Technical Report - **Product specification**

SmartHomes

Course:	IES - Introdução à Engenharia de Software
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Project abstract:	An app for monitoring the client's home resources, such as electricity and water.

Table of contents:

1 Introduction

In this first iteration of the IES final project, we'll firstly present our product, then the architecture used and finally the core user cases and usage scenarios. With this deliverable, we will also explain the organization of the software project, build the software as a team and use corporate solutions and tools related to the already presented SmartHomes theme.

2 Product concept

Vision statement

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.

This kind of set up also prevents complex programming skills or automation skills from the user (like it may happen in other cases like Google Home). Adding various functions from other mainstream applications, such as smart device control and control and info about household resources. Instead of merely controlling devices, we gain insights into how to intelligently assist the environment and your wallet.

Personas and Scenarios

Sara Mathews

- **Age**: 39 years old
- **Job**: Doctor
- Sara is concerned about the environmental impact of her pledge. Therefore, she wants to carry out the same values to her home. As she continues to embark on her eco-friendly journey, she seeks innovative ways to reduce her carbon footprint and strive for a greener, more sustainable future for all.
- **Motivation**: Be able to combine both eco-consciousness and easiness, by using a web app to check real-time info (either from the grid or from home-produced sources, like photovoltaic panels and wind turbines), keep clean-energy levels high, and get to know when her carbon footprint is higher from any place with internet connection.

Peter Williams

- **Age**: 28 years old
- **Job**: Software Engineer
- Peter is passionate about tech and consequently likes home automations. With a deep-seated passion for both technology and sustainability, he has equipped his home with a range of smart appliances and clean energy solutions. He can effortlessly monitor and manage the functioning of these devices, optimizing their performance for energy efficiency. This level of control not only brings convenience to his daily life but also reinforces his commitment to a greener, more sustainable future.
- **Motivation**: Be able to manage his home, by using, such as adjusting the thermostat, tracking energy consumption, or remotely managing his solar panels, he relishes the power of connectivity in his quest for a smarter and eco-friendly home.

Anna Franklyn

- **Age**: 34 years old
- **Job**: Restaurant Owner
- Anna cares about the environment and takes small steps towards a cleaner and more sustainable future. However, despite Anna's eco-friendly awareness, her main goal is keeping house costs as low as possible. By reducing them, she can get a perfect balance between saving money, energy and water resources.
- **Motivation**: Be able to keep track of energy and water consumption-related costs and reduce them as much as possible by using an app that gives her insights and ways to control her devices at home.

John Lennon

- **Age**: 56 years old
- **Job Description**: Lawyer
- John Lennon is a hardworking individual who values financial stability and needs to have control over his household appliances based on energy consumption. His determination is driven by the substantial cost of his daily electricity bills.
- **Motivation** - John believes that having control over his appliances and information about local electricity costs will help him reduce expenses and save money. His ultimate goal is to optimize energy usage and lower his electricity costs.

Product requirements (User stories)

Epics

- Homes
- House divisions (bedroom, WC, living room, etc.)
- Smart Devices
- Energy management

Core stories

- Register several houses and their electrical system in one app.
- Control every bit of water used in a drought in its region.
- Oversee electronic devices connected to the house grid.
- Administer the maximum percentage of the grid energy that can supply the house.
- Turn off electronic devices with just a few taps through the app.
- Define the percentage of each type of energy (solar panels, electrical energy, etc.) that I want to be spent on in a day.
- Set up a schedule to automatically preset the temperature throughout the day to reduce unnecessary costs of energy.

3 Architecture notebook

Key requirements and constrains

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Module interactions

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4 Information perspective

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5 References and resources

- MDPI. (2023). Geriatric Helper: An mHealth Application to Support Comprehensive Geriatric Assessment. https://www.mdpi.com/1424-8220/18/4/1285