Advanced Distributed Storage for grid Benefit (ADSorB)

Sustainable Places 2024

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3rd July 2024

Motivation

Motivation

- Distributed thermal energy storage is expected to play a major role in the transition to a future energy system that features increased electricity generation from intermittent renewable sources combined with decarbonisation of heating and transport.
- Storing thermal energy at point-of-use within domestic dwellings offers benefits over alternatives such as large-scale grid-level storage, not least that issues arising from local network distribution constraints may be overcome.

Approach

- The Advanced Distributed Storage for grid Benefit (ADSorB) project aims to develop:
    - two advanced thermal storage technologies, and
    - novel intelligent control systems.
- Implemented at scale, the ADSorB technologies present substantial opportunities for aggregation of distributed energy storage to significantly enhance UK energy flexibility.

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Overview & Project Partners

Funding and Duration

- Funded by UK Government Department for Energy Security and Net Zero

- Phase 1: Feasibility
  - Feb 2022-Jun 2022 (£150k)
- Phase 2: Implementation
  - Nov 2022-Jan 2025 (£2.6M)

Department for Energy Security & Net Zero

Loughborough University	WP1: Thermal Storage Prototyping and Manufacture
University of Sheffield	WP2: Laboratory-based characterisation and performance optimisation
University of Nottingham UK | CHINA | MALAYSIA	WP3: Field demonstration and performance evaluation
mixergy	WP4: Product development and exploitation

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Storage Technologies

Phase Change Material (PCM) Storage

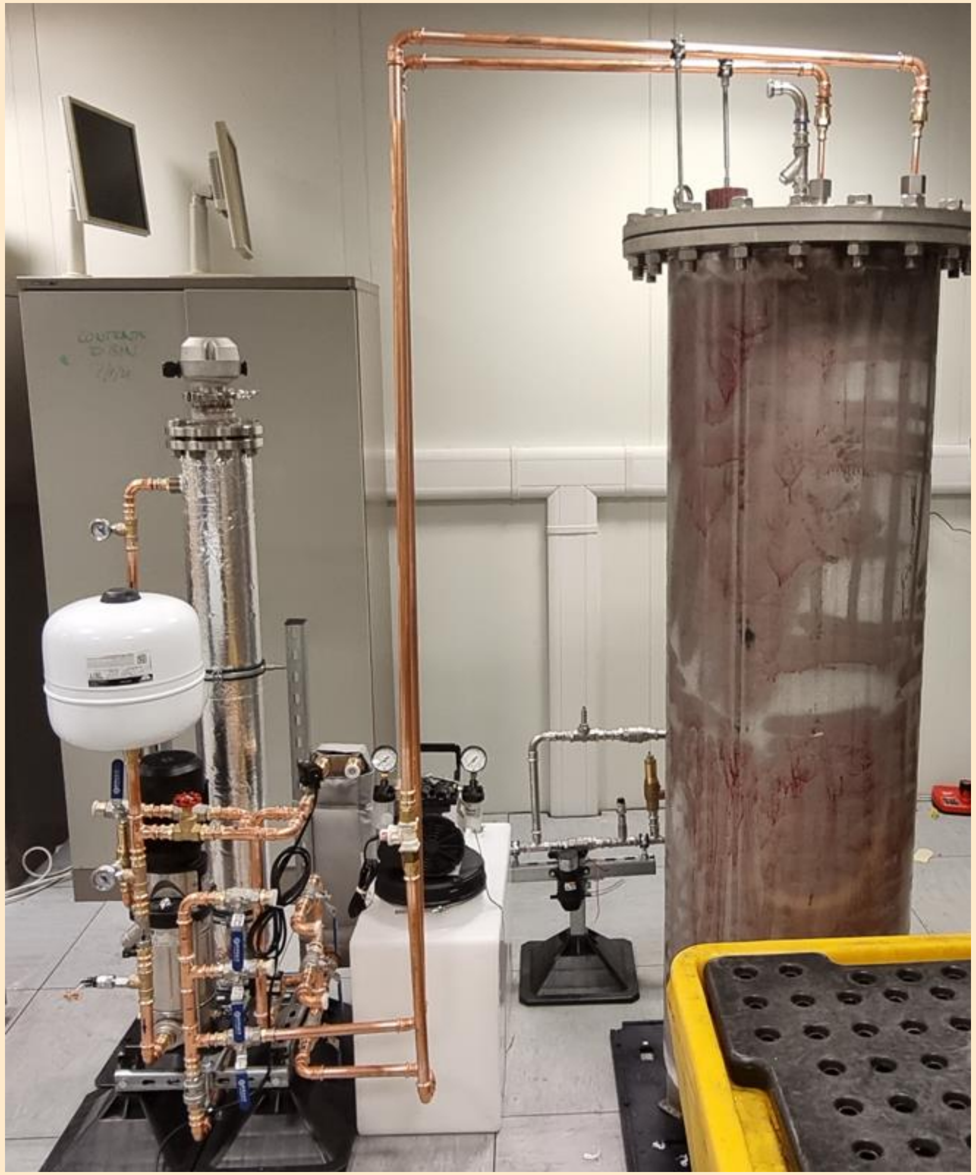
- Latent heat storage offers the potential for substantially increased heat storage capacity for a given store volume in comparison to traditional water based sensible storage, in addition to consistent delivery of heat at temperatures close to the phase change temperature.
- The primary focus of the PCM modules developed within the project is intra-day storage, enabling the shifting of daily peaks in heat demand and allowing users to take advantage of emerging time of use tariffs (TOUTs). Demonstrated capacity exceeds 4.5kWh per module.
- The system has been developed for use with a heat pump as the thermal source.

ADSorB

Storage Technologies

Thermochemical Storage (TCS)

- The major benefit of this technology is that, once charged, the thermochemical potential within the store may in principle be held indefinitely with negligible losses.
- As such, these systems are being developed for the purposes of extended duration storage – potentially over days or weeks.
- Given the intended application to longer-term storage, these systems have been designed to provide greater capacities than the PCM systems, with a target capacity of 45kWh per module.
- Storage of this duration and capacity is ideally suited to addressing infrequent but longer duration events such as consecutive days with little solar and wind generation, for which there are currently limited viable solutions.



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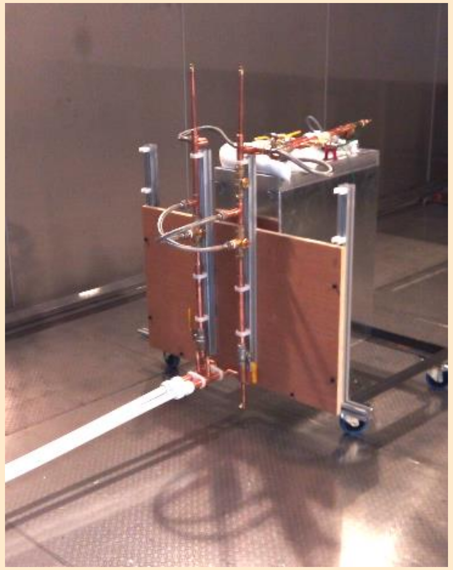
Characterisation and SoC Development

Module Level Characterisation

- Comprehensive laboratory-based testing of the systems is being carried out at the University of Sheffield.
- The facilities at the University of Sheffield's Laboratory for Verification and Validation (LVV) enable testing of the systems in controlled environmental across a full range of charge, idle and discharge conditions representative of different operational scenarios.
- For the PCM stores, tests have been designed to cover a range of scales and complexities in order to enable detailed characterisation of system performance and the development of novel state-of-charge (SoC) estimation techniques. Accurate SoC estimation is key for effective control but presents a challenging task for latent heat storage.
- The TCS systems will undergo analogous testing to support characterisation and state estimation activities.



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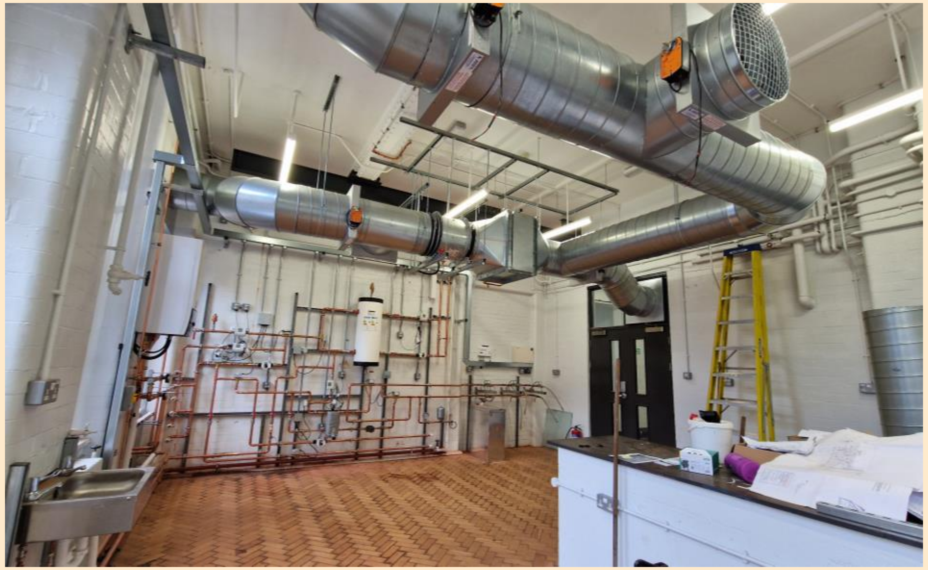
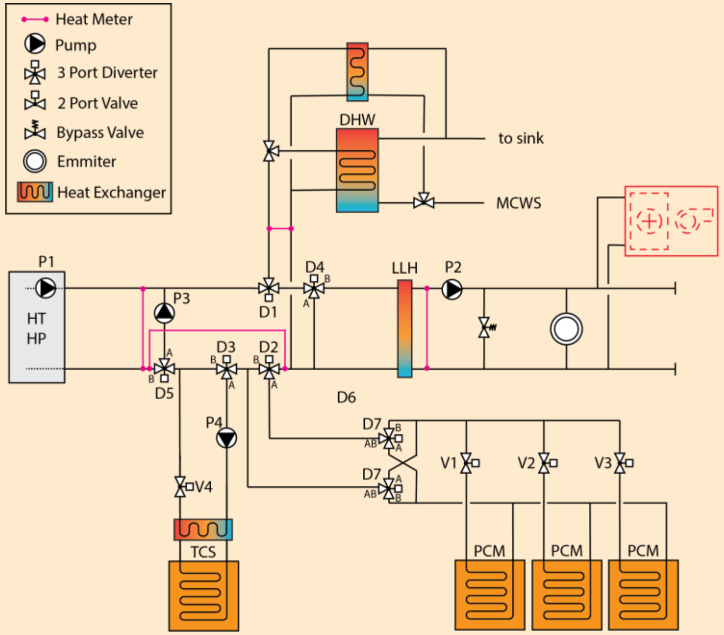
Characterisation and SoC Development

System Level Demonstration and Development

- A new low-carbon energy laboratory has been designed and commissioned to support the project.
- This comprises a replica of the domestic heating system installed in the trial properties, enabling developments in the design, operation and control of the storage systems and associated heating and emission equipment to be tested at system level prior to deployment within homes.
- It also offers extension to alternative heat sources, enabling testing of scenarios that are not possible within the occupied trial homes themselves.

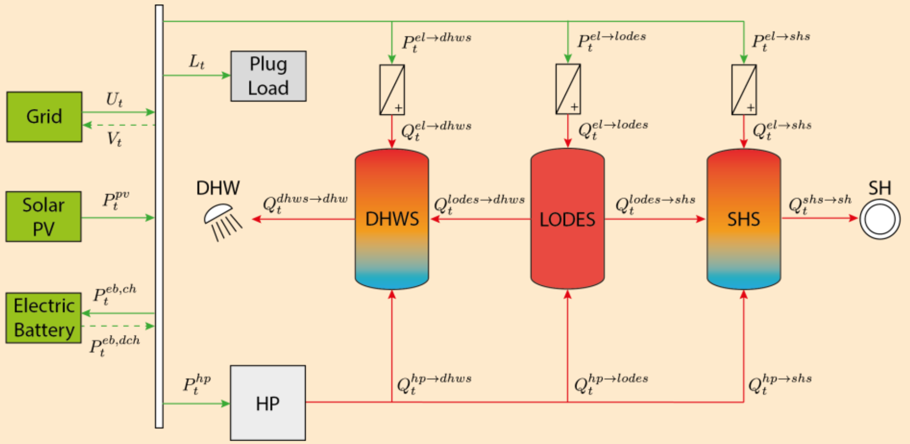


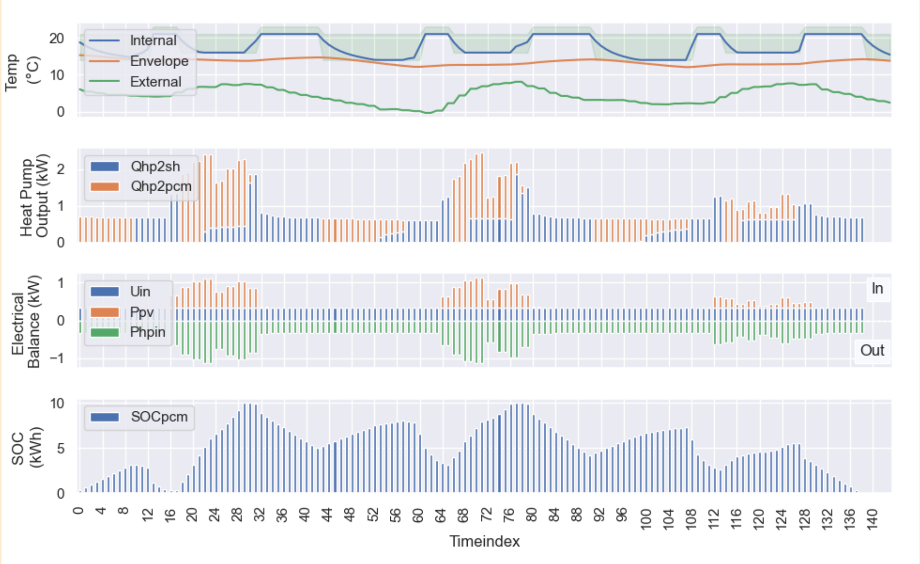


Model Predictive Control

Optimising Energy Storage

- Efficient, practicable control of domestic energy systems remains an open problem, particularly for the case that long-duration and short-duration storage is combined.
- A scheduling strategy based on model predictive control (MPC) strategy has been developed for this purpose.
- This offers several key control characteristics i.e. that it should:
  - Be scalable, predictive and grid aware.
  - Require minimal user input and installer tuning.
  - Be capable of servicing both occupier and network needs by balancing multiple, potentially competing objectives.
- MPC software development links closely with the development of both module-level and dwelling-level control systems by Mixergy Ltd.
- This encompasses the design and implementation of hardware and software elements for each storage type, including integration with domestic heating technologies including heat pumps.





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Deployment

Creative Energy Homes Trial Site

- A key facet of the ADSorB project is demonstration of the technologies in real-world environments.
- The technologies are being deployed into two of the University of Nottingham's Creative Energy Homes to demonstrate their use and functionality in occupied dwellings.
- The TCS units will also be trialled on the District Heat Network serving the Creative Energy Homes, enabling performance of the storage systems at this larger scale to be evaluated.
- These deployments will provide critical supporting evidence of the effectiveness of the technologies in different residential settings.

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Future Projects: Work With Us

Capabilities

- **Existing multi-disciplinary partnership:** Ready to scale current trial
- **Storage technologies:** Novel (IP under development) phase change and thermochemical storage technologies being developed towards TRL 7.
- **Facilities:** Test beds across scales from material characterisation to in-home trials, including environmentally controlled testing of full-scale thermal stores.
- **SME partner:** Offering commercialisation insights, controls platform and potential route to market.
- **Modelling, optimisation and control:** Unique intelligent controls development capabilities, utilising data-informed model predictive control.

Potential Partners

- **Trial hosts**: Municipalities able to host a larger scale deployment of the technology. This could include mixed use dwellings, tower blocks or district heating networks.
- **Manufacturing scale-up expertise**: Experience of moving technologies from TRL 7 to 9, and into commercialisation.
- **Energy service providers and network operators**: Particularly those interested in exploring or trialling experimentation with tariffs or flexibility services.
- **Consumer behaviour insights**: Lifecycle user research to understand technology and tariffs use and acceptance.

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University of Sheffield

Department for Energy Security & Net Zero

Any questions?

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ADSorB

Exploring the Sustainable Energy Potential in Positive Energy Districts (PED) via Geographic Information System (GIS)

Hande Demirel, Istanbul Technical University
Ayşenur Koçyiğit, Istanbul Technical University,
Beril Alpagut, Demir Enerji
Damla Muhcu, Kadıköy Municipality

Positive Energy District (PED)

PROPEL
Positive RObust PEd Localities

The Positive Energy District (PED) concept is an urban development strategy derived from carbon-neutral and zero-energy communities that aims to reduce energy consumption and increase renewable energy production in line with the United Nations (UN) Sustainable Development Goals.

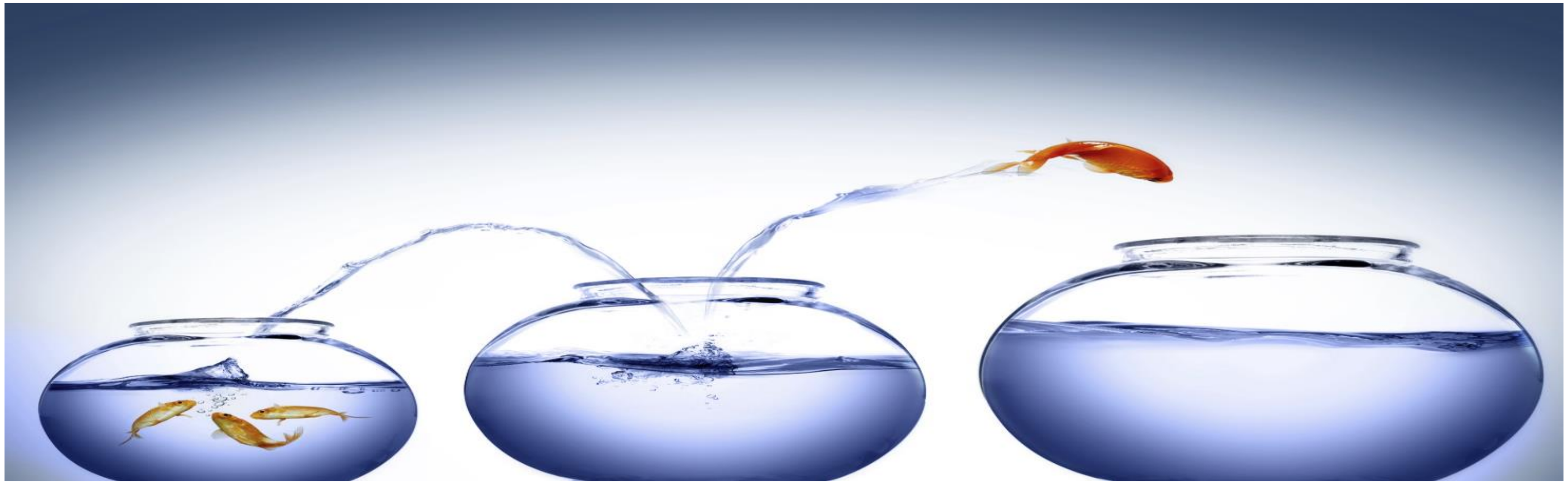
Positive Energy District (PED)

PROPEL
Positive RObust PEd Localities

The Positive Energy Districts (PEDs) are zones designed to produce net zero emissions and be self-sufficient in energy. Within these zones, renewable energy technologies and integrated energy systems are used to meet citizens' basic needs, including electricity, heating, and cooling, with an annual surplus of renewable energy.

Challenges & Opportunities

- Decision making for planning, managing and operating such systems requires tailored frameworks, models and tools,
- Definition of feasible PED boundaries,
- Potential of sustainable resources within the area,
- Various criteria exists, where their importance needs to be assessed.



Challenges & Opportunities

PROPEL
Positive RObust PEd Localities

- Spatial Information Science including spatial data acquisition, Geographic Information Systems (GIS),
- Artificial Intelligence including machine learning, deep learning,
- Digitalization of PEDs, digital twins, visualization of PEDs.

Picture By Sajid Malik, July 18, 2022
https://www.geospatialworld.net/prime/prime-opinion/urban-spatial-digital-twin/

INTERNATIONAL R&D PROJECTS

PROPEL
Positive RObust PEd Localities

Name	Type of Funding	Date	More Information
Making City	Horizon 2020	2018-2024	https://makingcity.eu/
STARDUST	Horizon 2020	2017-2024	https://stardustproject.eu/
CityxChange	Horizon 2020	2018-2023	https://cityxchange.eu/
POCITYF	Horizon 2020	2019-2024	https://pocityf.eu/
ATELIER	Horizon 2020	2019-2024	https://smartcity-atelier.eu/

PROPEL – CASE STUDY KADIKÖY

- **Aim of the Project:** The PROPEL project aims to expand a PED energy system with biogas and transportation. Within the scope of the project, examples of PEDs will be analyzed. These examples are Kadıköy Municipality/Turkey, Vasters, Vafab, Malarenergi and Stockholm/Sweden and Florence, Padova/Italy.
- **Project Partners:** RISE (Research Institutes of Sweden), Istanbul Technical University (ITU), Link Campus University (LCU), Eurac Research, Kadiköy Municipality, Västerås stad/City of Västerås, Comune di Firenze, Vafab, Mälarenergi, Stockholms stad, Giotto Cooperativa Sociale and Enermet Enerji ve Meteoroloji Mühendislik ve Müsavirlik A.S.

PROPEL – CASE STUDY KADIKÖY

- To support the energy balance analysis in the Kadıköy province, several sustainable energy sources needs to be examined.
- Within this study, the Caferağa district was chosen as a sample area to assess its solar energy potential.
- Solar energy potential was examined within the scope of the study, seasonal differences were examined with sun hour analysis, and the shadow change during the day and the sun hour status during the day were examined.

METHODOLOGY

PROPEL
Positive RObust PEd Localities

Exploring Sustainable Energy Potential in Positive Energy Districts (PED)

Data Acquisition

- Building data including the number of storeys

Generation of 3D Model

- 3D building model

Performing Analyses

- Sun hour
- Shadow change
- Solar energy potential

DATA

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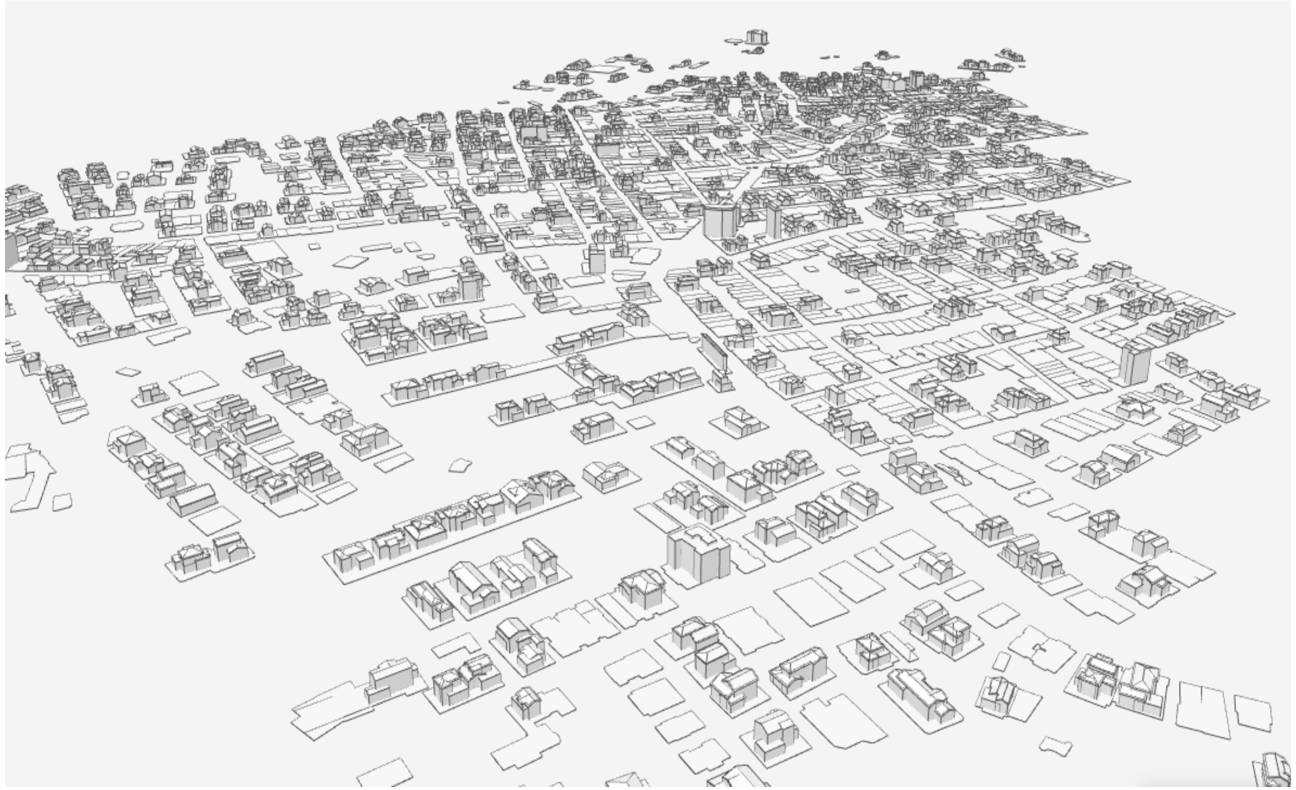
Positive RObust PEd Localities



3D model of Caferağa District

The analysis utilized building data from the study area, which contains details such as construction year and number of floors. This data was used to create a 3D model of the study area.

SPATIAL ANALYSES

PROPEL
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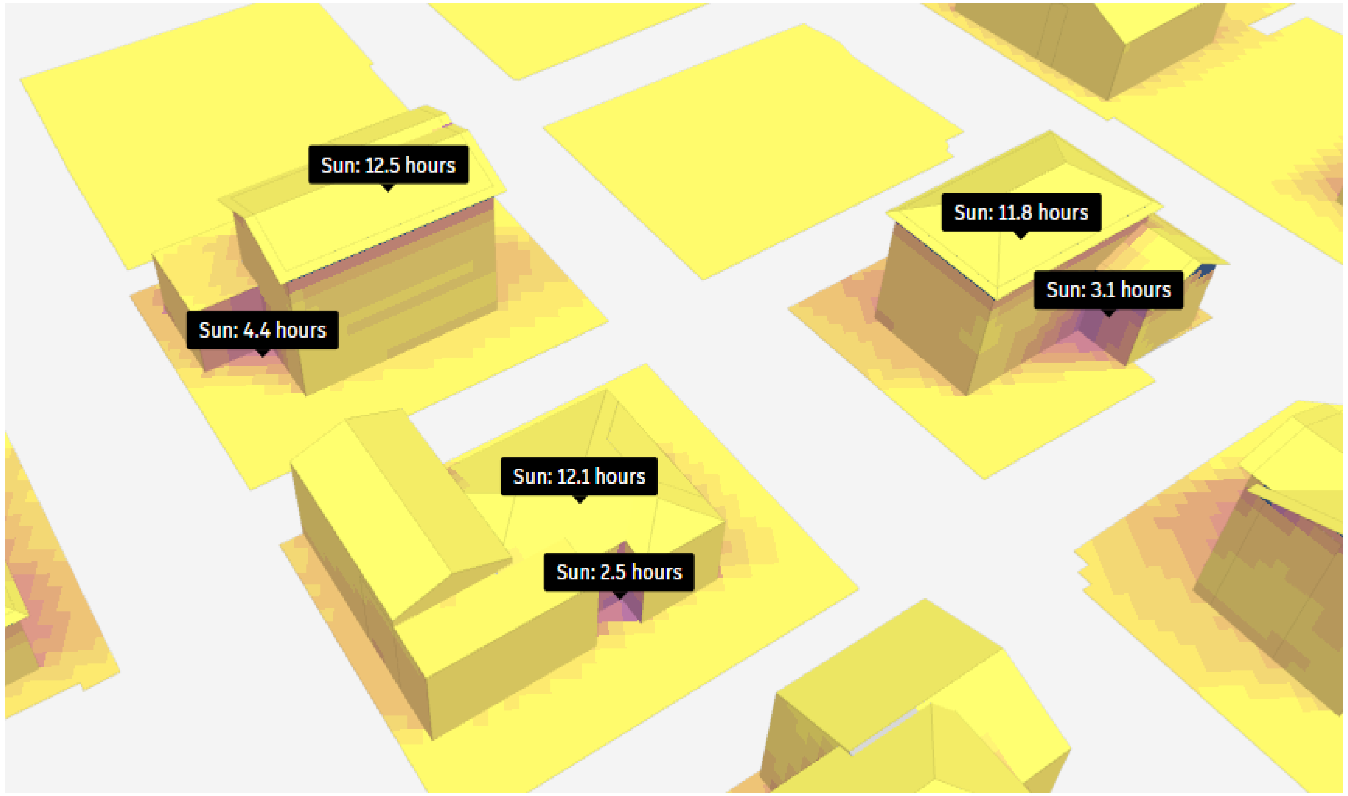
As a result of the analysis, 60% of the study area is exposed to the sun for more than nine hours.

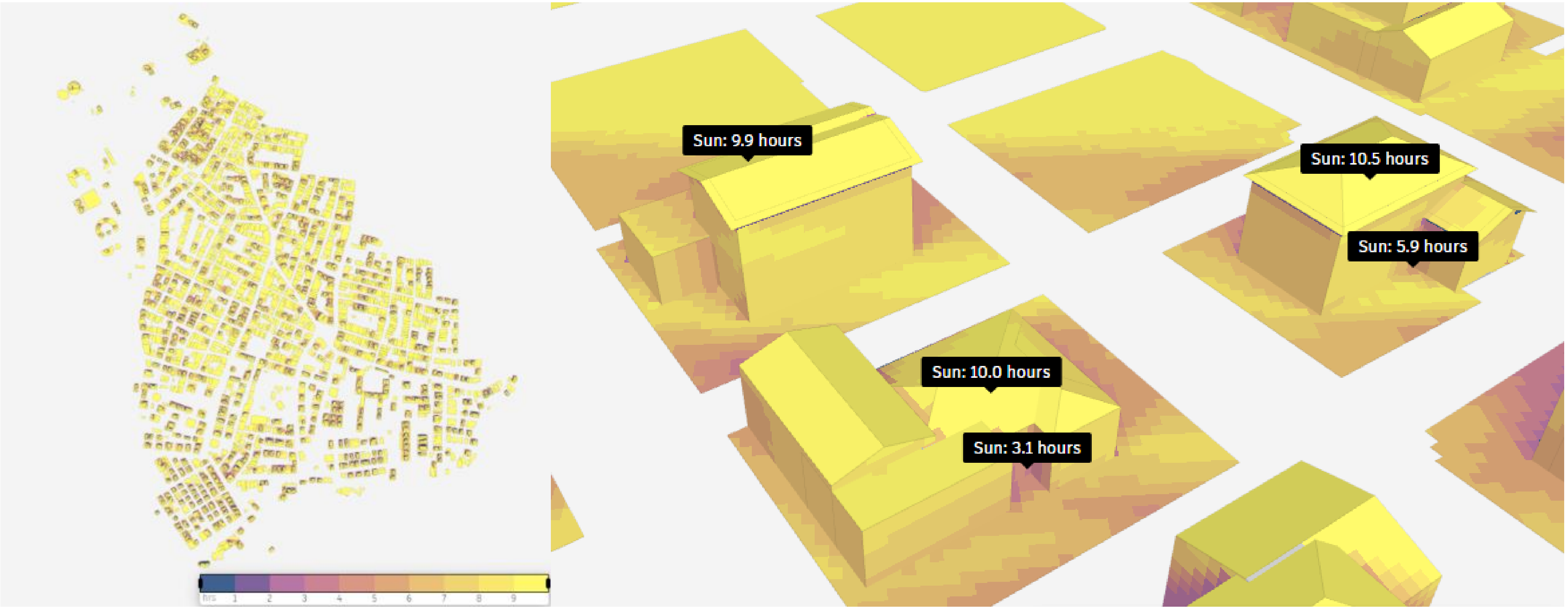


May 10

SPATIAL ANALYSES

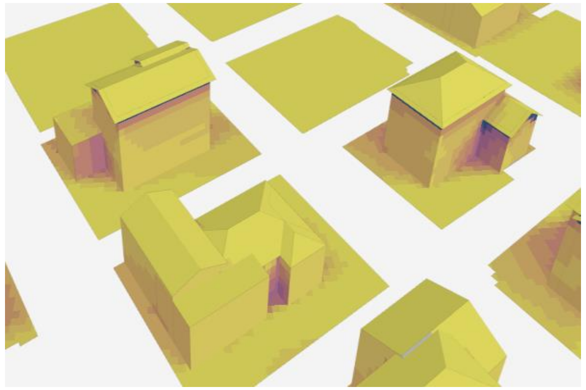
PROPEL
Positive RObust PEd Localities

The analysis shows that 49% of the study area is exposed to the sun for over nine hours.

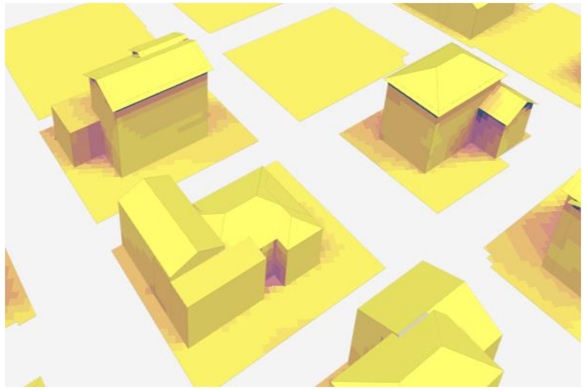


October 10

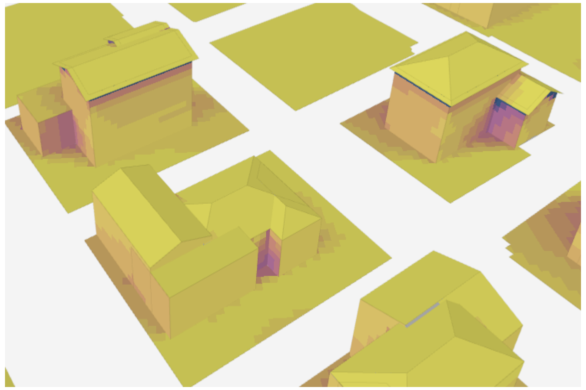
CHANGE OF SHADOW



7.00



14.00

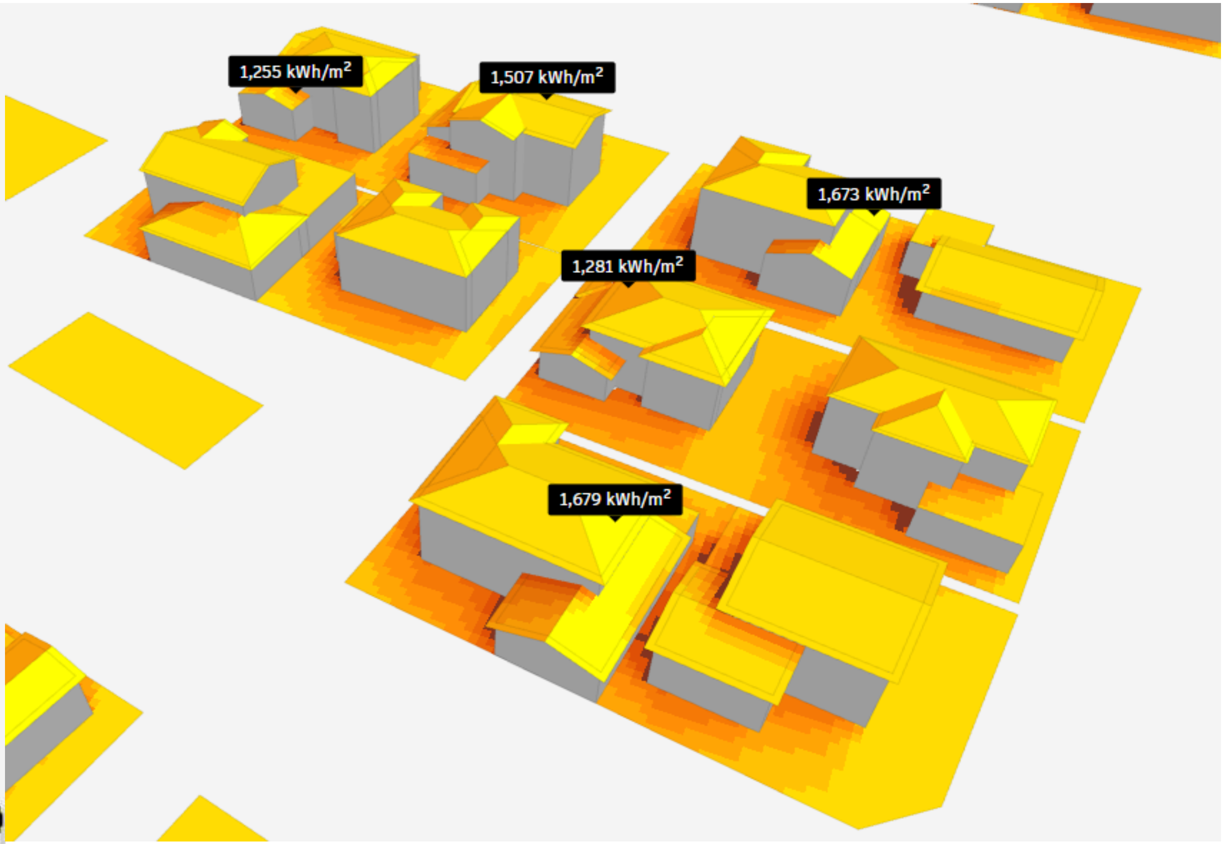


20.00

At noon, there is less shade compared to morning and afternoon. Buildings are more exposed to the sun, with shade prevalent towards sunrise and sunset, and more shade at sunset than at sunrise.

SOLAR ENERGY POTENTIAL

PROPEL
Positive RObust PEd Localities



As a result of the analysis, the annual solar energy potential of the study region was reached. The total solar energy was 629,000,000 kWh, and the average solar energy was 1,410 kWh/m2 .

CONCLUSION

- Within the scope of the study, sun hours and solar energy analyses were performed to evaluate the solar energy potential of the Caferaga District, and shadow conditions during the day were examined. To evaluate seasonal differences, one day was selected from four different times of the year, and the analyses were carried out for May 10, August 10, October 10, and December 10.
- It was observed that the buildings were exposed to the sun for almost half of the day in the spring and summer seasons. However, this period decreased in the fall and especially in the winter. Another factor affecting the insolation time is the location. It was observed that the corner points located in the more interior parts of the building are generally in the shade and, therefore, very little exposed to the sun.

CONCLUSION

PROPEL
Positive RObust PEd Localities

- As a result of the analysis, solar energy has a good initial potential especially during spring and summer seasons within the PED.
- However, further information such as number and type of panels is required to calculate the solar energy potential more precisely.
- Local authorizes, companies and other relevant stake-holders needs to co-plan, co-design, and co-implement such challenging projects with the lessons learned from international projects.

SUSTAINABLE PLACES 2024

LocalRES

Optimizing flexibility management in renewable energy communities: A LocalRES approach

Fairouz Zobiri, PhD

Energised Futures
Powered by centrica

24 September 2024

This project has received funding from the European Union's Horizon 2020 Programme under the Grant Agreement no. 957819

LocalRES

The LocalRES project

Energised Futures
Powered by centrica

Empowering local renewable energy communities for the decarbonisation of the energy systems

Empower consumers to actively engage in the design and management of their own renewable energy community (REC)

Maximise the local consumption of intermittant green energy using the flexibility of smart assets

This project has received funding from the European Union's Horizon 2020 Programme under the Grant Agreement no. 957819

LocalRES

Energised Futures
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The Project Consortium

8 Countries

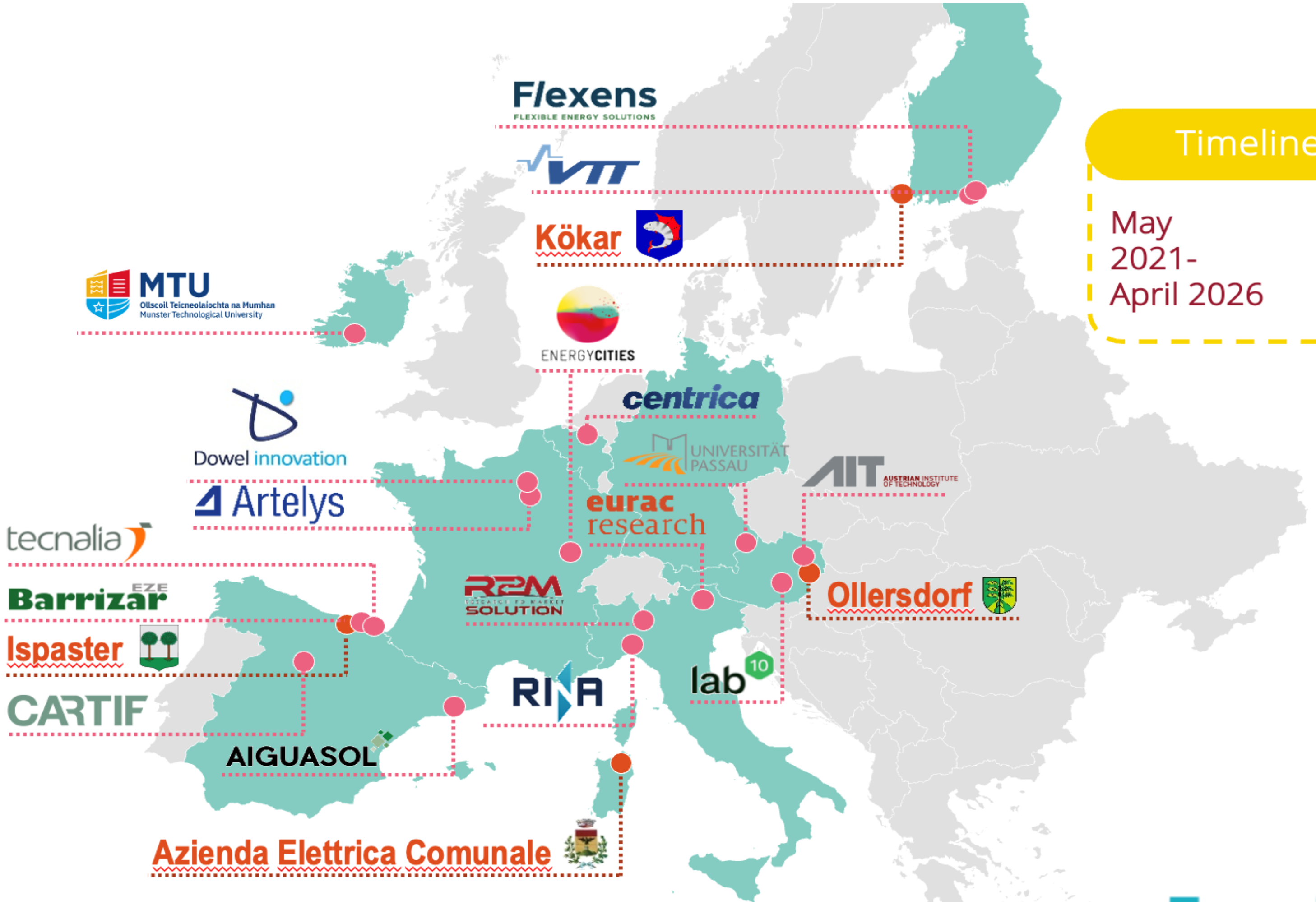
Spain, Austria, France, Belgium, Finland, Italy, Ireland, Germany

21 Partners

- 6 DSOs
- 2 LARGE
- 2 COOP.
- 5 SMES
- 1 ASSOC.
- 1 UNIV.
- 4 PUBLIC
- *2 3rd PART.

4 Demo cases

- Berchidda (Italy)
- Ispaster (Spain)
- Ollersdorf (Austria)
- Osimo (Italy)



Timeline

May 2021- April 2026

This project has received funding from the European Union's Horizon 2020 Programme under the Grant Agreement no. 957819

Benefits of REC

REC members can save on their energy bills by consuming free locally produced electricity when it is available

REC members give priority to green electricity generated locally

By reducing the electrical distance between consumers and producers, electrical losses are reduced

REC assets can provide grid services, avoiding costly and unsustainable grid expansions

This project has received funding from the European Union's Horizon 2020 Programme under the Grant Agreement no. 957819

MEVPP Definition

- The assets of an REC are managed through a Multi-Energy Virtual Power Plant (MEVPP)
- The MEVPP is a multi-input, multi-output platform with inputs:
  - Battery: smart energy storage
  - EV: smart charging and mobile energy storage
  - Heat pump: intelligent heat and temperature control
  - PV: on-site energy production
- and outputs:
  - Self-consumption schedule
  - P2P trading and blackout strategies
  - Congestion management
  - Frequency services

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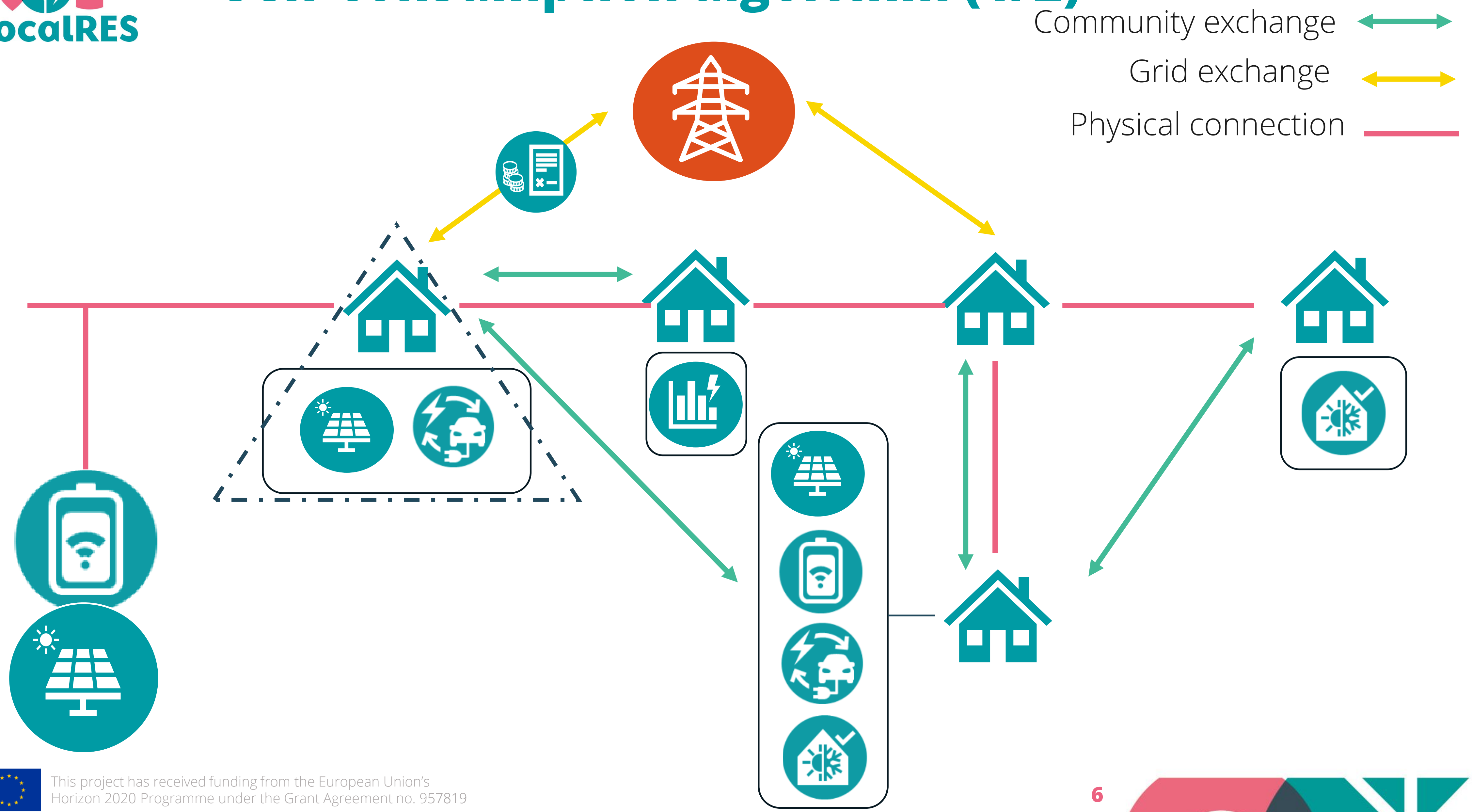
Self-consumption algorithm (1/2)



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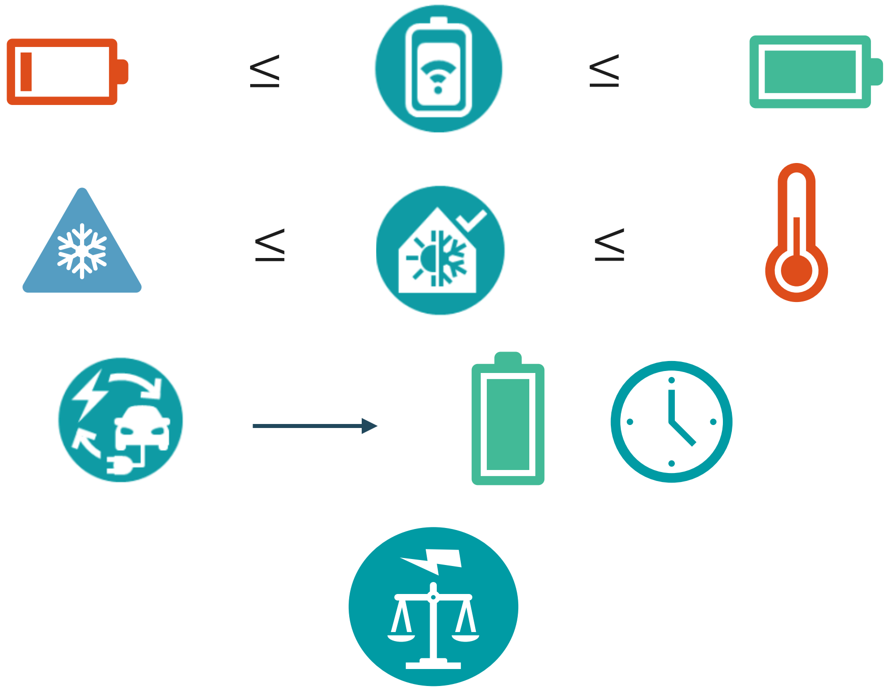
Self-consumption algorithm (2/2)

$$\textit{minimise} \quad Cost\ (trading\ with\ the\ grid) + Cost\ (community\ trading) + Cost\ (peak\ consumption)$$

with constraints



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Flexibility services for DSO markets

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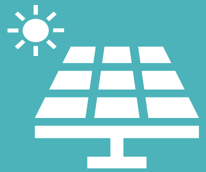
Why?



- managing the complexities of modern power systems
- enabling a more efficient, cost-effective, and environmentally friendly energy grid

What?

- **Procurement of flexibility (DSO flexibility service)**
  - Load/generation curtailment
  - Network reconfiguration

How?

The REC can support the local DSO and solve issues of the local grid by offering the flexibility of their assets

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Multi-objective trading

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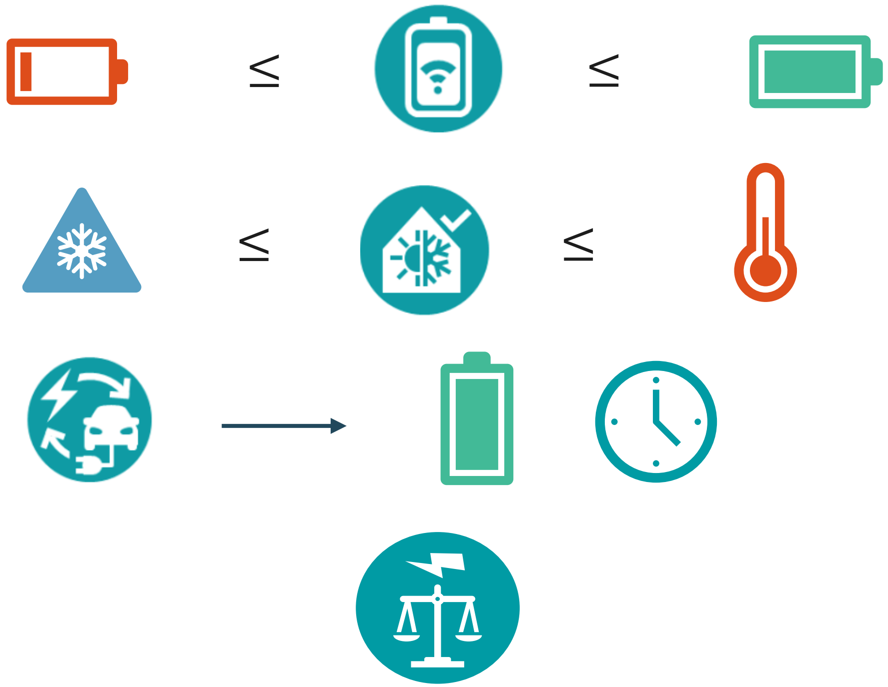
minimise *Cost (Self Consumption) − Revenue (DSO flex)*

Under constraints



How much is my flexibility worth to the DSO?

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LocalRES

Distributed Optimization

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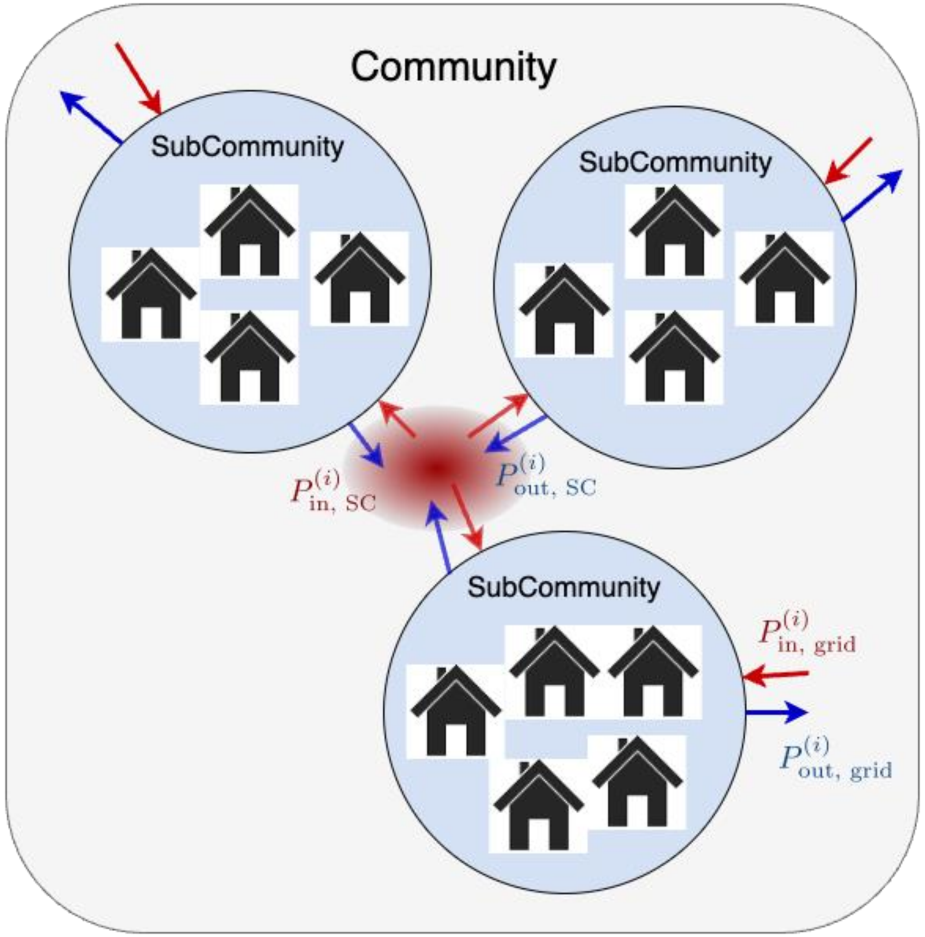
- Community is divided into subcommunities managed by different aggregators
- For data protection purposes, objective function is split so that each aggregator (i) solves their own problem

$$minimize\ (cost - revenue)^i + \lambda\ (coupling\ terms) + \rho \| coupling\ terms \|_2^2$$

The variable λ can be seen as an artificial price used to achieve consensus.

- This method is referred to as ADMM. It is an iterative optimisations and adaption of Lagrange multipliers until constraint converges.



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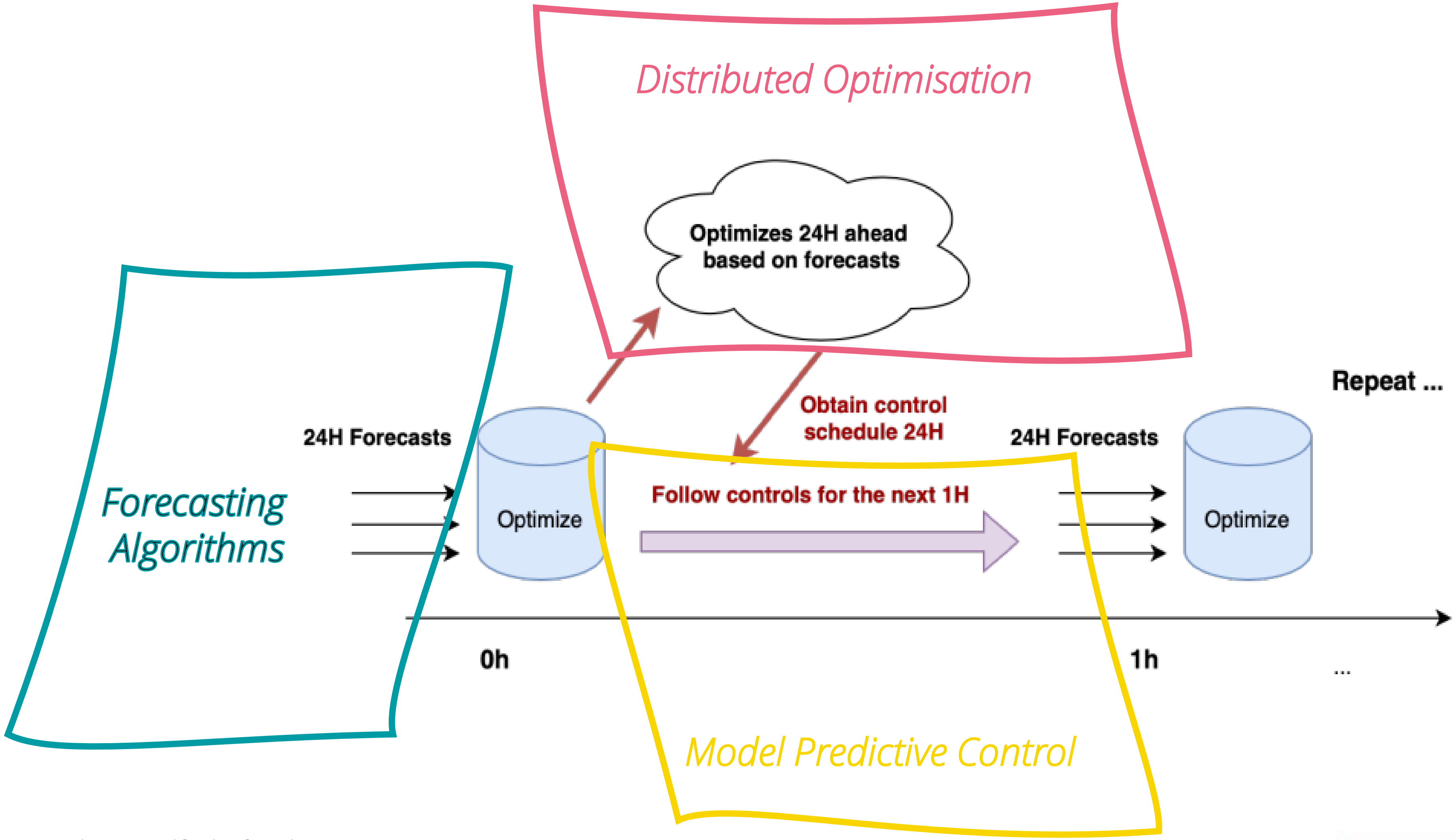
Optimization process



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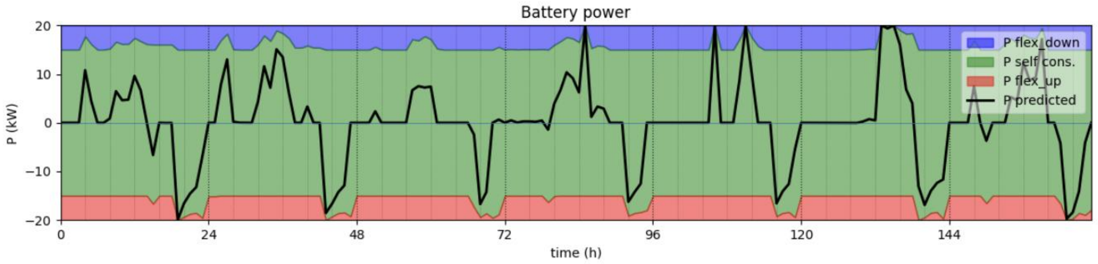
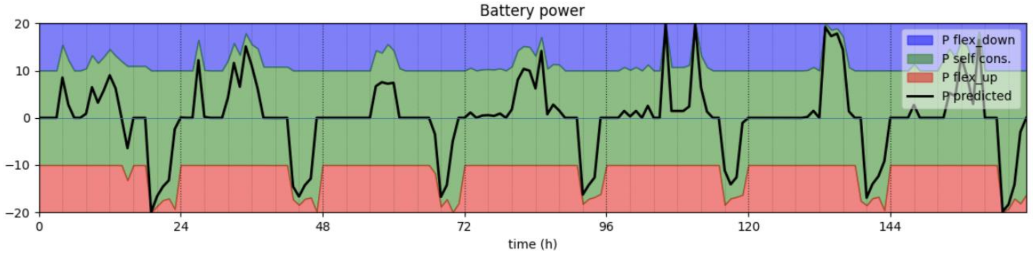
Results

- Test the algorithm on a community of 20 members with residential consumers, municipal buildings, supermarkets,
- Batteries are split into 2 virtual batteries, for self-consumption and DSO services
- Price of electricity is the day-ahead price, price of flex is the imbalance price

Ratio of self-consumption/DSO flex	100% - 0 %	75% - 25%	50% - 50%	25% - 75%
Self-consumption (SC) cost	826 €	+ 4 %	+ 6.5 %	+ 10 %
Total cost (SC – flex reward)	826 € - 0 €	- 19 %	- 40 %	- 62 %



75% for self-consumption, 25% for DSO flex



50% for self-consumption - 50% fpr DSO flex

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Demo sites (1/2)

Osimo – Italy

- Study peer-to-peer energy transfer in the community

Berchidda – Italy

- Installations are still in progress
- Expected to manage heat-pumps, public charging point and battery

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Demo sites (2/2)

Ispaster – Spain

- 22 households in the REC with 4 households having a pv installation
- Expected installation of Battery storage
- Demonstrate **community peak-shaving**, **community self-consumption**

Ollersdorf – Austria

- Local energy management system (EMS) that manages the community
- All controls we calculate are community level and the local EMS splits into household level
- Demonstrate **flexibility services to the DSO**

This project has received funding from the European Union's Horizon 2020 Programme under the Grant Agreement no. 957819

Thank you for your attention! Questions?

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LocalRES

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This project has received funding from the European Union's Horizon 2020 Programme under the Grant Agreement no. 957819

EVELIXIA project: how to level up the SRI class of building

SUSTAINABLE PLACES 2024

EVELIXIA
BUILDINGS AS ACTIVE UTILITY NODES

Igor PEREVOZCHIKOV, R2M Solution France

Smart Grid-Efficient Interactive Buildings

Sustainable Places 2024
24 September 2024
Luxembourg, Luxembourg

This project has received funding from the European Union's Horizon Europe Framework Programme for Research and Innovation under grant agreement no 101123238

Carle van Loo, Spanisches Konzert

PROJECT IDENTITY CARD

EVELIXIA: Smart Grid Efficient Interactive Buildings

Project Number	101123238
Project Name	Smart Grid Efficient Interactive Buildings
Call	HORIZON-CL5-2022-D4-02
Topic	HORIZON-CL5-2022-D4-02-04
Type of Action	HORIZON-IA
Service	CINEA/C/02
Project Starting Date	1 October 2023
Project Duration	48 months

EVELIXIA Consortium

36 partners in **total**

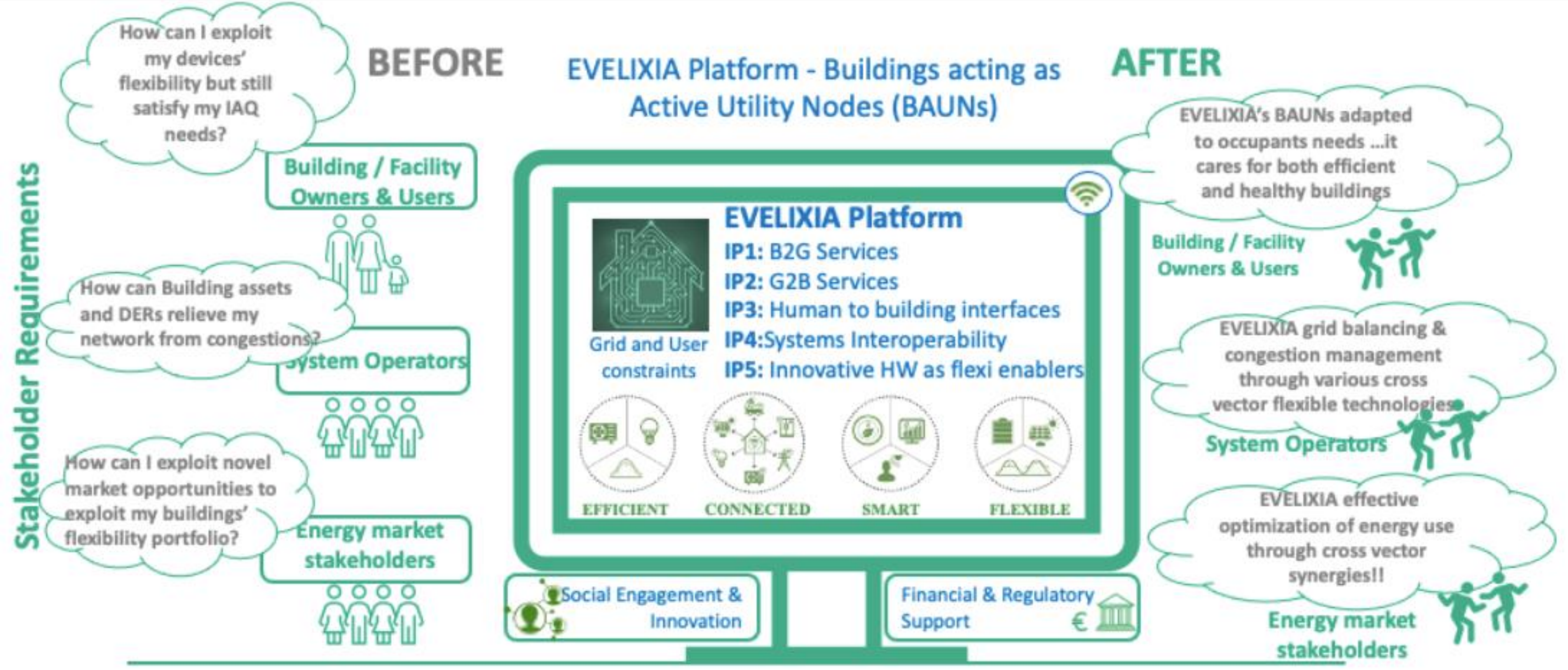
12 EU countries

12 horizontal partners

7 pilot site ecosystems

EVELIXIA Project concept

Goal: realize Buildings as Active Utility Nodes (BAUN)

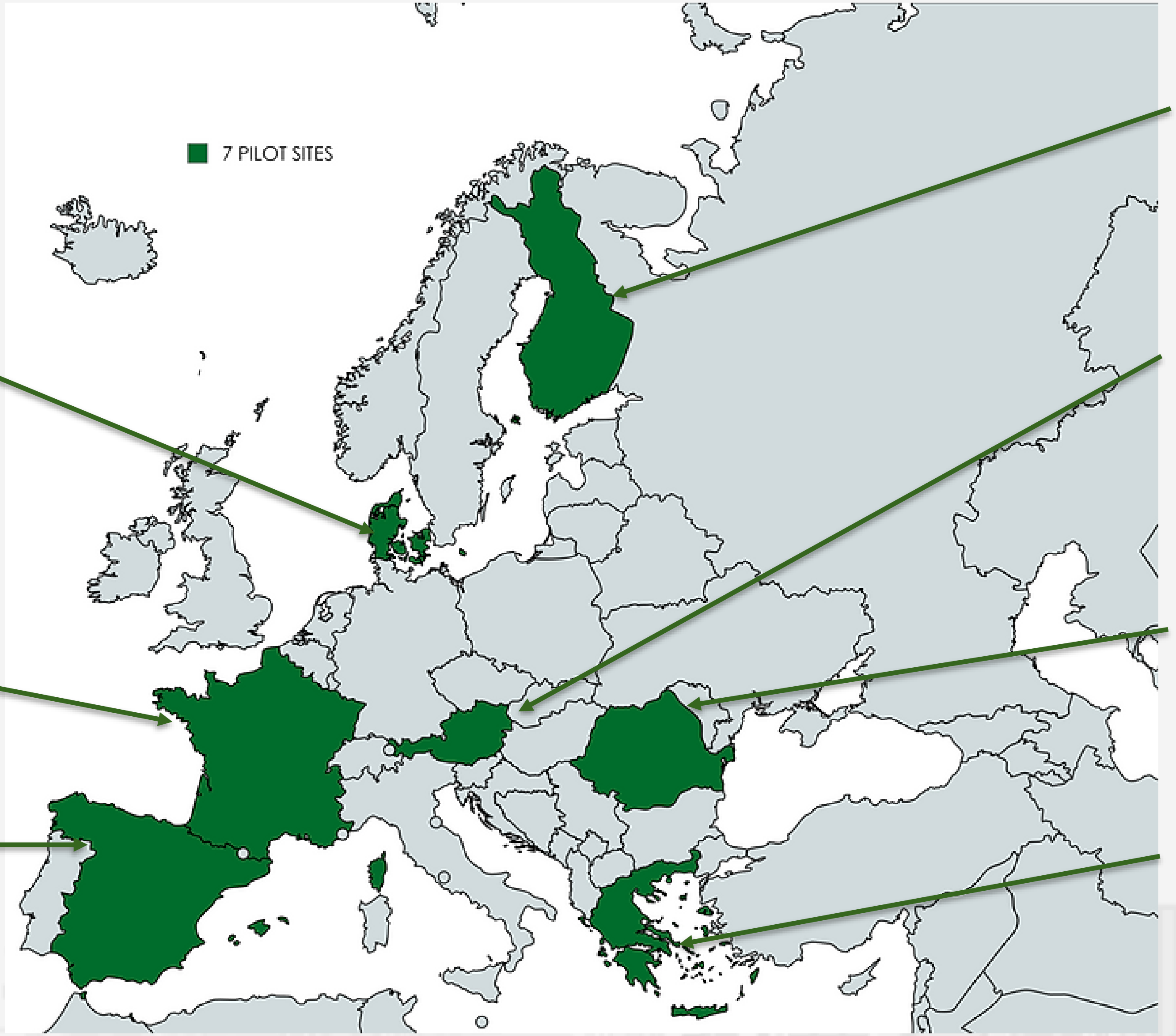


EVELIXIA Project summary

BAUN framework incorporates:

1. C**oordination of building infrastructure**, IoT and EMSs so their **intercedences** are visible as **financial opportunities**
   - Data and model-driven **B2G and G2B services**
   - EVELIXIA **Autonomous Building Digital Twin (ABDT)** and the **Autonomous District Digital Twin (ADDT)**
2. Development of a **Services Marketplace** where stakeholders can construct, access and exploit **novel services and relevant business models**
3. User-friendly and engaging **interaction with stakeholders**
   - **EVELIXIA Stakeholders Interaction Platform**, incorporating the **Live Digital Building Logbook** and **Visual Analytics Engine**
   - users' **ownership of data**, assets and services respecting their **privacy** and **security,** accomplished through the design of a **Blockchain Infrastructure**

EVELIXIA Pilot sites



DENMARK
9 Apartments Blocks

FRANCE
1 industrial building
E-Factory

SPAIN
Galicia building + Restaurant

FINLAND
6 residential buildings

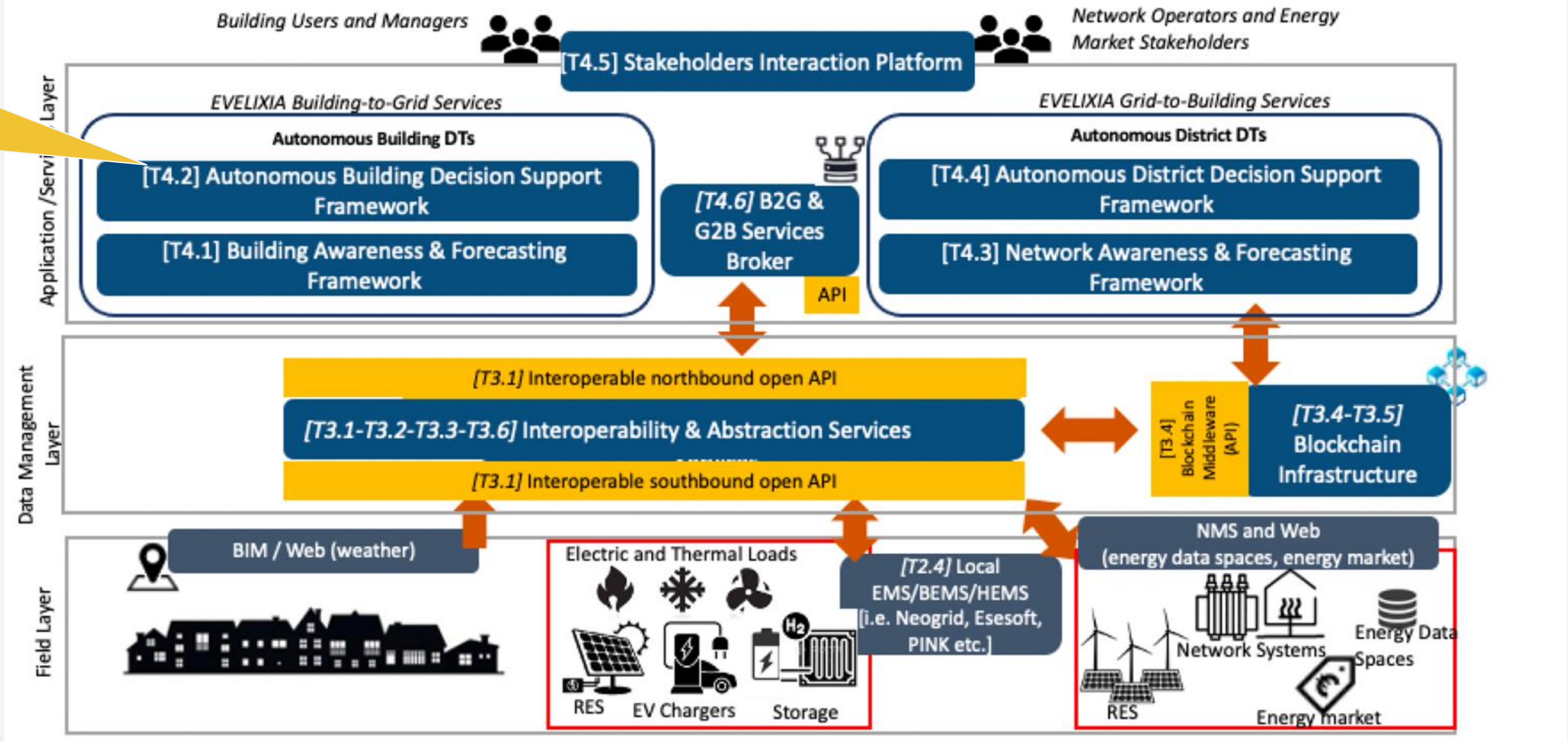
AUSTRIA
5 Private Households
8 Townhouses
5 Public Buildings

ROMANIA
Dormitories + campus restaurant

GREECE
CERTH/ CPERI Building + Mpodosakeio Hospital

EVELIXIA Technical Architecture

SRI Advisor Tool



SRI Advisor tool objectives

- The SRI advisor tool provides Building Owners and Managers with tailored recommendations on how to level up their SRI class by 1 letter.
- The tool analyses the possible technology upgrade packages, with a view to determining the most cost-effective building upgrades to achieve a higher SRI score.
- R2M further advances SRI advising functionalities to compute ad-hoc, tailored recommendations, exploiting building accurate modelling characteristics that EVELIXIA enables.

Functionality levels for smart ready services

Code	Smart ready service	Main functionality level as inspected by SRI assessor	Functionality level 0 (as non-smart default)	Functionality level 1	Functionality level 2	Functionality level 3	Functionality level 4	SRI score 0,00%
H-1a	Heat emission control	0	No automatic control	Central automatic control (e.g. central thermostat)	Individual room control (e.g. thermostatic valves, or electronic controller)	Individual room control with communication between controllers and to BACS	Individual room control with communication and occupancy detection	
C-1a	Cooling emission control	0	No automatic control	Central automatic control	Individual room control	Individual room control with communication between controllers and to BACS	Individual room control with communication and occupancy detection	
V-1a	Supply air flow control at the room level	0	No ventilation system or manual control	Clock control	Occupancy detection control	Central Demand Control based on air quality sensors (CO_2, VOC, humidity, ...)	Local Demand Control based on air quality sensors (CO_2, VOC,...) with local flow from/to the zone regulated by dampers	
L-2	Control artificial lighting power based on daylight levels	0	Manual (central)	Manual (per room / zone)	Automatic switching	Automatic dimming	Automatic dimming including scene-based light control	
DE-1	Window solar shading control	0	No sun shading or only manual operation	Motorized operation with manual control	Motorized operation with automatic control based on sensor data	Combined light/blind/HVAC control	Predictive blind control (e.g. based on weather forecast)	
EV-17	EV charging information and connectivity	0	No information available	Reporting information on EV charging status to occupant	Reporting information on EV charging status to occupant AND automatic identification and authorizition of the driver to the charging station			

SRI Advisor tool functional view

EXISTING

SRI calculation tool

Online tool developed by CERTH based on the SRI generic technical framework

SRI Advisor tool

NEW

Database with a list of possible interventions, associated costs and benefits

Service	Functionality Level 0	Functionality Level 1	Functionality Level 2	Functionality Level 3	Functionality Level 4
Example: Window solar shading control	No sun shading or only manual operation	Motorized operation with manual control	Motorized operation with automatic control based on sensor data	Combined light/blind/ HVAC control	Predictive blind control (e.g. based on weather forecast)

CAPEX
OPEX
Benefits
SRI score

CAPEX
OPEX
Benefits
SRI score

CAPEX
OPEX
Benefits
SRI score

CAPEX
OPEX
Benefits
SRI score

NEW

Optimisation engine

to select the most cost-efficient renovation package

Objective function:
maximising the net present value (NPV) of possible renovation packages

SRI Advisor tool challenges

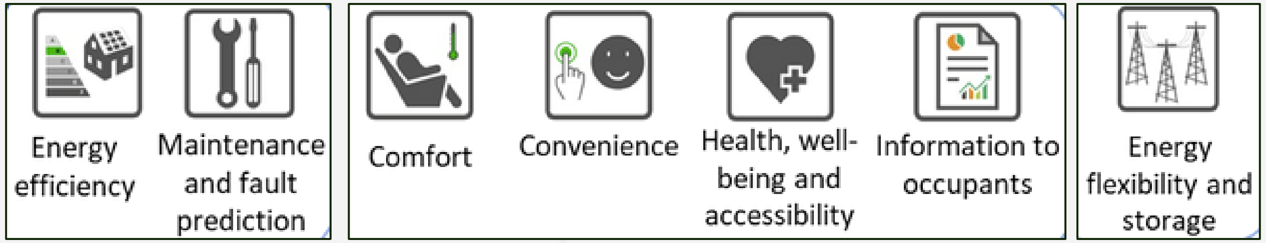
- Depend on each country
- Depend on different possible technological choices
- Vary in time

Same as CAPEX + depend on lifetime
Sometimes expressed as a % of CAPEX

Just running the SRI assessment tool

CAPEX
OPEX
Benefits
SRI score

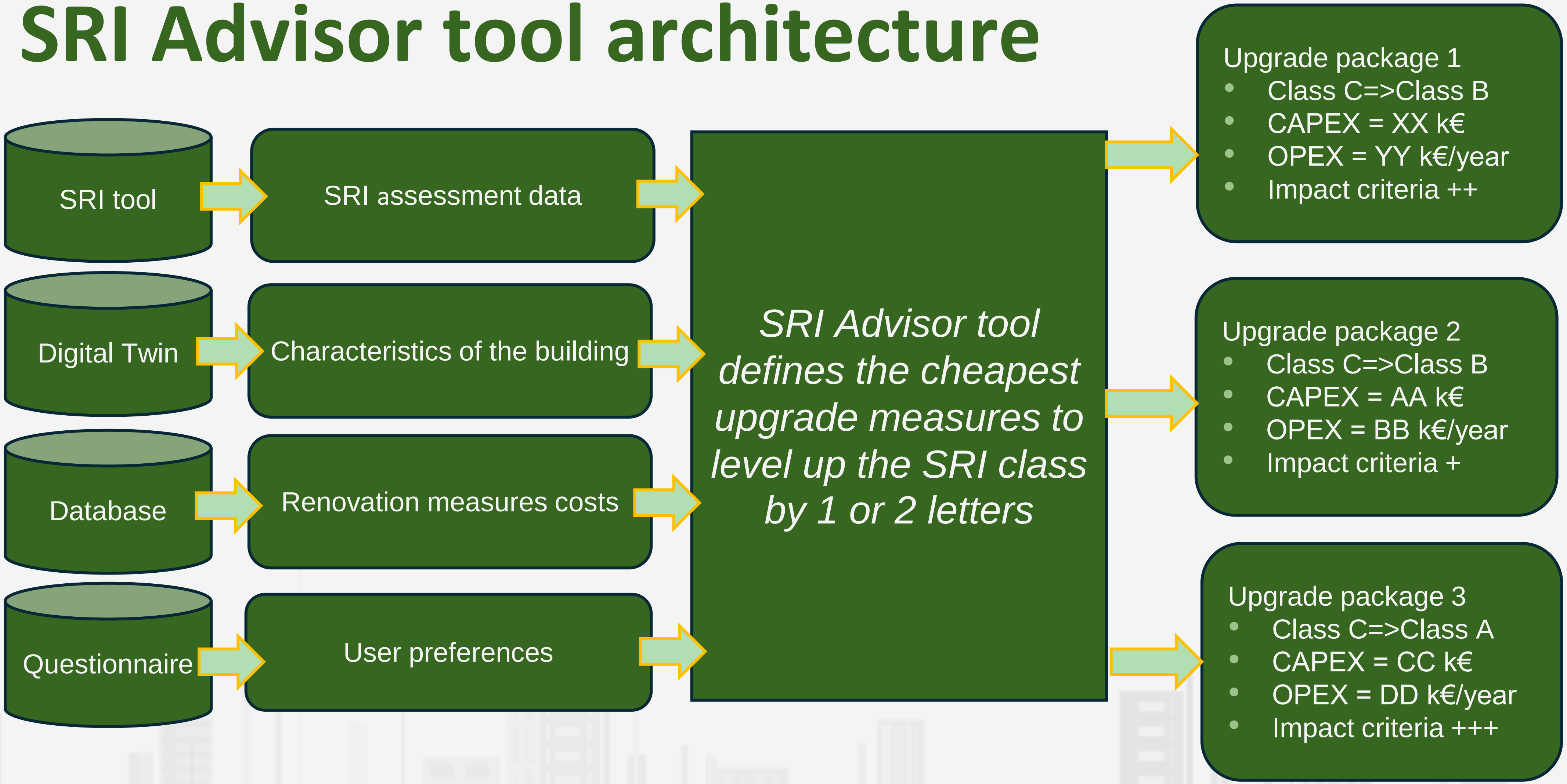
More complicated and multi-dimensional!



1.Evaluate energy savings: *how much energy may be saved if blinds are motorized??*
2. Monetize the savings: depends on country, electricity tariff, etc

1.Evaluate convenience benefits: *which scale to use to measure the increased convenience of motorizing blinds??*
2.Monetize the benefits: *how??*

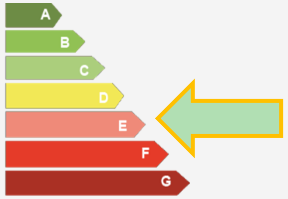
SRI Advisor tool architecture



User input interface

Score: 28%

SRI score

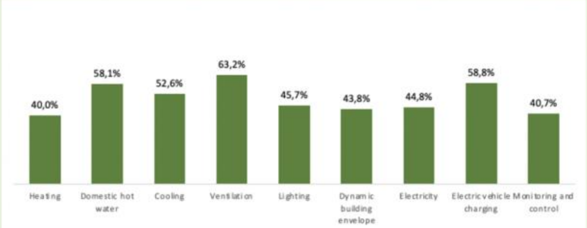


SRI class

Class: E

DOMAIN SCORES

Heating	40,0%
Domestic hot water	58,1%
Cooling	52,6%
Ventilation	63,2%
Lighting	45,7%
Dynamic building envelope	43,8%
Electricity	44,8%
Electric vehicle charging	58,8%
Monitoring and control	40,7%



Stage (i) — SRI assessment data

- Option 1: Import file
- Option 2: Connection to the SRI assessment tool output

Stage (ii) — Characteristics of the building

- Option 1: Import file from Digital Twin
- Option 2: Manual input

Number of rooms	15
Number of lighting points	45
Number of windows	30
Parking spaces	4
Other characteristics	…

Stage (iii) — User preferences

Cheapest renovation package	√
Improving the building’s energy efficiency	-
Adapting the building’s operation to the occupant needs	-
Adapting to signals from the grid (e.g., energy flexibility)	-

Cost database

Smartness

Services*	Functionality 1					Functionality 2					Functionality 4				
	Multiplier	Unit cost	Man-power cost	CAPEX	OPEX	Multiplier	Unit cost	Man-power cost	CAPEX	OPEX	Multiplier	Unit cost	Man-power cost	CAPEX	OPEX
Heat emission control	1	2000	300	2300	115	15	100	150	1650	82.5	15	200	200	3200	160
Cooling emission control															
Supply air flow control															
Artificial lighting															
Windows solar shading															
EV charging information															

Database (Unit + Manpower costs) under construction

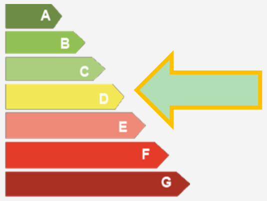
Building characteristics: Area, Rooms, Windows, EV charging slots…

**In this simplified example the number of services is limited to 6 and illustrative cost data are used*

User output interface

Score: 47%

SRI score



Class: D

SRI class

Upgrade package 1	Slightly improve every service	SRI score improved 19% SRI class: E => D Cost: 36,000 €
Upgrade package 2	Moderately improve services of all domains except EV	SRI score improved 20% SRI class: E => D Cost: 43,000 €
Upgrade package 3	Maximise smartness of ventilation, lighting and dynamic building envelope, and improve energy flexibility of heating/cooling services	SRI score improved 37% SRI class: E => C Cost: 66,000 €

Services*

- Heat emission control
- Cooling emission control
- Supply air flow control
- Artificial lighting
- Windows solar shading
- EV charging information

In this simplified example the number of services is limited to 6 and illustrative cost data are used

Conclusion

- *SRI Advisor tool will be one of the first tools in EU giving tailored recommendations on how to level up the SRI class of buildings by one or two letters.*

- *Problems encountered:*
  How to quantify and monetize energy savings? It's depending on country, electricity tariff etc.
  How to evaluate and monetize other benefits? On Health criteria? Convenience?

- *Future steps :*
  Finalize building of the cost database
  Finalize the algorithms of the tool
  Integrate this tool into the EVELIXIA platform

- *Risks identified :*
  Quality and reliability of cost data

SUSTAINABLE PLACES 2024

THANK YOU!

VELIXIA

BUILDINGS AS ACTIVE UTILITY NODES

Igor PEREVOZCHIKOV, R2M Solution France

Smart Grid-Efficient Interactive Buildings

Sustainable Places 2024
24 September 2024
Luxembourg, Luxembourg