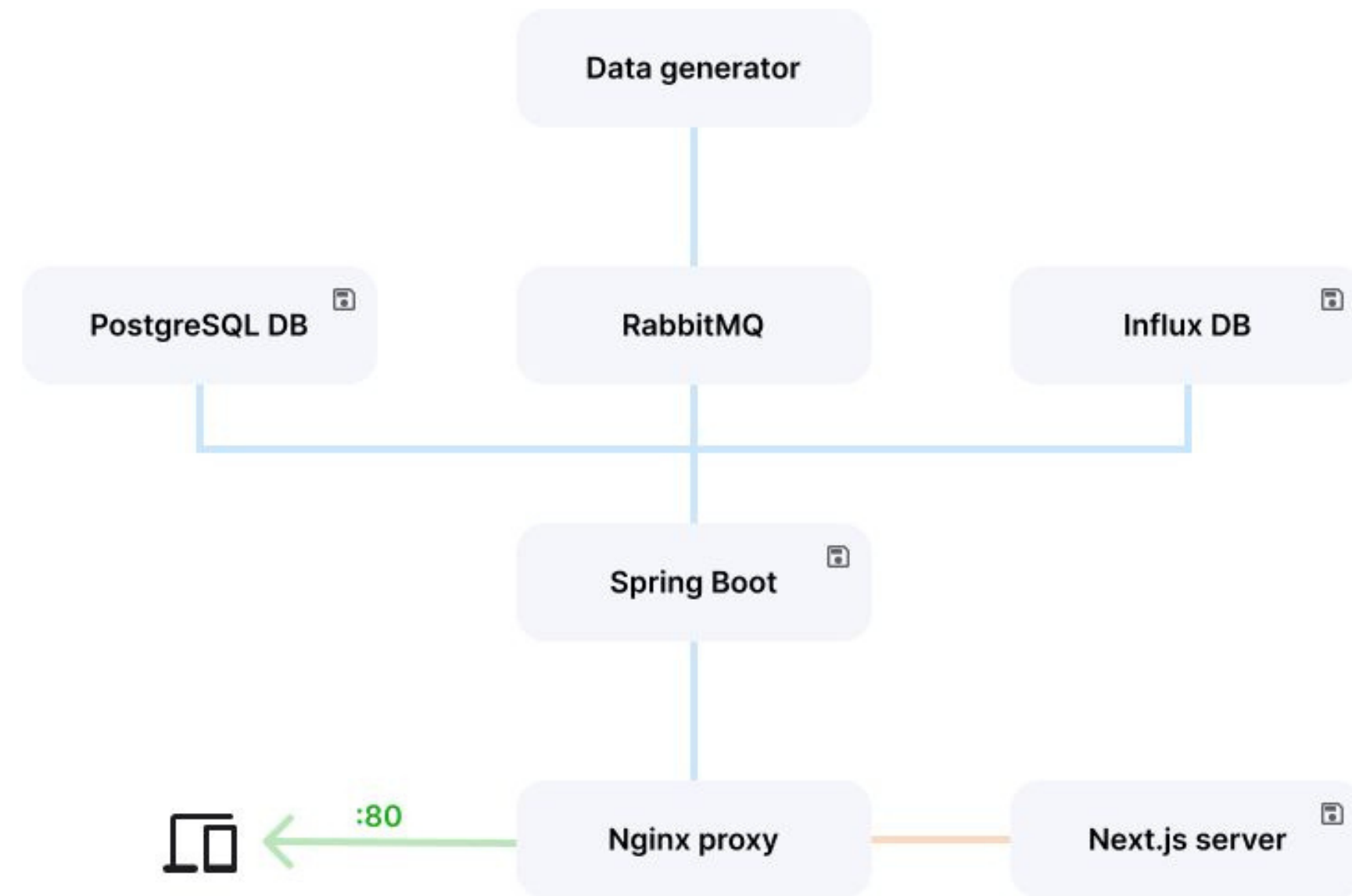
- As Anna, I want to register several houses and their electrical system in one app.
- As John, I need to control every bit of water used in a drought in its region.
- As Peter, I would like to oversee electronic devices connected to the house grid.
- As Ana, I would much like to get notified about the 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.



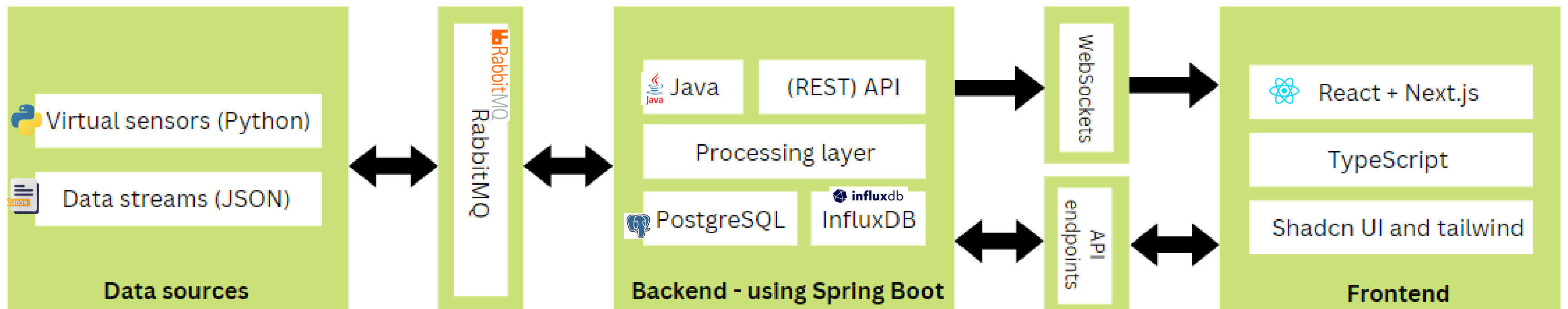






























# Containers organization



# **ARCHITECTURE**



# GitHub Board

<input type="checkbox"/>	<input checked="" type="radio"/> 0 Open	<input checked="" type="radio"/> 30 Closed	Author ▾	Label ▾	Projects ▾	Milestones ▾	Assignee ▾	Sort ▾	
<input type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	 General Improvements			backend	frontend	 1	
#73 by falcaodiogo was closed yesterday  updated yesterday									
<input type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	 Documentation			backend	documentation	 1	  1
#25 by Brupez was closed yesterday  updated yesterday									
<input type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	 Finish settings			frontend		 1	
#70 by RGarrido03 was closed 2 days ago  updated 2 days ago  5 tasks done									
<input type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	 CRUD operations for home			frontend		 1	
#68 by RGarrido03 was closed 2 days ago  updated 2 days ago  2 tasks done									
<input type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	 Enhance Previous Notifications PR			backend	frontend	 1	
#69 by falcaodiogo was closed 4 days ago  updated 4 days ago									
<input type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	 Add support for more houses. house specification from backend			backend	data generator		  1



Brupez commented last week

Collaborator

Damn! Go you 🙌 Only one question, why the need for two Queues int the RabbitMQ?



RGarrido03 commented last week

Owner Author

The generator and Spring need two "channels" to communicate: one in the Spring->generator direction and another in the opposite one.  
Otherwise, Spring and the generator would consume messages from the same queue. Not only that would create a desync, it would also not follow the Portuguese saying "pão pão, queijo queijo", as both messages types have different formats 🙌



Brupez merged commit d097807 into main last week

Revert

RGarrido03 mentioned this pull request last week

Add support for more houses, house specification from backend #8

Closed



Pull request successfully merged and closed

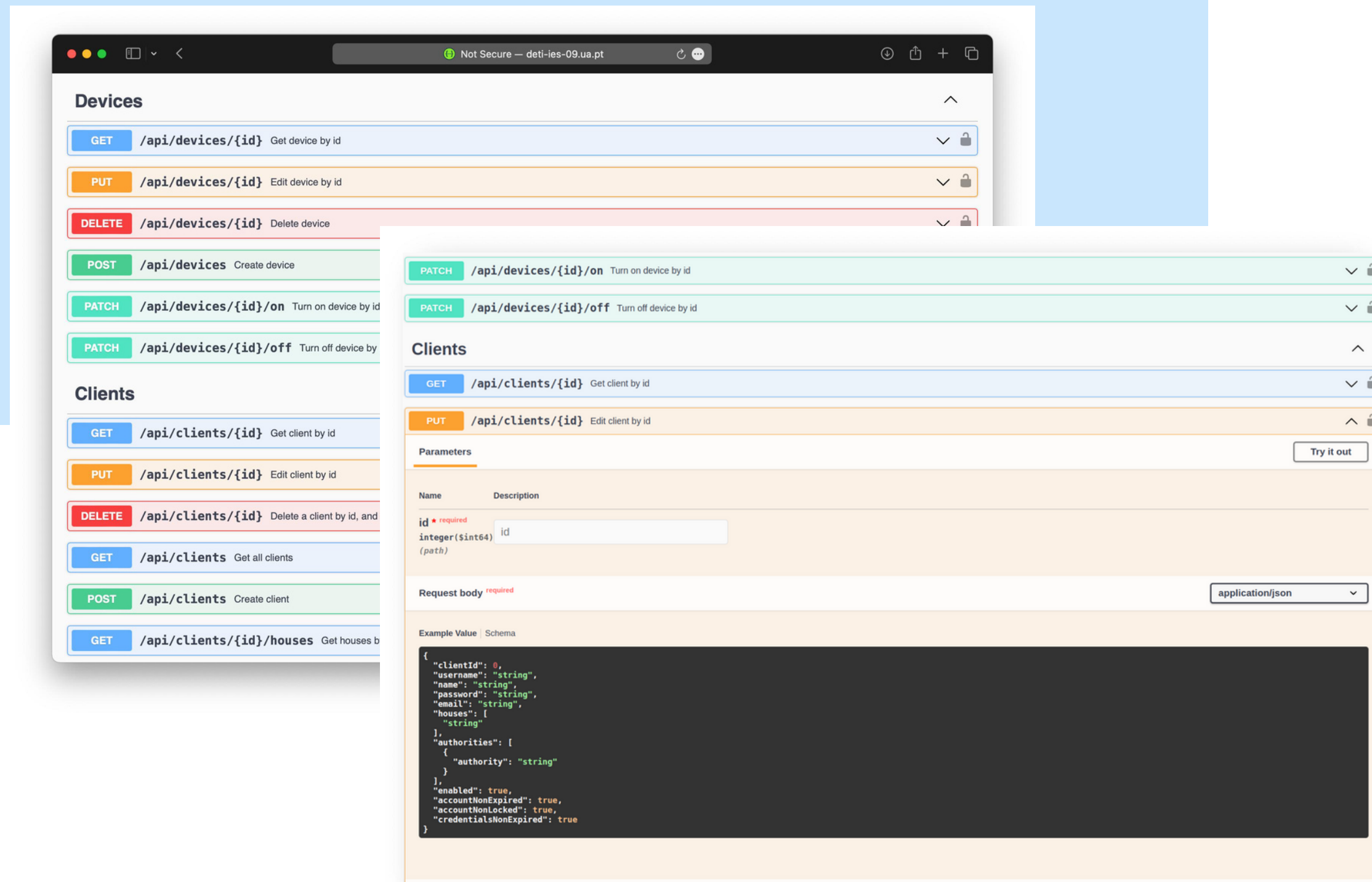
You're all set—the 8-add-support-for-... branch can be safely deleted.

Delete branch

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

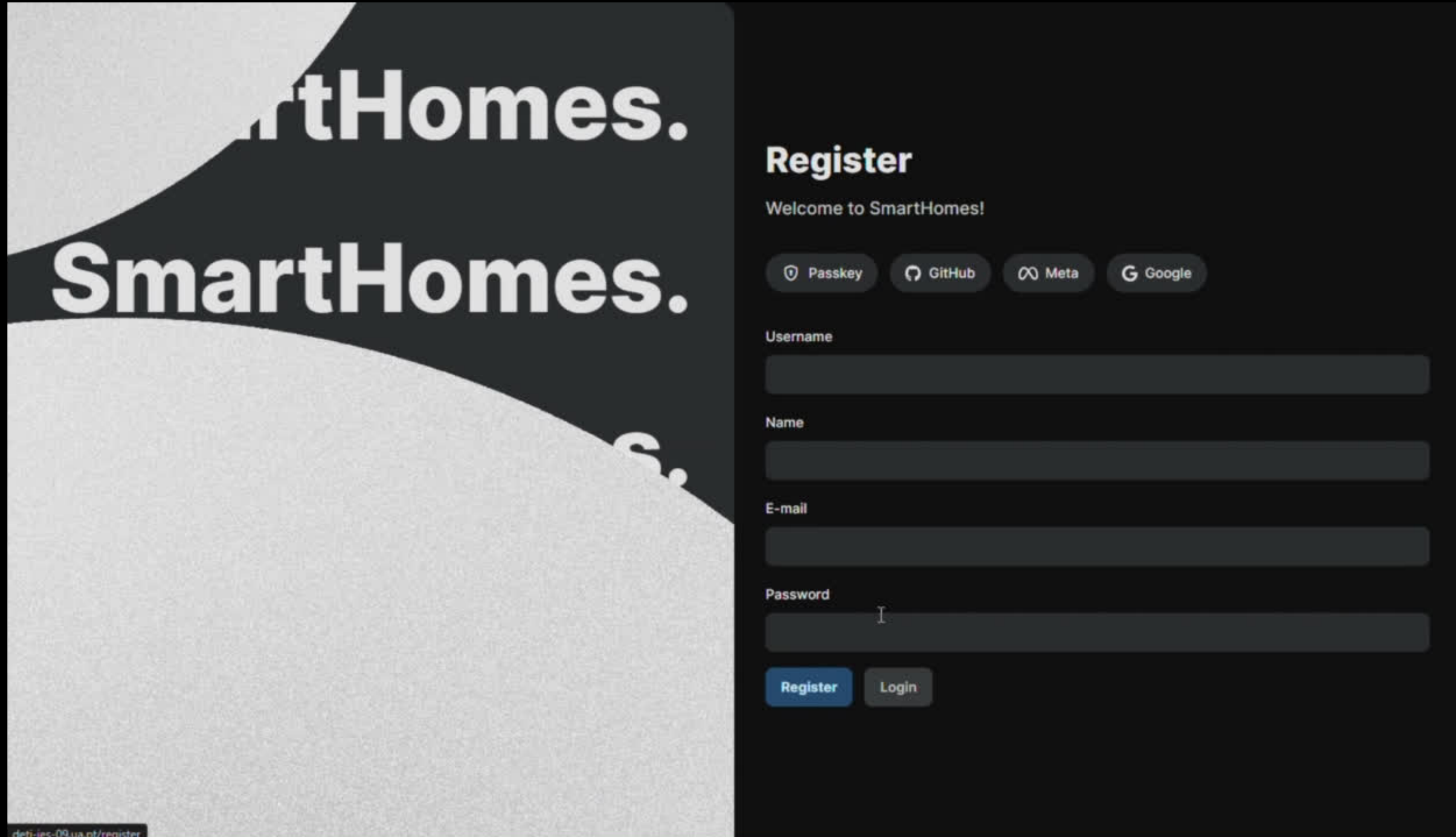
## Rest API Documentation Swagger UI



<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.



The image shows a web application interface for 'SmartHomes.'. The left side features a large graphic with the text 'SmartHomes.' repeated in a stylized, overlapping manner. The right side is a registration form titled 'Register' with the subtitle 'Welcome to SmartHomes!'. The form includes four social login buttons: 'Passkey', 'GitHub', 'Meta', and 'Google'. Below these are four input fields labeled 'Username', 'Name', 'E-mail', and 'Password'. At the bottom of the form are two buttons: 'Register' and 'Login'. A small URL 'deti-ies-09.ua.pt/register' is visible in the bottom left corner of the page.

SmartHomes.

SmartHomes.

## Register

Welcome to SmartHomes!

[Passkey](#) [GitHub](#) [Meta](#) [Google](#)

Username

Name

E-mail

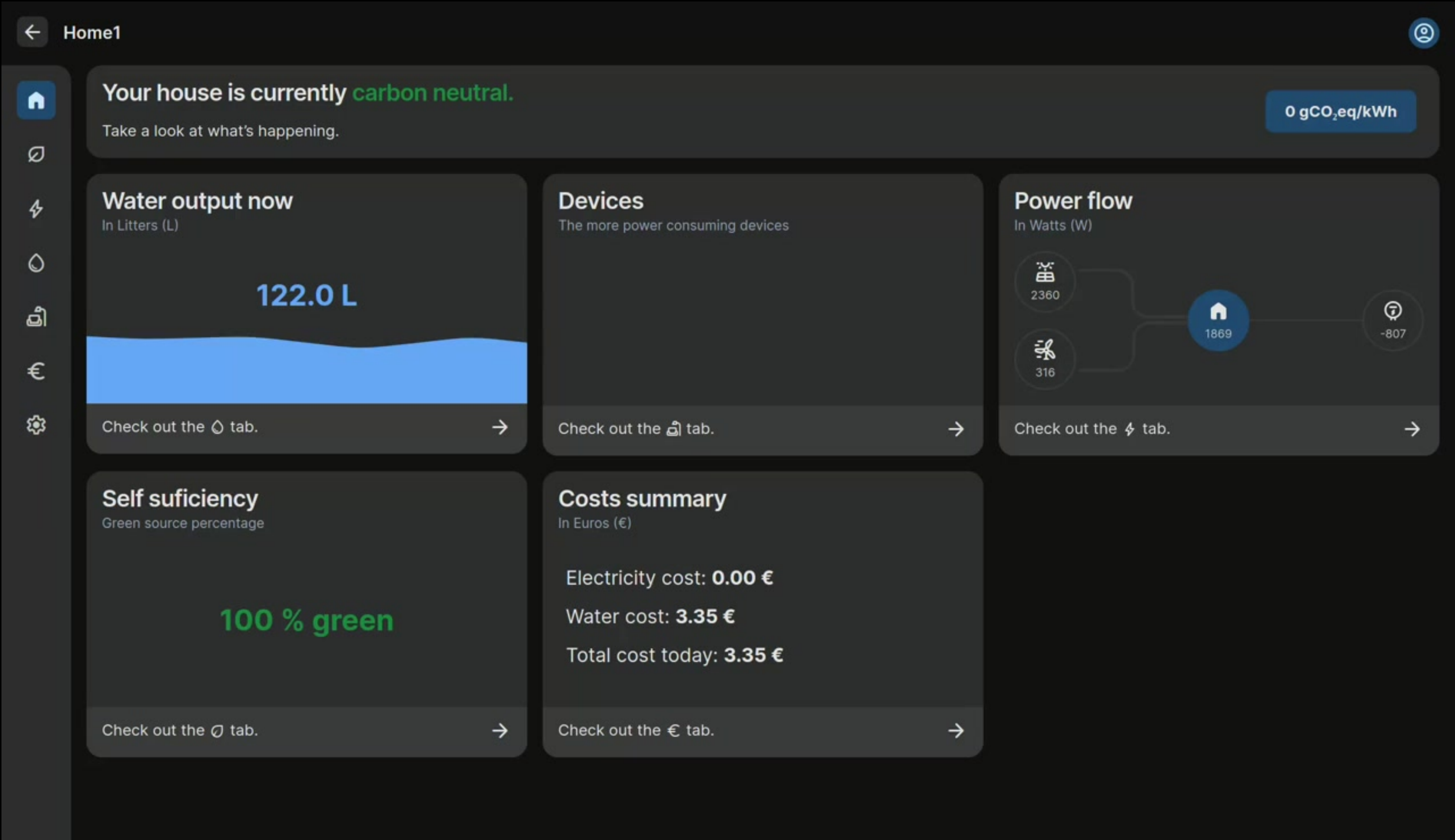
Password

[Register](#) [Login](#)

deti-ies-09.ua.pt/register

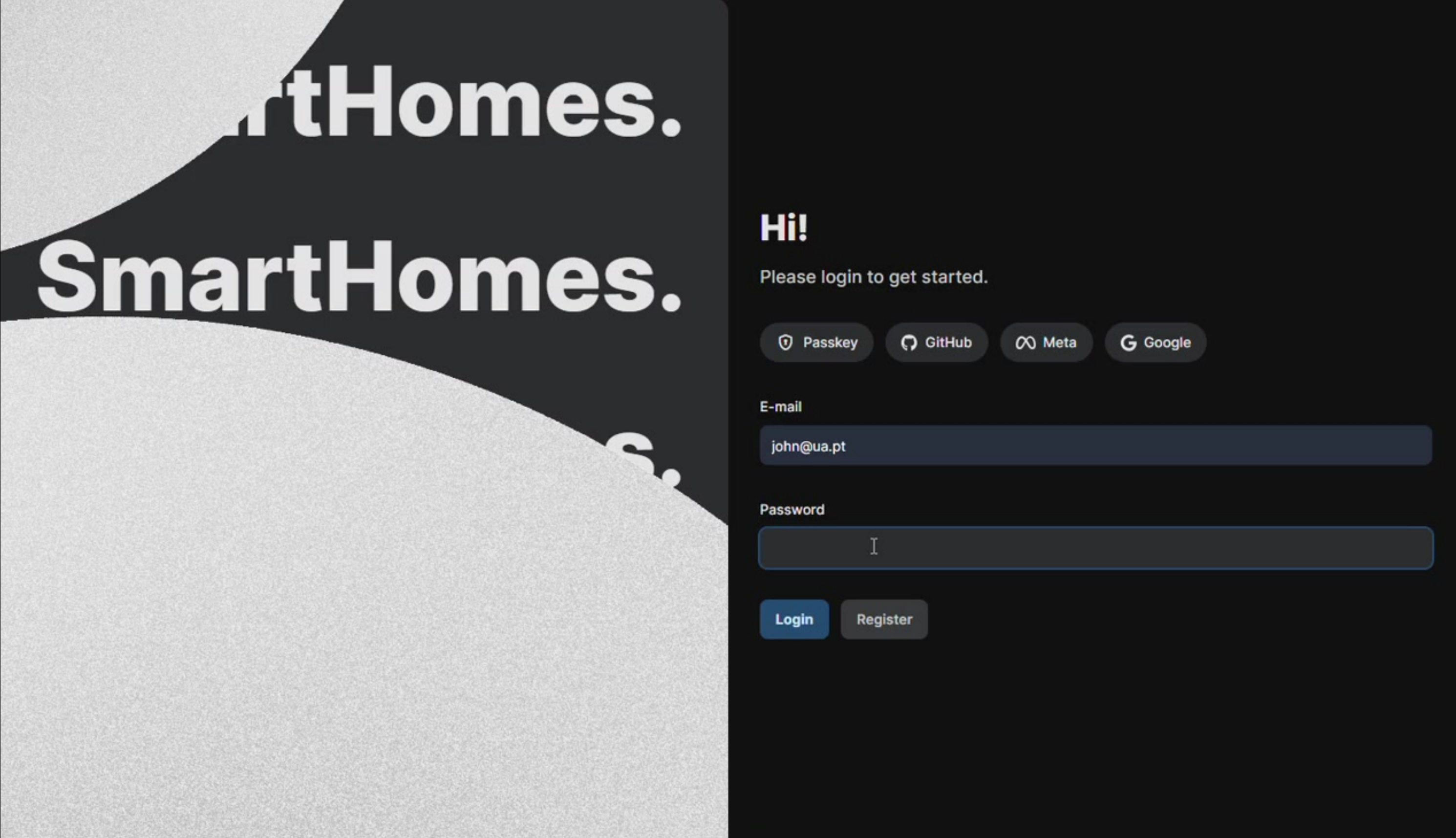


As Anna, I want to register several houses and their electrical system in one app.





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



The image shows a login page for 'SmartHomes'. On the left, there is a large graphic with the text 'SmartHomes.' repeated twice in a stylized, overlapping manner. On the right, the login form is displayed. It starts with a 'Hi!' greeting, followed by the instruction 'Please login to get started.' Below this are four social login buttons: 'Passkey', 'GitHub', 'Meta', and 'Google'. The main login section has two input fields: 'E-mail' with the value 'john@ua.pt' and 'Password' which is currently empty. At the bottom of the form are two buttons: 'Login' and 'Register'.

# SmartHomes.

## SmartHomes.

Hi!

Please login to get started.

[Passkey](#) [GitHub](#) [Meta](#) [Google](#)

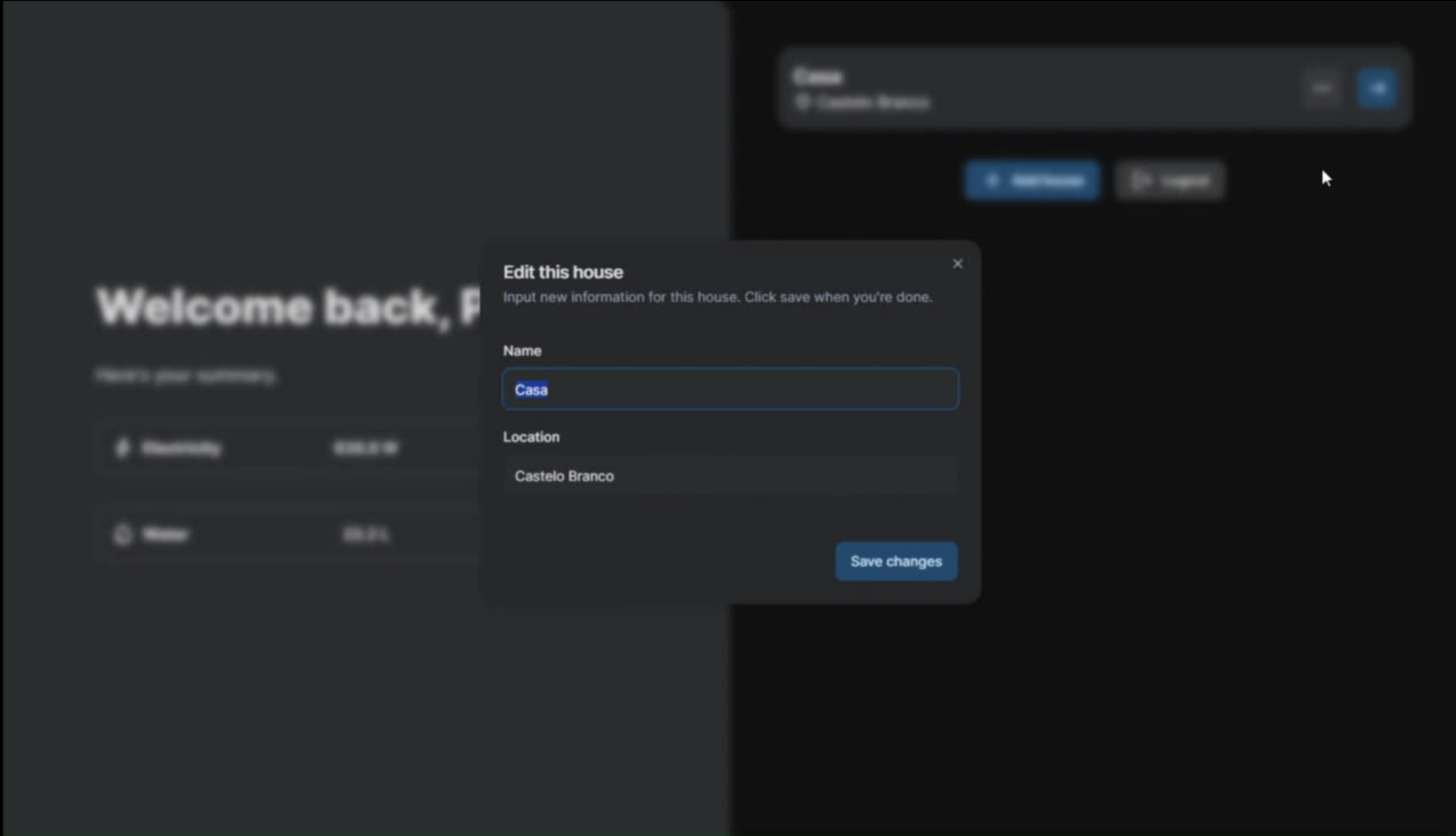
E-mail

john@ua.pt

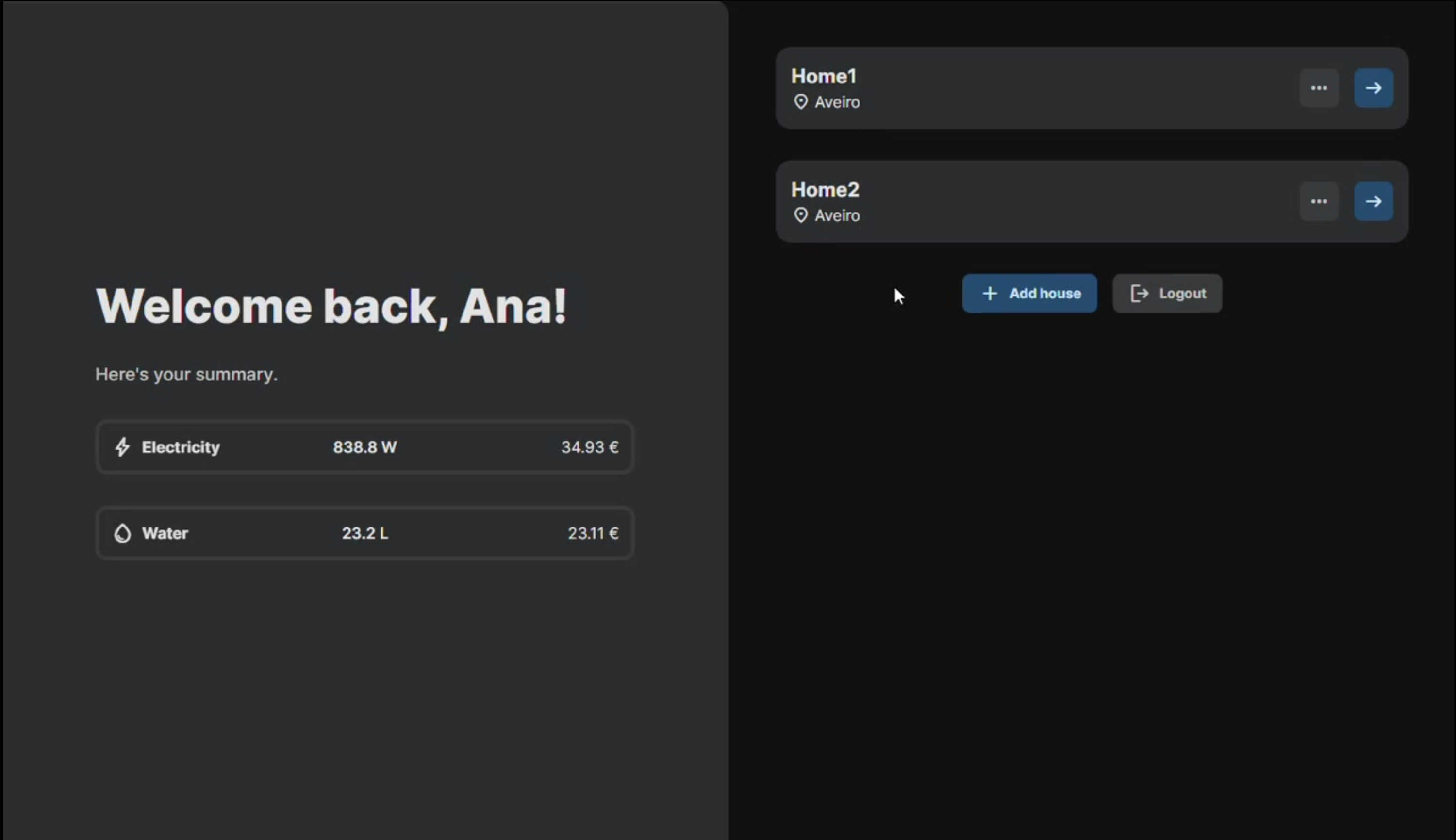
Password

[Login](#) [Register](#)

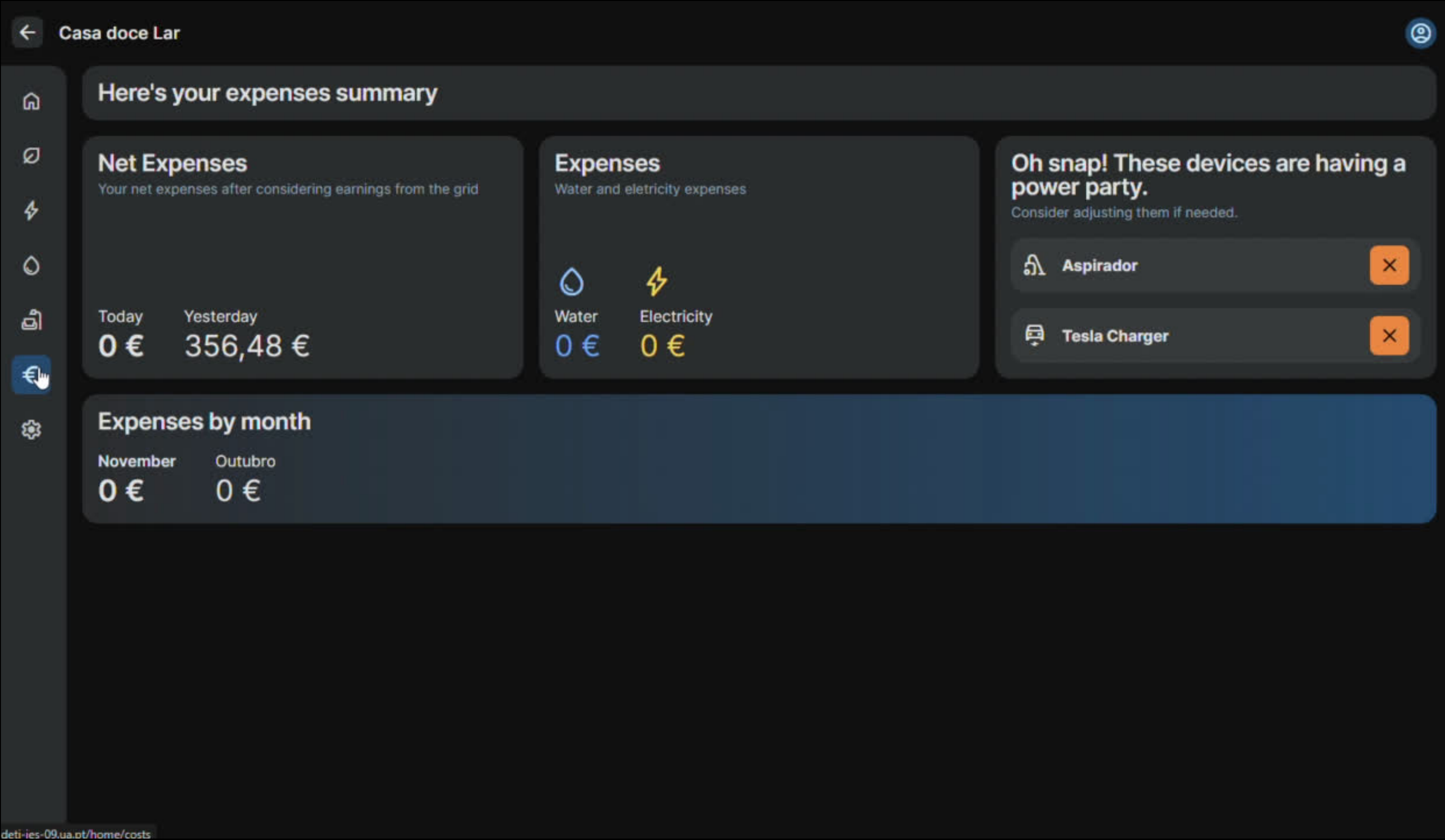
As Peter, I would like to oversee electronic devices connected to the house grid.



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?**

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SmartHomes

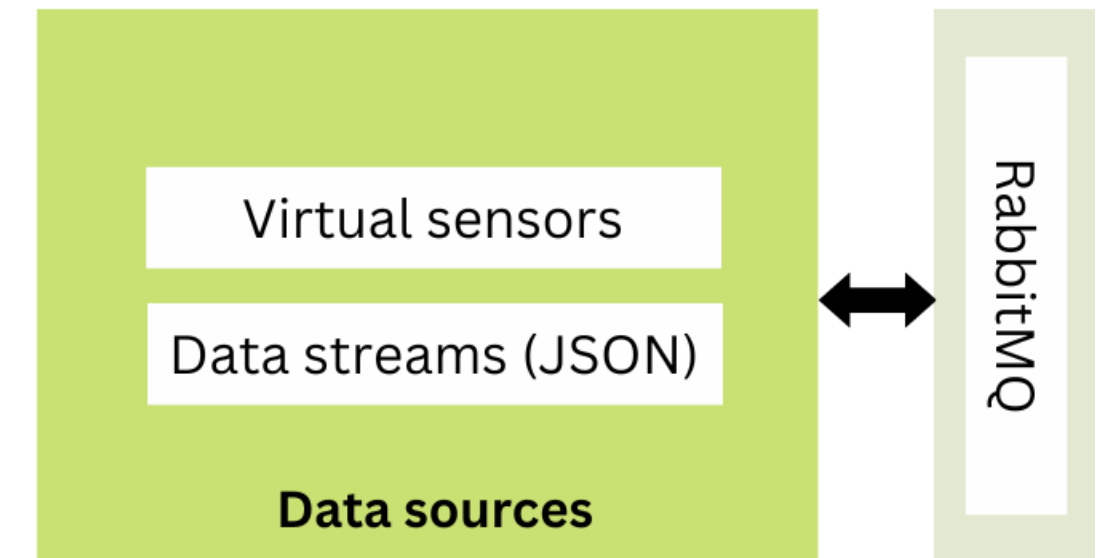


# IES GROUP PROJECT

P2 - LEI

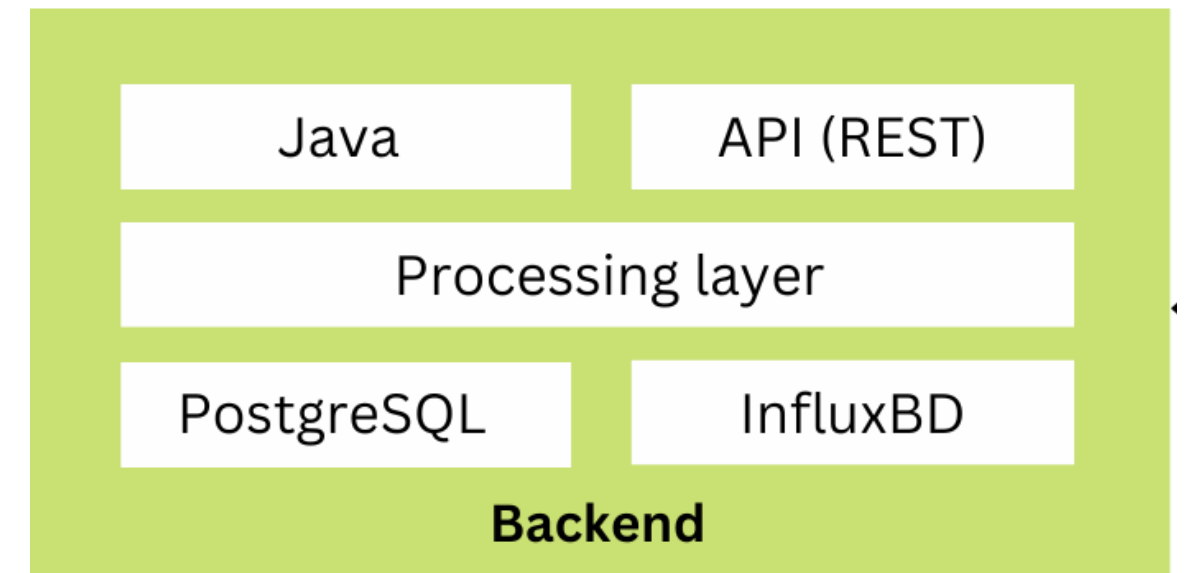
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- **Data sources generate diverse data streams from sensors and devices using Python functions in JSON format.**
- **Messages Queues efficiently buffers and distributes data messages between sources and backend layers.**



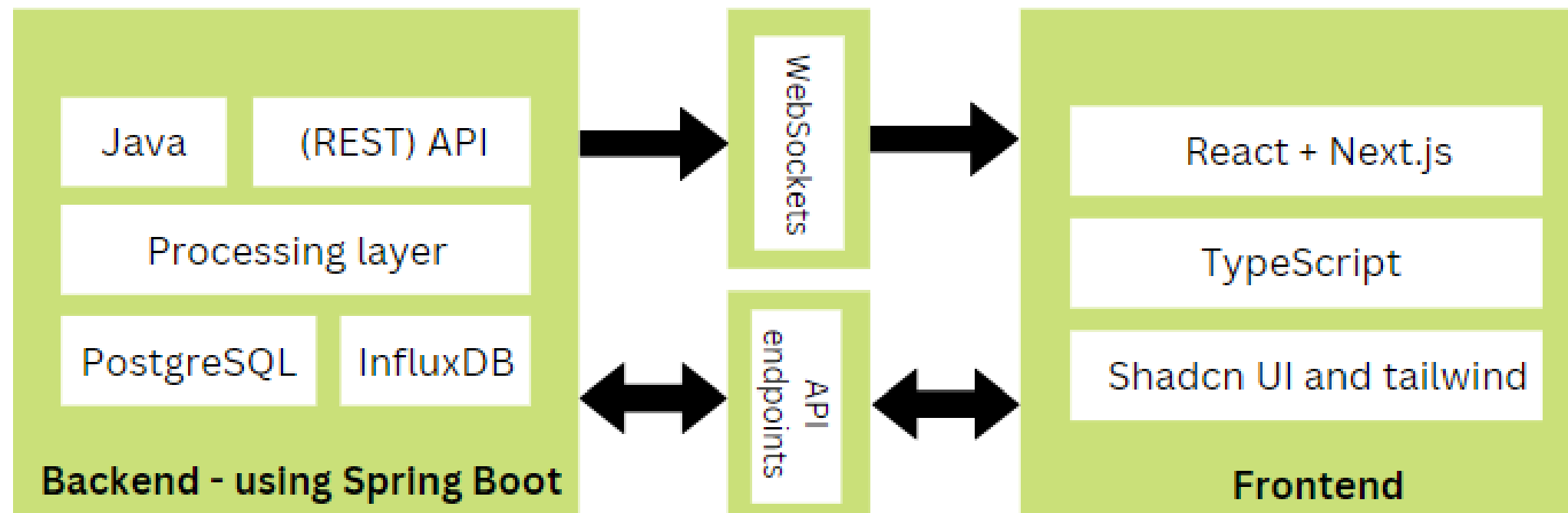
# DATA SOURCES + QUEUES

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



# BACKEND

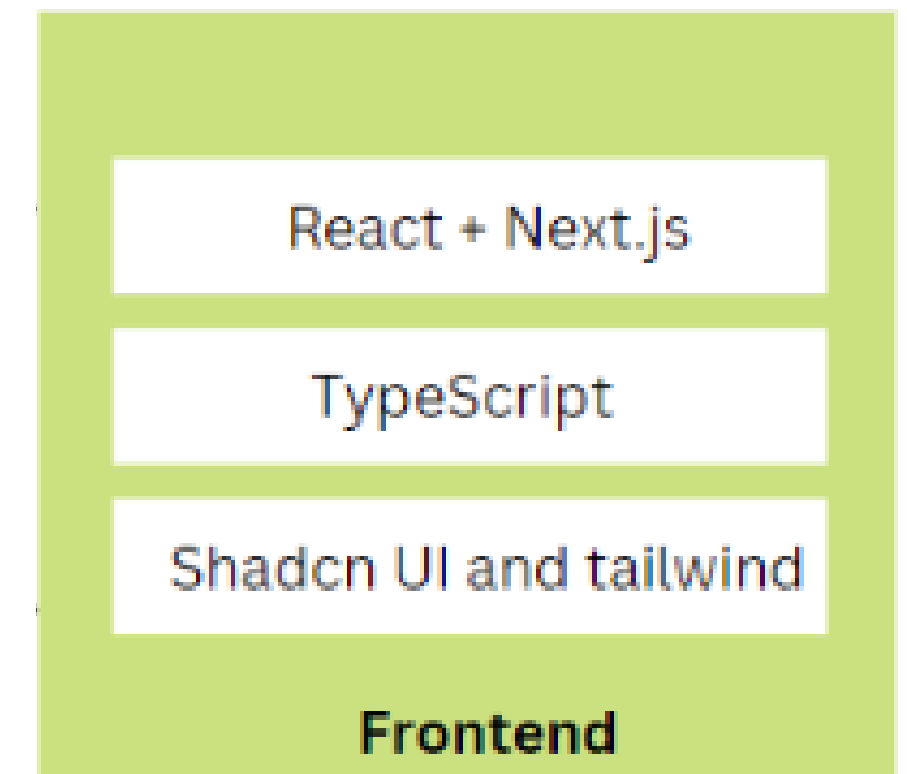




- Serves as an interface with RESTful endpoints for data retrieval and manipulation, using JSON payloads and WebSockets.

API  
+ WEBSOCKET

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



# FRONTEND