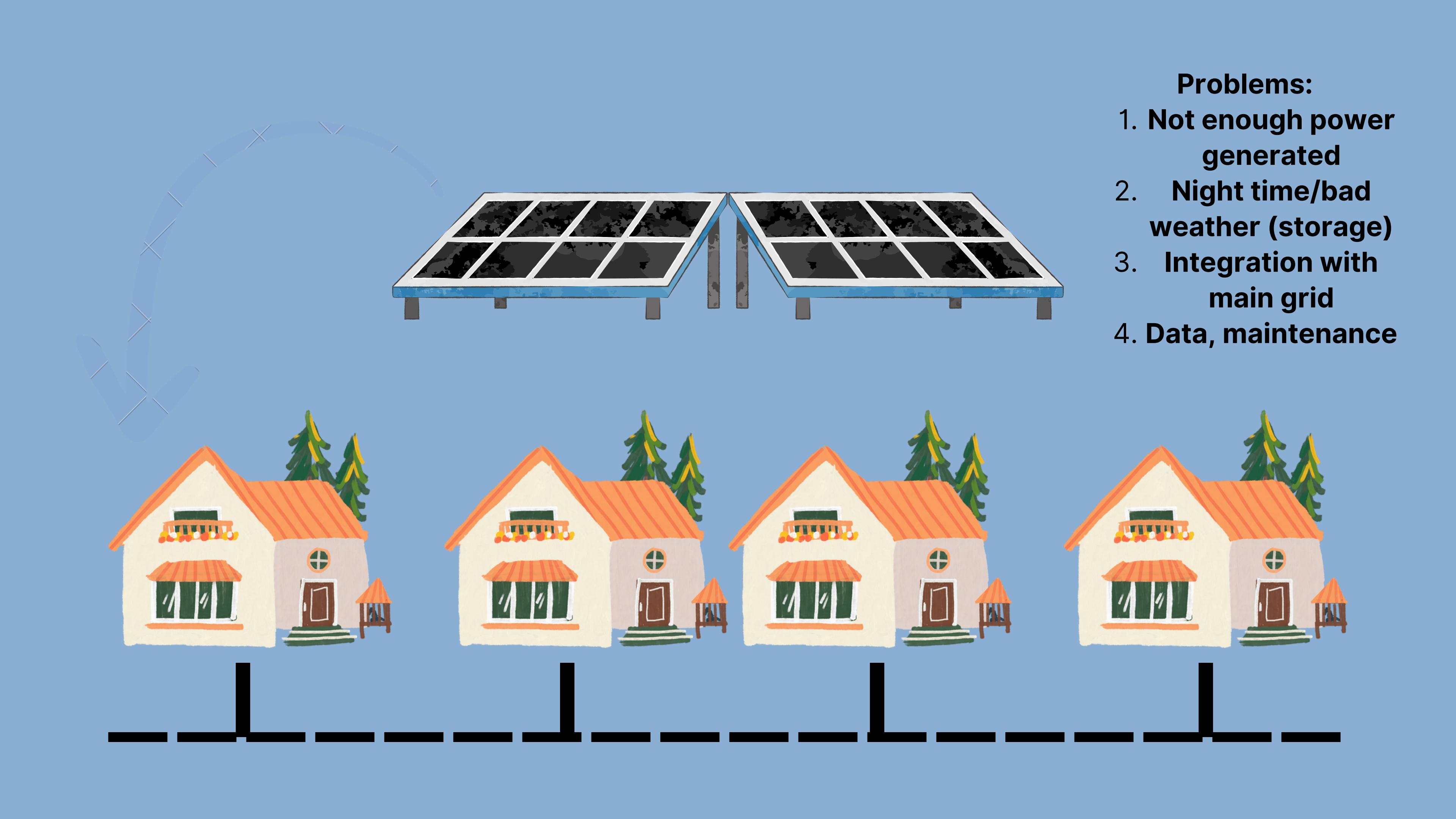


# SolarEase

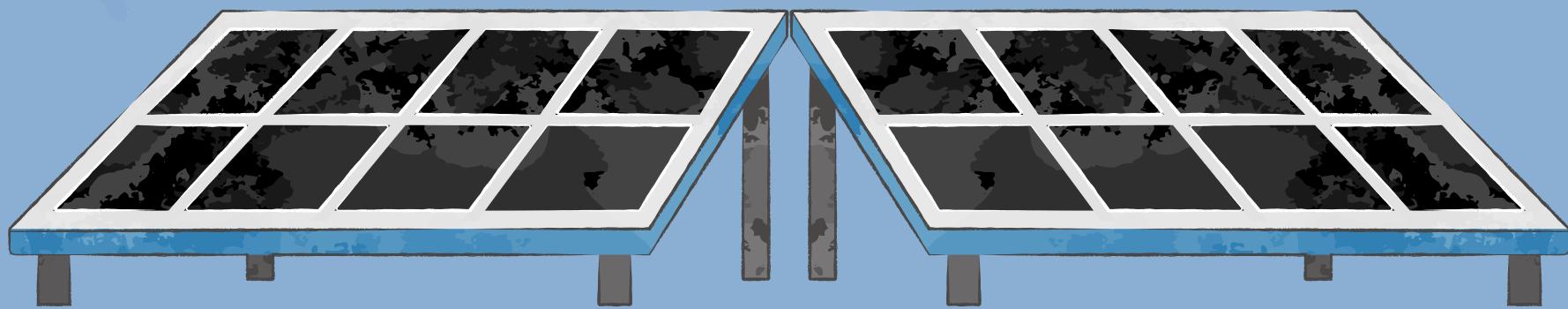
Bringing the energy source to  
community

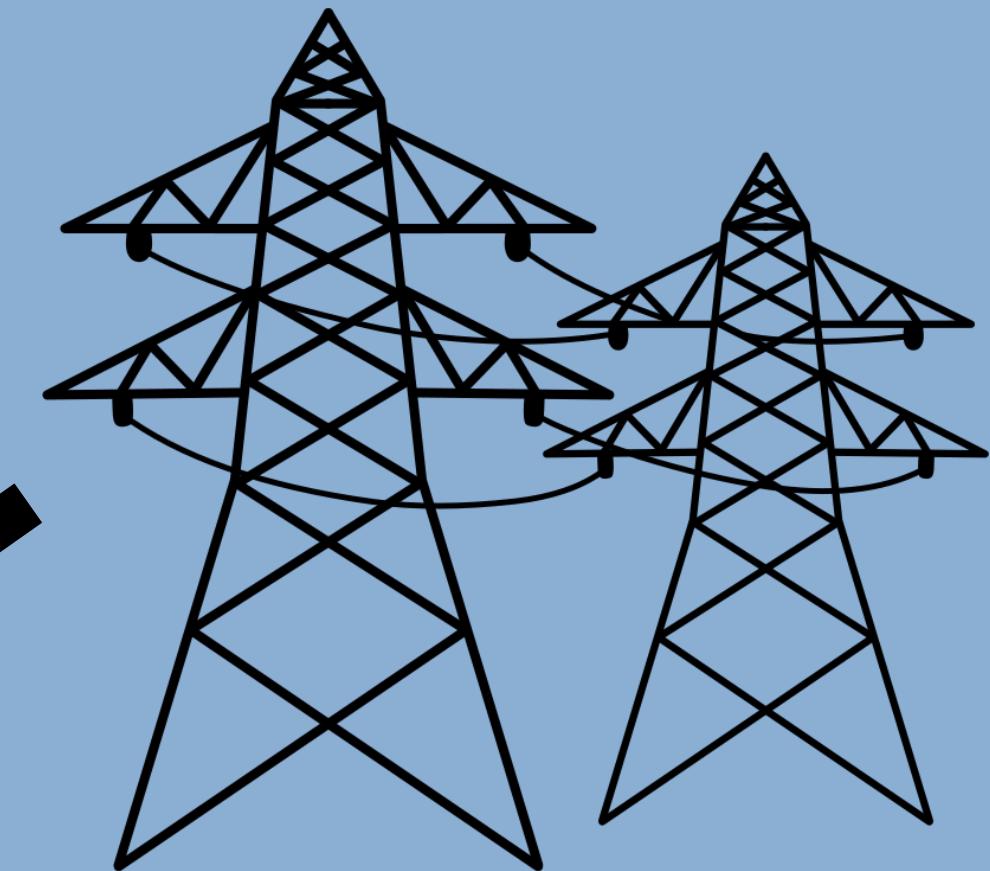
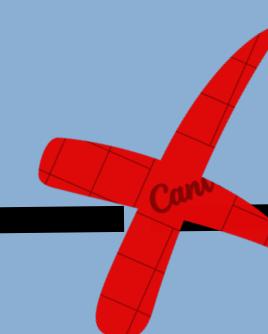
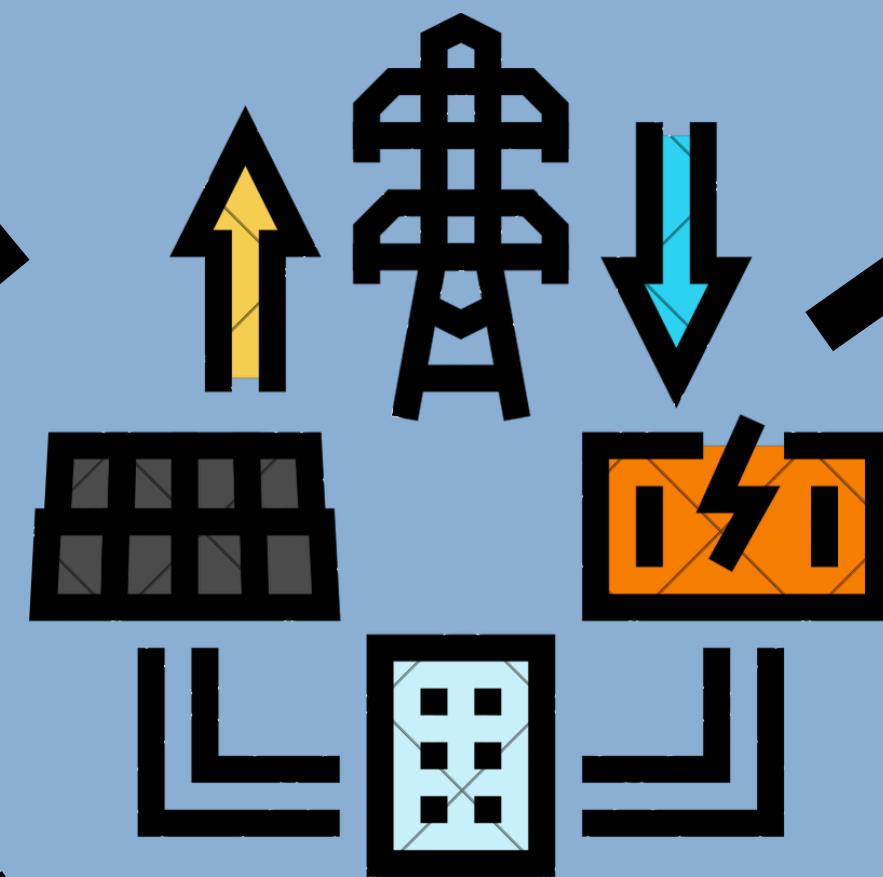
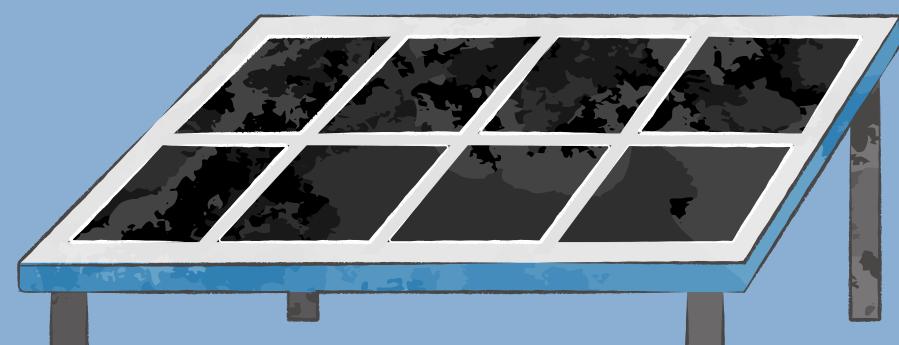
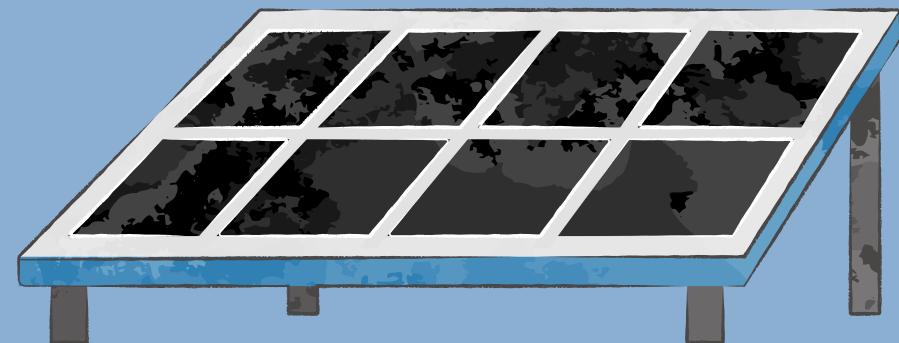




## **Problems:**

- 1. Not enough power generated**
- 2. Night time/bad weather (storage)**
- 3. Integration with main grid**
- 4. Data, maintenance**



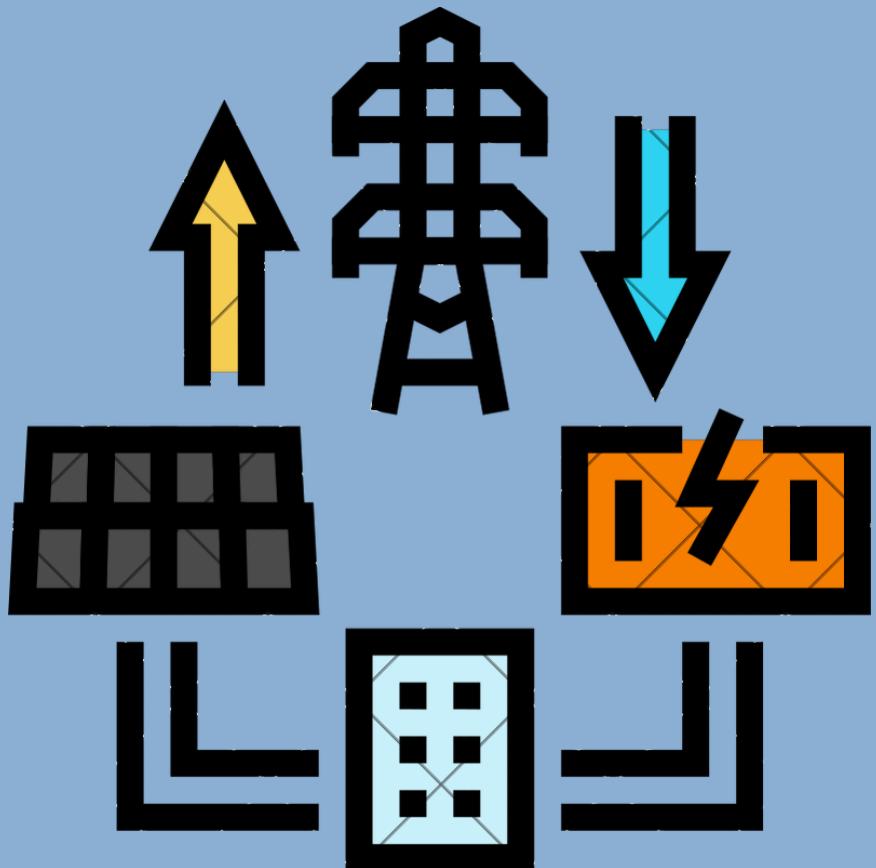


## **Key stakeholders:**

1. **Owners of buildings (Munich Wohnen):**  
Already in the process of putting PVs on rooftops. Project adding 12.5 MWa per year to energy production (10% roof space per year).
2. **Energy providers (E.ON):** Already working on decentralizing, digitalizing their energy system.

Long distance transmission like SuedLink (750 KM, 2028, 10B euros)

# Autonomous Mini-Grid system



- Smart Meters
- Sensors
- IoT devices, WLAN, Network Software + AI
- Data Visualization about production and consumption
- Understand consumer behavior and do projections
- Allow prompt warnings about low production on a rainy day so energy provider will know about the upcoming shortfall

# **What value are we creating for the energy companies?**

Micro self-sustaining grids that provide majority of the energy to community through generating it locally.

Saves money from infrastructure and maintenance of long-distance transmission. Decentralized grids means power loss will be minimal and more analytics into understanding the consumption of a community.



# Problem

- Elderly people find it hard to pay bills
- No money to invest in green energy
- E.ON/other energy companies

# Solution

Renting roof space from buildings/schools for exchange of discounted energy prices

\*more solutions at the end



# **Roof Space in Neuperlach**

Schools/Kindergarten

Apartment buildings

Commercial buildings

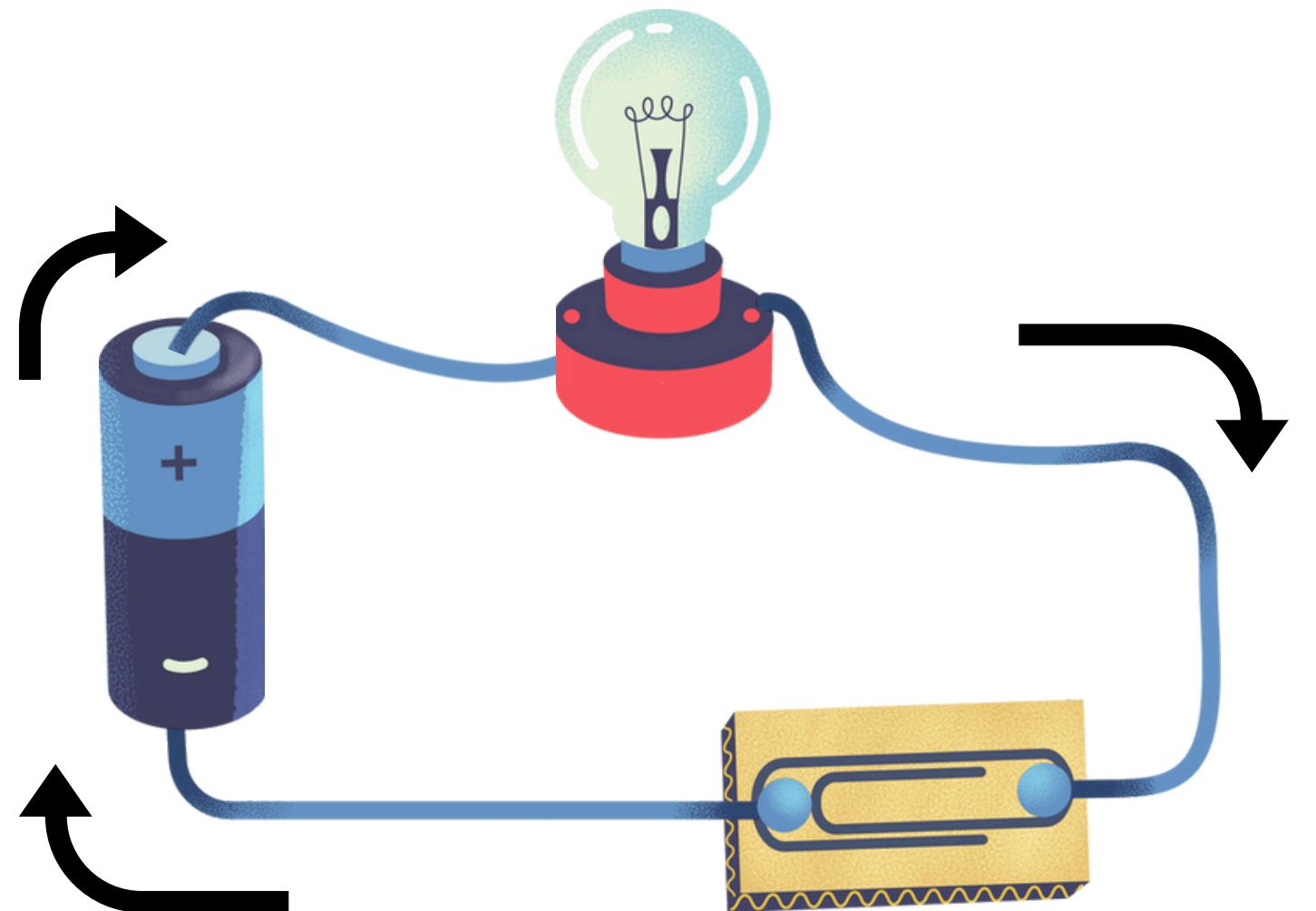
Government-owned empty  
land

# **What value are we creating for the elderly?**

As most of them rely on pension, they will be able to pay less for energy

No need for them to invest money or time into understanding and implementing green energy

# Road Map



In-depth analysis of energy consumption of Neuperlach and estimated potential of Neurperlach being energy source



AI powered micro-grid system with data visualization from live data sources (MVP)

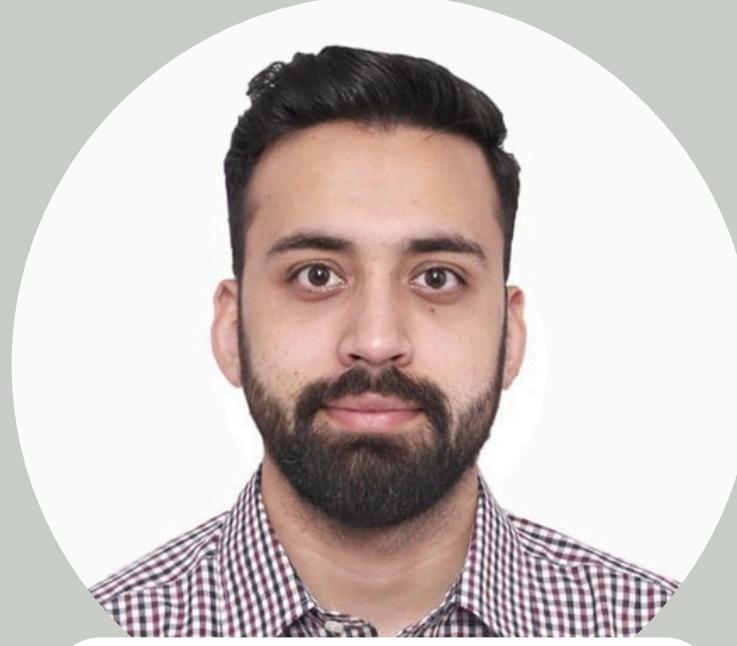


Identify energy companies. Pitch them our idea.

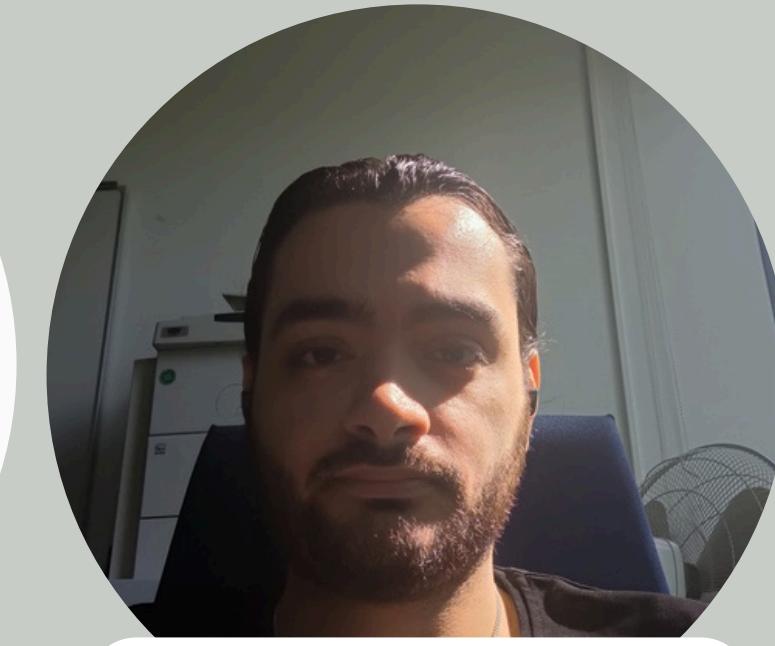
# Team



Ivana Peneva  
M.Sc. Information  
Systems



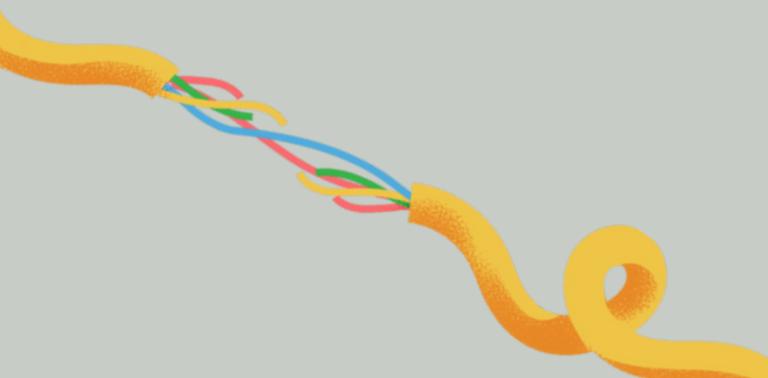
Asad Khan  
M.Sc. Management  
and Technology



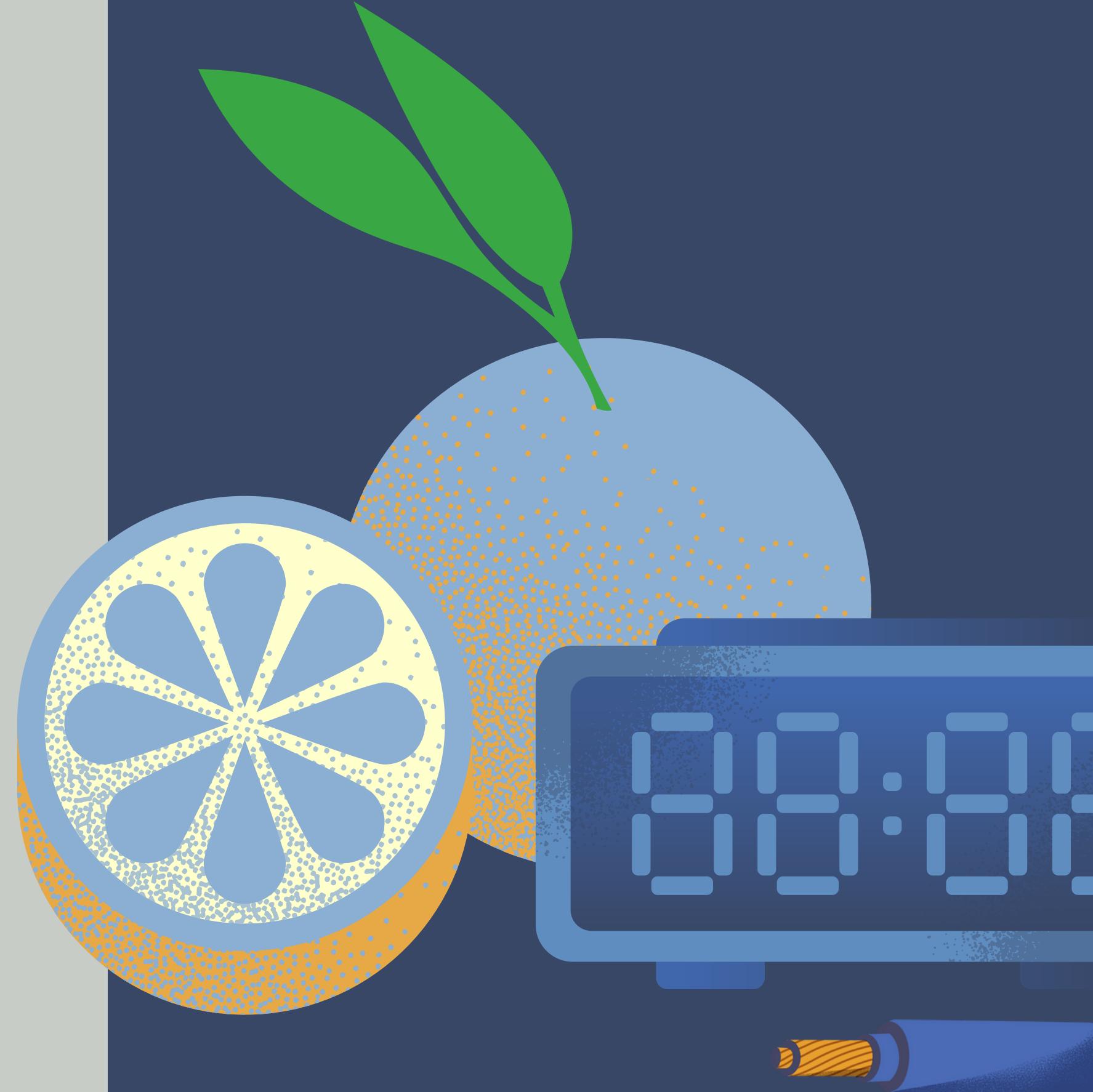
Maqarios Saleh  
M.Sc. Informatics



Amir Suhail Salim  
M.Sc Power  
Engineering



# Thank you



# Findings supporting our project

Interviews with the elderly

E.On. already pretty ambitious in implementing rooftop systems

Mostly big buildings in Neuperlach

>30 Schools in the Neuperlach area

> 100 Schools in the Neuperlach area

# OUR IDEAS

Provide investors with simulations and real-time calculations of the energy consumption. We can calculate in day d, house h generating and consume c. Those numbers differ from summer to winter from workday to weekend and so on and so forth

Maqarios

Kindergartens produce their own green energy and allow the parents to charge their electric vehicles. We will create an app for parents to track how much they should be billed for charging their cars and for the kindergarten fee.

Ivana

Kindergardens can produce energy and sell it to nearby offices and apartments. An app to track the energy usage can be created

Ivana

Develop a software platform to manage and optimize the use of solar panels on government-owned buildings, ensuring equitable distribution of solar energy to residents, schools, kindergartens, and shops in Neuperlach

- Real-time data collection from solar panels.
- Visualization of energy production statistics.
- Real-time tracking of energy usage per building and unit.
- Historical consumption data analysis.
- Algorithm to distribute energy based on real-time production and consumption data.
- Priority settings for essential services (schools, kindergartens).

Ivana

Develop an entire system from PV panels to mobile app. We will provide all-in-one solution for investor like E.ON.

- When E.ON install their solar panels, we will add smart metering, IoT devices, sensors and connect it to WLAN to get live data.
- This live data will be shown to E.ON or energy providers through an app or website to monitor total production, total consumptions and analytics including potential production for the day through sunlight sensors.
- Machine Learning will be applied to the incoming data to understand the consumption behavior and how E.ON can further make the energy efficient. For example, E.ON would know in advance that tomorrow, they would need energy from external sources as its going to be cloudy or rainy.
- E.ON can also use this data to do projections about how much energy they would need to transmit from elsewhere.

Asad

Develop a web and mobile application that helps kindergarten management optimize their use of solar energy through smart scheduling and energy management. The app will enable kinder garden management to plan and automate energy-intensive tasks.

Ivana

Develop a web and mobile application that provides residents with easy to understand information about their solar energy production and consumption. The app aims to promote awareness and education on renewable energy usage within the community

Develop a web and mobile application that helps residents give residents information about free solar events nearby. The solar energy is generated by solar panels installed on their building's rooftop. The app will provide transparency in energy distribution and foster a sense of community engagement. There will be events like cinema, coffee making, juice making or grilling using solar energy

Develop a software platform to connect investors and houses:

- House:
  - Potential Power Generation.
  - Estimated Costs.
  - Estimated Dividends.
- Investors:
  - Choose a house to invest in its roof.
  - Calculate RoI based on chosen investment.
  - Extra benefits if investor is a tenant of the same house/building.



**Gertruda Maislach**  
Senior in the Neuperlach area  
92 years old

*"Ah, my home is my castle. Inside here, I like to keep it warm and cozy, even if my wallet is small. Outside, it's often too cold and dangerous"*

- Stays at home all the time
- Likes to keep her apartment very warm
- Stays at home 90% of the time
- Doesn't have much money to pay her bills, because she relies on a pension



**Anna Mueller**

Kindergarten Manager in Neuperlach  
area for 20 years  
45 year old

*"Just like the sun helps everything grow, we shine our light to help each child bloom."*

- Wants to give the opportunity to parents to charge their electric vehicles while dropping off their kids at the kindergarten and have a
- Stays after hours to work on the computer
- Wants to have a clear overview of the billing of each parent

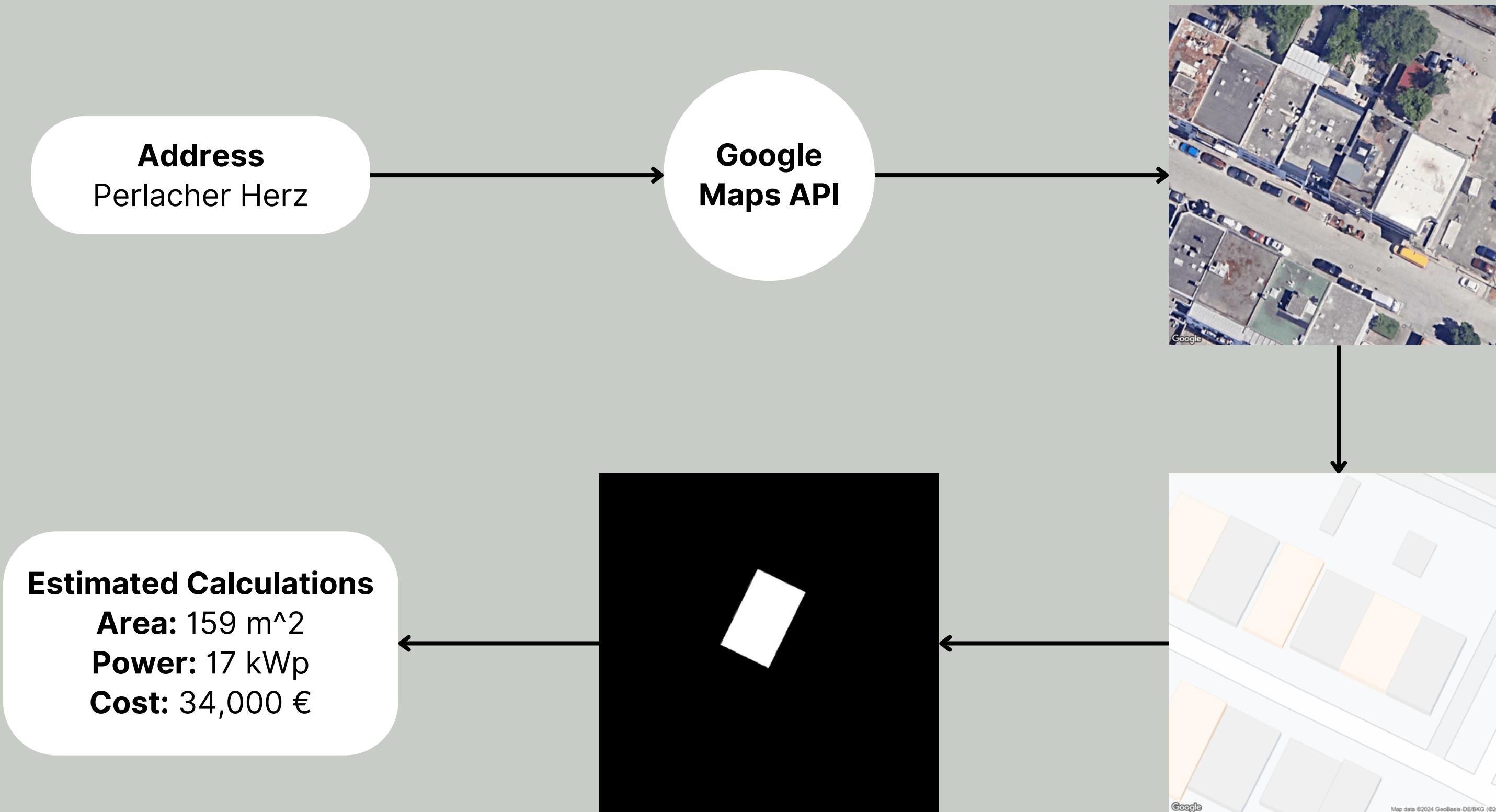


**Maximilian Wagner**  
**Investor in E.On.**  
**45 year old**

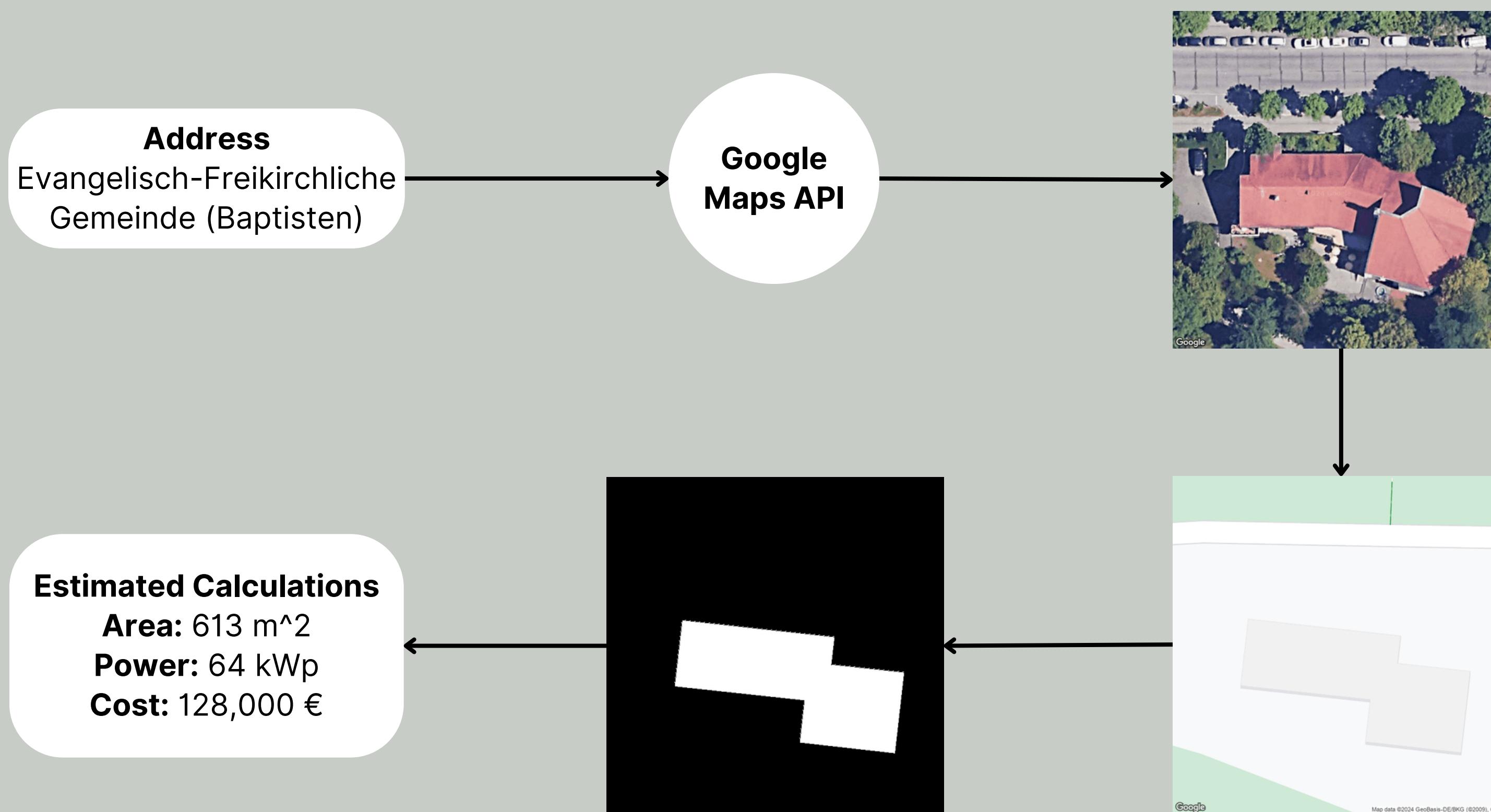
*"Just like the sun helps everything grow, we shine our light to help each child bloom."*

- Excited about ambitious solar projects in Munich
- Wants to outsource data collection and data analysis

# What has been implemented so far?



# What has been implemented so far?



## **Interview guideline:**

### **Introduction:**

- Hey, my name is Ivana and I'm a student working on a project about energy usage and housing. I'm interested in learning about your experiences living in Neuperlach. I am very happy that you have found a few minutes to talk to me and I promise it wouldn't take that long. Is it okay to record this conversation

### **General Lifestyle and Housing Questions**

- Can you tell me a bit about your home (is it an apartment/house)? How long have you lived here? How many people living in this apartment
- Do you know much about the history of your buildings? How old is the building for example
- Do you own your apartment? Does the government own it? öffentlich geförderter Wohnungen publicly subsidized housing

### **Energy Usage and Costs**

- How do you feel about your current electricity bills? Have you noticed any changes in the cost over the years? 160 Euro
- Do you take any measures to reduce your electricity usage? If so, what kind of measures?
- Would you like to pay less for electricity bills?
- Have you ever considered alternative energy sources, like solar panels, to reduce your electricity costs?, Do you know much about solar panels, or do you know people who have them?

### **Interest in New Solutions**

- Would you be open to making changes to your home if it meant saving money in the long run? For example, installing energy-saving devices or systems?
- How do you feel about the idea of renting out a part of your rooftop if it didn't require any upfront cost and could save you money on bills?"

### **Environmental Concerns**

- How important is it to you to use environmentally friendly energy sources?

### **Wrapping Up**

Thank you so much for your time and insights. You helped us a lot! Is there anything else you'd like to share about your experiences with energy usage?