Year 2021-2022

ISENERGY

Functional Requirements Document

M1 SMART ENERGY
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ISEN ALL IS DIGITAL! TOULON | yncréa

Contents

1 INTRODUCTION

Energy saving has become a major issue nowadays. To reach the objectives, set for the energy transition and to reach the energy autonomy in the years to come so that we can do without fossil fuels as sources of energy to produce our electricity or for our means of transportation. The current objective is to reduce the weekly, monthly, and thus annual consumption of electricity in a household. By consuming less, we will produce less, therefore we will use less fossil energy for the manufacture of this Energy.

- Purpose

This document aims to teach you more about the technical part of the project and provides all the information you need

- Scope

The goal of our project is to propose solutions to reduce energy consumption in homes. For that, we will create a Radio Transmitter for Linky (ERL) which will have for goal to read the data of consumption directly from the Linky meter thanks to the entry of a TIC (Tele Information Customer) in real time in order to see the consumption of the customer and so to analyze the hours when it consumes the most in order to seek solutions to reduce this peak of consumption

- Background

The organization is as follows. Each member of the group has a skill that he or she feels most comfortable with. Depending on the tasks we must perform for the project. According to these tasks, if one of them corresponds to his area of competence, the task will be assigned to him. The other members will have another task and if their task goes well and another person finds himself in difficulty, he will be able to offer his help to try to debug it.

The person in charge of producing the document is the project leader because he is the one who supervises the follow-up and the progress of the project by assigning the tasks to each member of the group.

- **References**

[List references and controlling documents, including meeting summaries, white papers, other deliverables, etc.]

- **Constraints**

Like any project, we have constraints to respect. The constraints are:

- Delivery date: 19 & 20 May 202
- Use of an ESP32 with wifi technology

2 METHODOLOGY

For realize our project, we have decided to divide our project into different development phases.

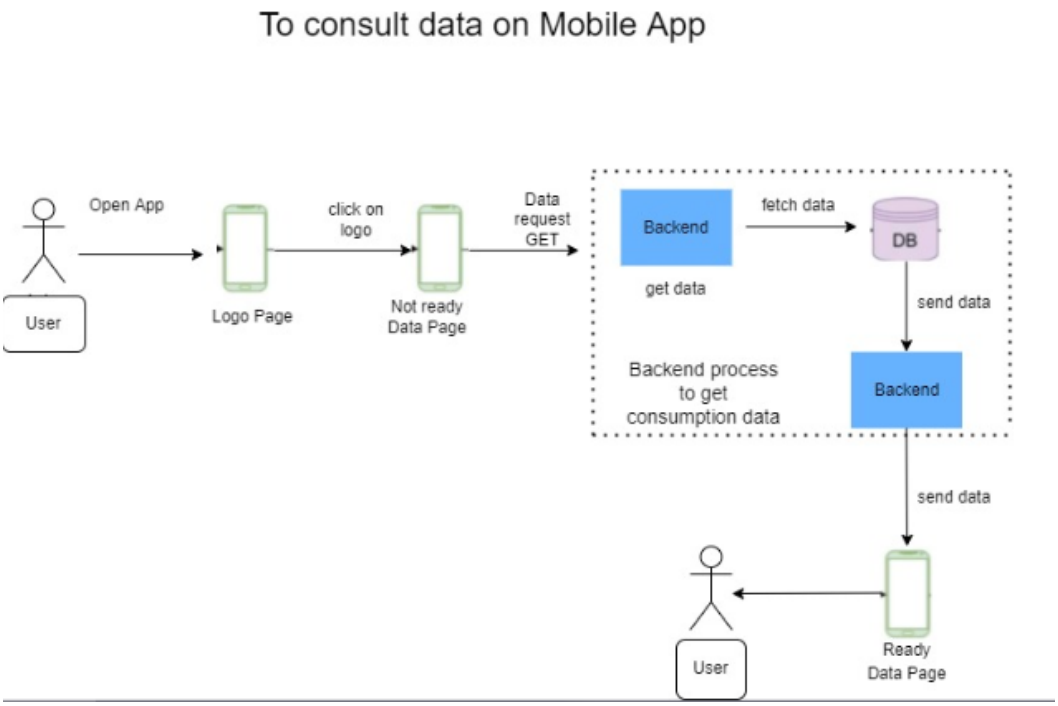
- Part 1: Design the operation of the prototype using a dynamic and static architecture
- Part 2: Design the first interface for the application
- Part 3: Create the prototype
- Part 4: Retrieve data with LRT
- Part 5: Link the data retrieve with a database and the application.

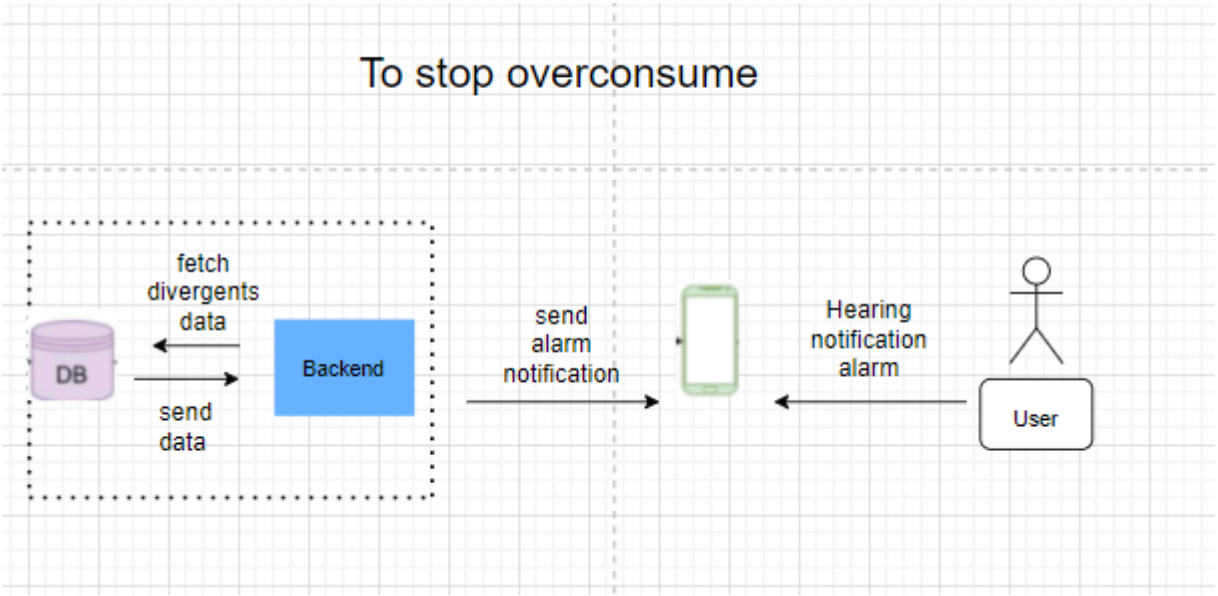
3 FUNCTIONAL REQUIREMENTS

- Context

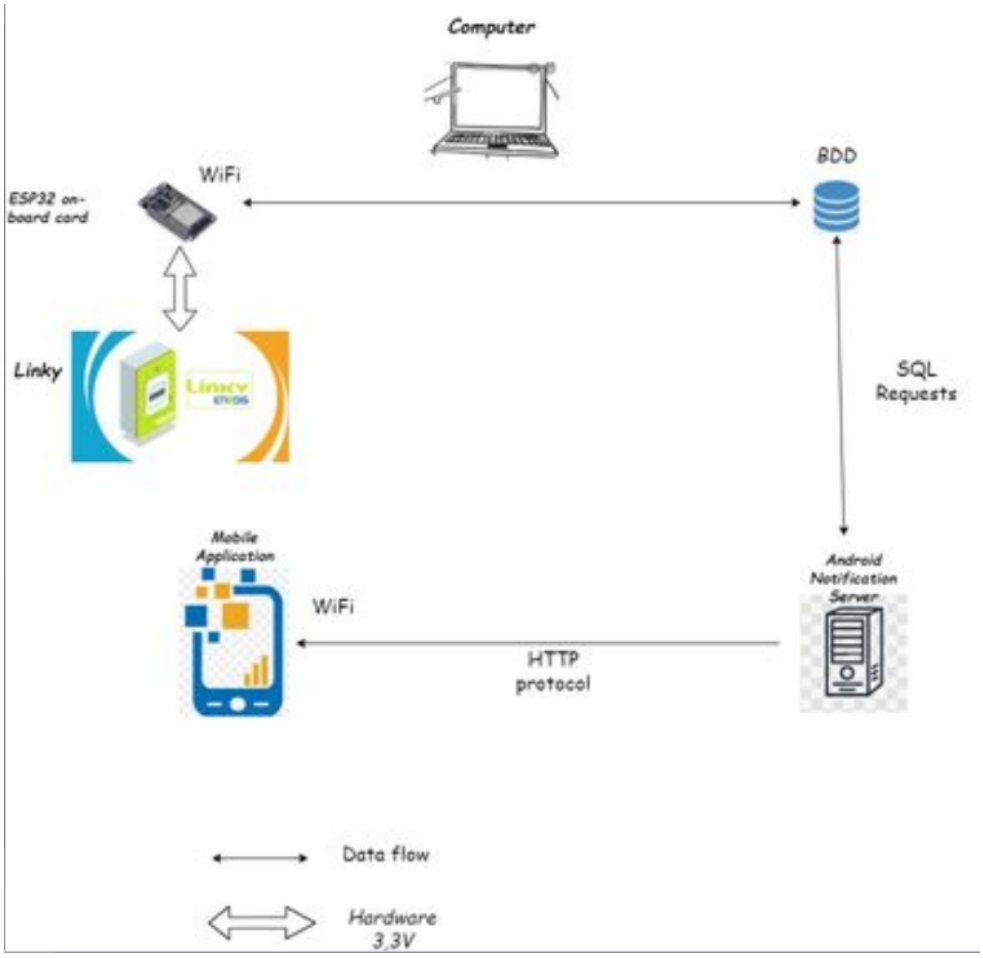
We can see on screenshots, the dynamic and static architecture

Dynamic architecture





Static architecture



- **User Requirements**

➔ A functional prototype

➔ Adaptable for all Linky counter in the house

➔ Use of Wifi technology to communicate

- **Other Requirements**

➔ Non-intrusive system

➔ Autonomous system

➔ Retrieve data with LRT

- **Data Flow Diagrams**

IN PROGRESS…

- **Logical Data Model/Data Dictionary**

IN PROGRESS...

- **Functional Requirements**

[List the functional requirements of the system.]

Sample Requirements

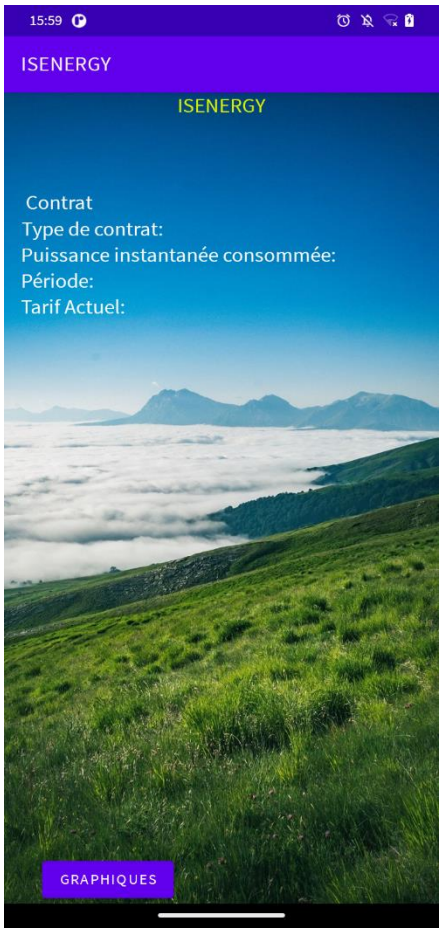
Requirement	Requirement Definition
Code Arduino	The code for the good operating of the prototype
Code in the app for retrieve the data	The data are retrieved from the Linky counter, and he is sent in the database
Code for the design in the app	The code for a good interaction between the client and the application

4 SOFTWARE INTERFACES

The name of the application is ISENERGY.
Here is an overview of the home screen. On this page we can see several information like:

- The contract we have subscribed
- The type of contract
- The power that the customer currently consumes
- The consumption period in which he is (full hour, off-peak hour...)
- The rate according to the period and the electricity supplier

He will also be able to access his consumption in the form of a graph.




```
<TextView
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    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/Activity_Name"
    android:textColor="@color/Activity_Name"
    android:textSize="20sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    tools:layout_editor_absoluteY="27dp"
    tools:ignore="MissingConstraints" />
```

5 ESP32 INTERFACES (ARDUINO)

Our project works thanks to Wi-Fi with a pc which will be used as local server.
Here are the functions which describe the characteristics of the operation in Wi-Fi:

Screenshot here soon

6 DIFFICULTIES

→ For the Arduino (ESP32) code:

→ For the android application:

We didn't have any Kotlin course, so we had to learn a new language alone and for the needs we had. (and sometimes a little short of ideas for the design of the application)

7 To go further

We have thought about different things for this project, there are many possibilities to develop this project and it will be in constant evolution. Due to lack of time, we have simplified it to the maximum to have a functional rendering. If you want to use our project to improve it, you can already use the code to access the consumption information and the contract related to the customer.

8 Shoot of the final prototype

IN PROGRESS…