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Living Lab Pamplona
Second oPEN Call Info Webinar

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oPEN Lab

TARTU
PAMPLONA
GENK

LEADING THE TRANSITION
TO POSITIVE ENERGY
NEIGHBOURHOODS

This project has received funding from the European Union's Horizon 2020 Research and Innovation Framework Programme under grant agreement No 101037080.

oPEN Lab objective

oPEN Lab project objective:

- to **identify** and **demonstrate replicable** solution packages enabling the achievement of **positive energy buildings and neighbourhoods**.

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TO POSITIVE ENERGY
NEIGHBOURHOODS

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TARTU PAMPLONA GENK LEADING THE TRANSITION TO POSITIVE ENERGY NEIGHBOURHOODS

32 project partners from

7 countries

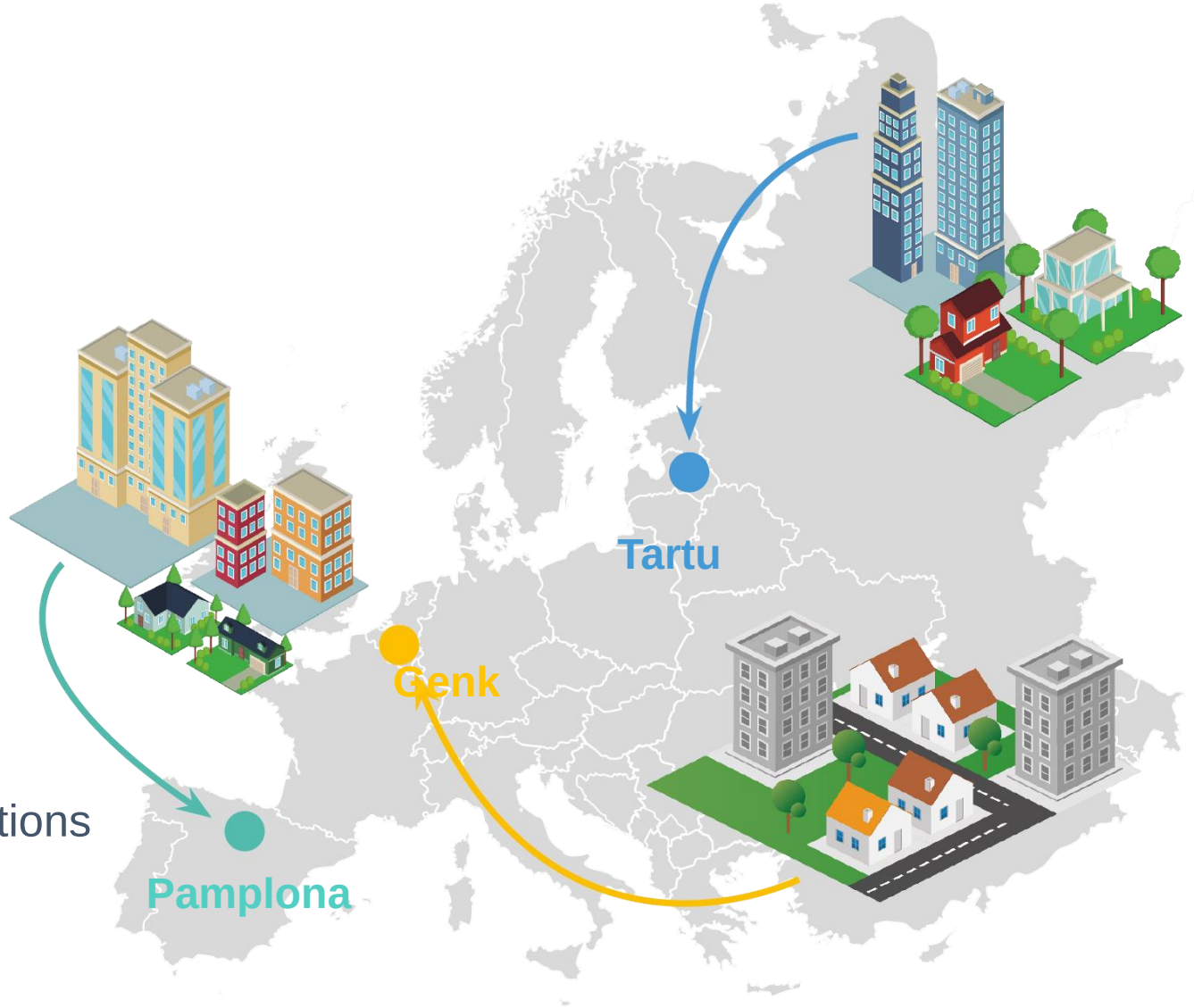
12 companies

09 research organisations

05 innovation clusters or industry associations

04 public authorities

22M€ budget



Local consortium

oPEN Lab
TARTU PAMPLONA GENK
LEADING THE TRANSITION TO POSITIVE ENERGY NEIGHBOURHOODS

Ayuntamiento de Pamplona | Iruñeko Udala

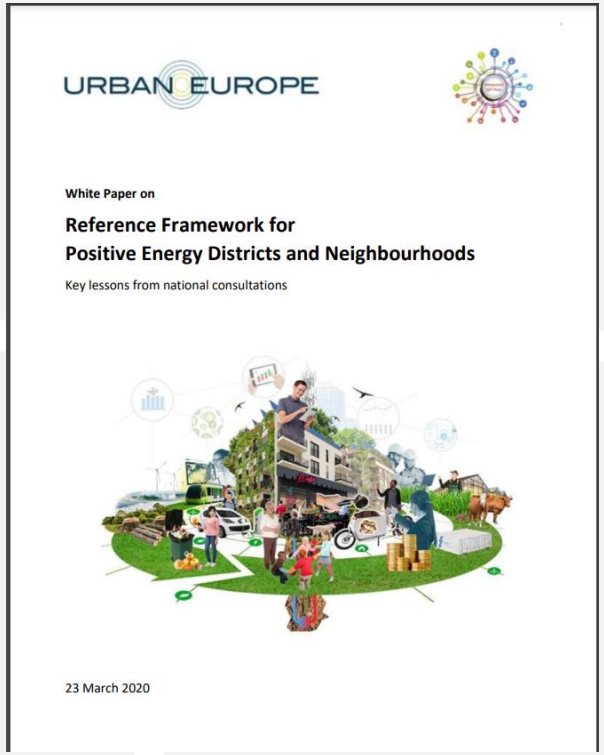
CENER
CENTRO NACIONAL DE ENERGÍAS RENOVABLES

OBRAS especiales

eman ta zabal zazu
Universidad del País Vasco
Euskal Herriko Unibertsitatea

Positive Energy Districts

*"Positive Energy Districts are **energy-efficient** and **energy-flexible** urban areas or groups of connected buildings which produce net zero greenhouse gas emissions and actively manage an **annual local or regional surplus production of renewable energy**."*



JPI Urban Europe / SET Plan Action 3.2 (2020). White Paper on PED Reference Framework for Positive Energy Districts and Neighborhoods. https://jpi-urbaneurope.eu/ped/

Positive Energy Neighbourhoods

- Could be understood as an incipient PED
- Limited number of buildings (at least two of different nature).
- 75% reduction of GHG emissions by march 2026 and net zero by 2030.
- Annual surplus production of renewable energy.
- Requirements:

Energy efficiency in buildings

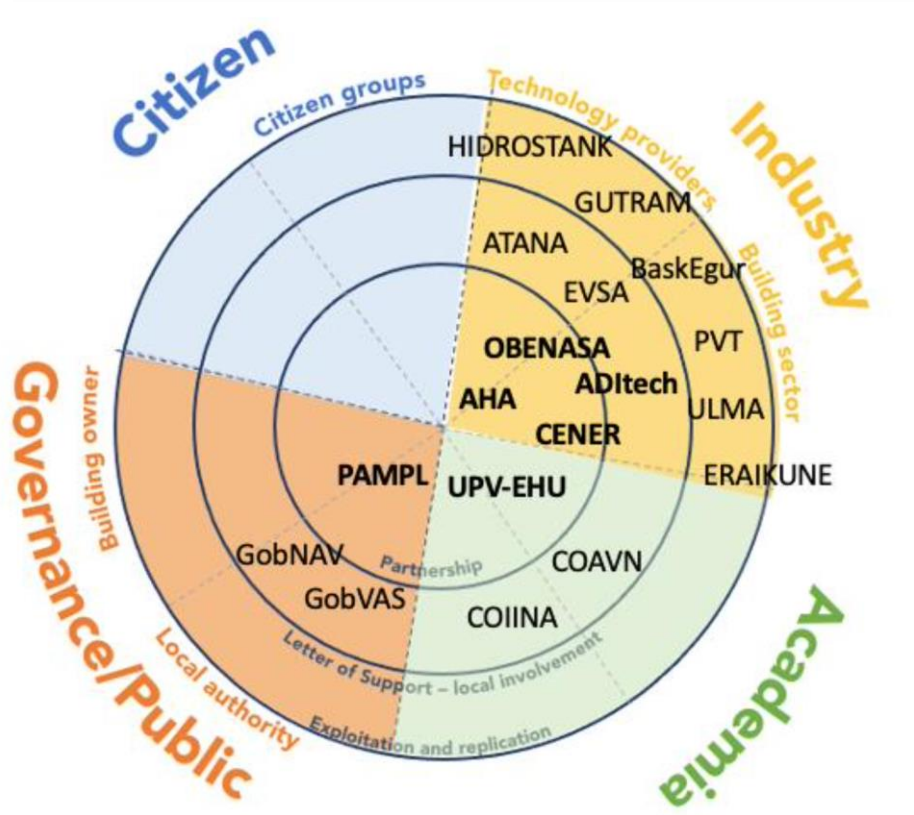
Local supply of renewable energy

Flexibility of energy consumption

What is a Living Lab?

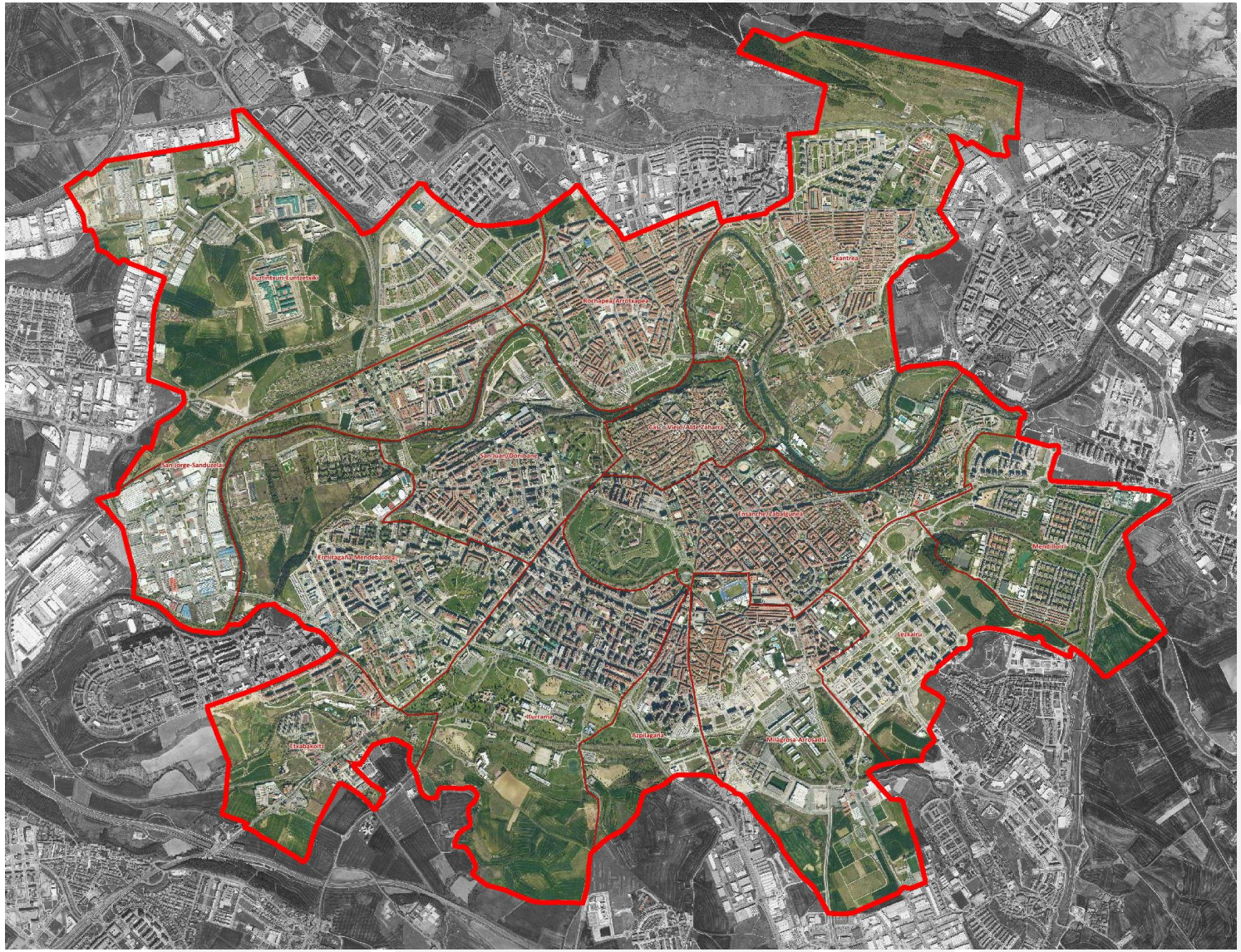
"A Living Lab is an **innovation intermediary**, which orchestrates an **ecosystem of actors** in a specific region.

Its goal is to **co-design products** and services, in an **iterative way**, with key stakeholders in a public-private-people partnership (PPP) and in a real-life setting.

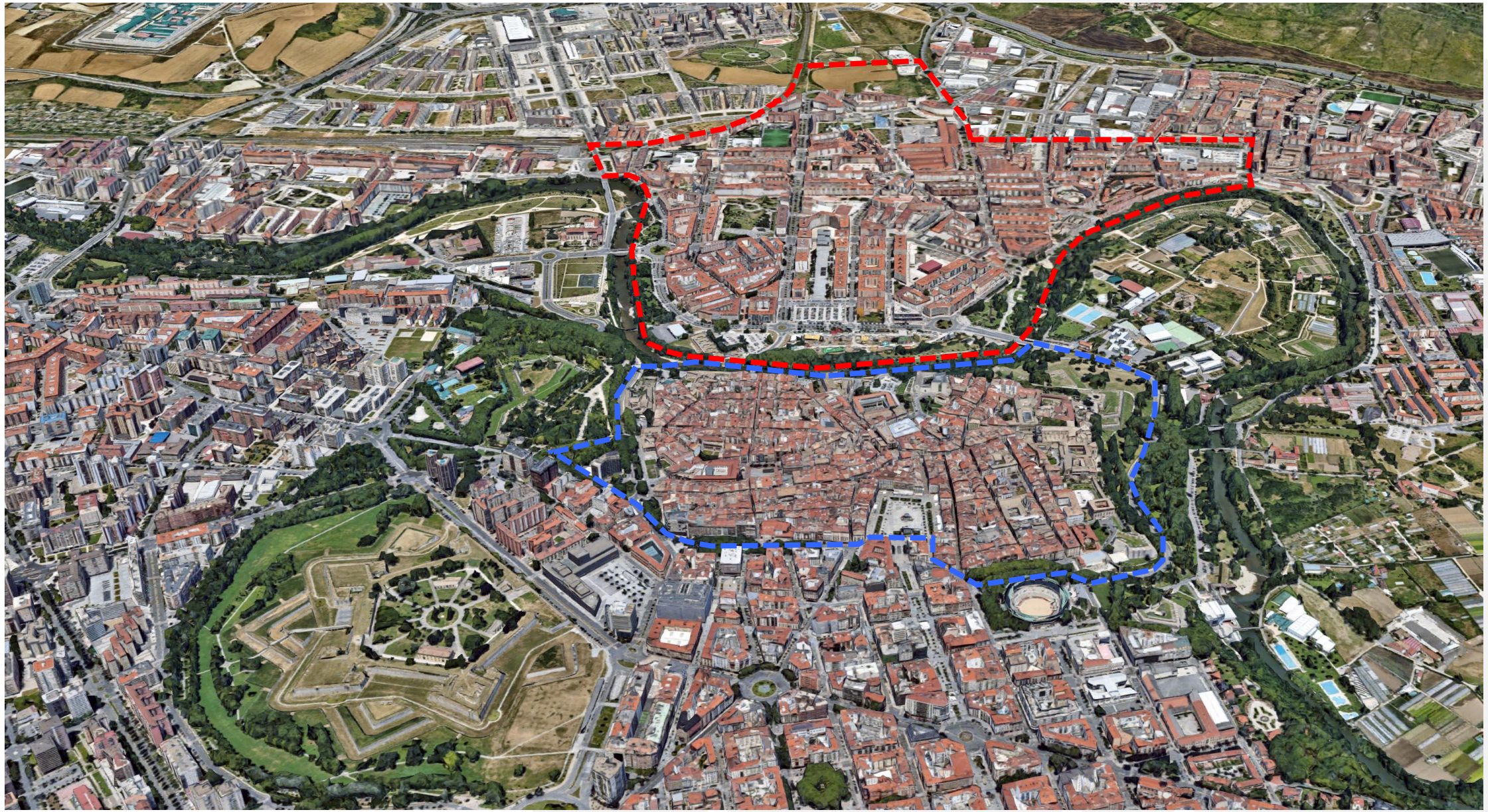


Mastelic J, Stakeholders' engagement in the co-design of energy conservation interventions: The case of the Energy Living Lab, Lausanne: University of Lausanne, 2019.

Pamplona within Europe



District of Rochapea



oPEN Lab Pamplona objectives

In oPEN Living Lab Pamplona, driving objectives:

- **Set up one of the few operational PEN concept in Spain, become** over time an **operational PED**.
- **Drive economic transformation.**
- **Set-up and successfully operate a Living Lab.**

oPEN Lab

TARTU PAMPLONA GENK

LEADING THE TRANSITION TO POSITIVE ENERGY NEIGHBOURHOODS

1 POSITIVE ENERGY NEIGHBOURHOOD

12 SOCIAL HOUSING

1 privately owned FORMER INDUSTRIAL SITE

20 000+ m^2 renovated by the end of the project

12+ INNOVATIVE TECHNOLOGIES

5 LOCAL PARTNERS

2 AEC SERV. PARTNERS

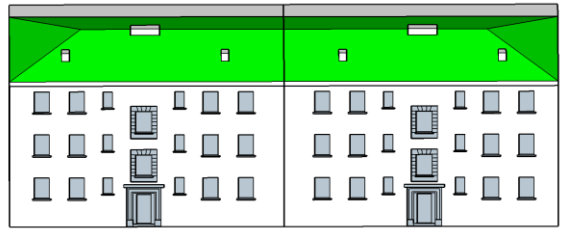
2 RESEARCH INSTITUTES

1 PUBLIC SECTOR

San Pedro Residential Group

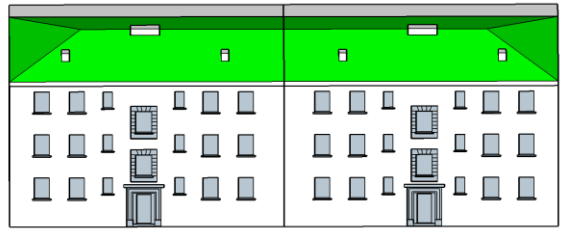
IWER Complex

Building scale San Pedro



- Deep energy renovation of 12 sheltered apartments.
  - Energy retrofitting of the entire thermal envelope.
  - Addition of a lift and balconies
- Thermal envelope renovation
  - Renovate form the inside:
    - Limiting impact on living space
    - Offering a solution for apartment buildings (single owners to individually renovate).
  - VIP.
  - In theory a 50mm thick solution.

Building scale San Pedro

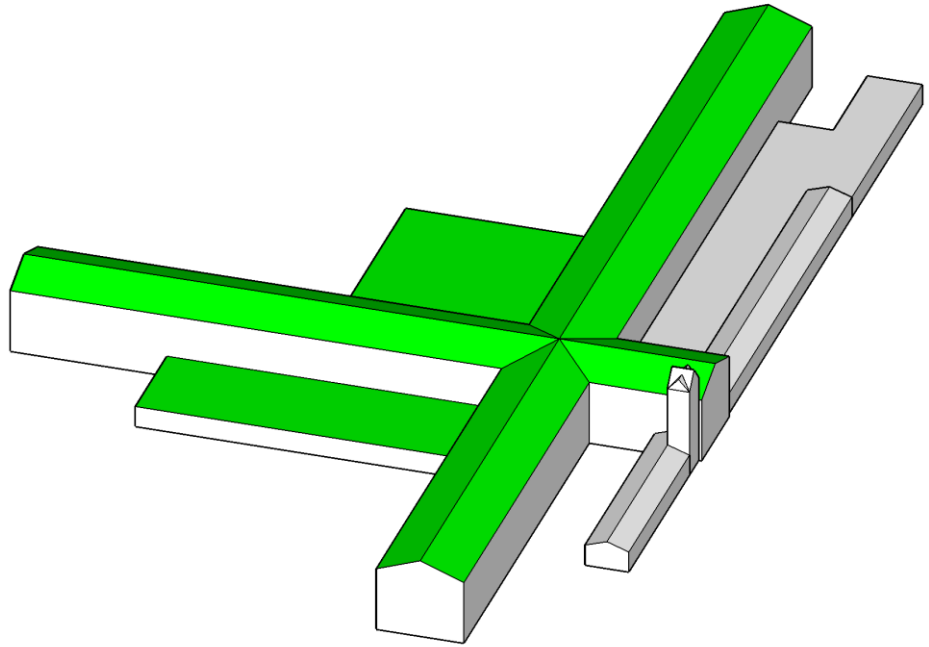


Energy Systems:

- Demonstration and validation of roof BIPV (60kWp)
- Electricity storage with lithium batteries 90kWh.
- Charging point for EV,
- Highly efficient BTS:
  - Low GWP heat pumps for heating/cooling and DHW.
  - Thermal storage of 600 lts/building.
  - State of the art double flux ventilation with heat recovery.
- User interfaces: [oPEN Calls]
- Integrate Energy Management System (CENER)

Building scale IWER

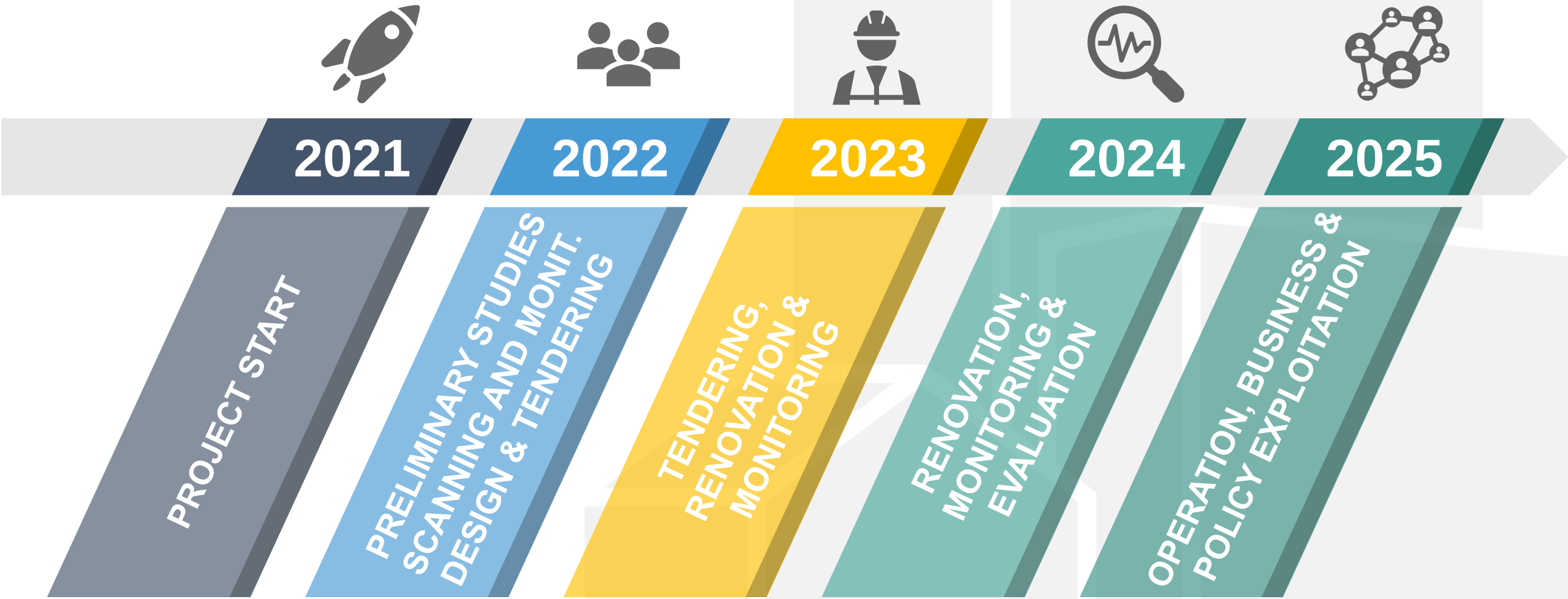
- Renovation of 30.000 sqm in several phases.
  - 7.000 sqm for a nursing home.
  - 5.000 sqm for office space.
  - 10.000 sqm for commercial use.
- Large scale demonstration of roof BIPV with implementation of heat harvesting scheme.
  - Heat harvested is used as primary renovation air for ventilation
  - Industrialized solution provides thermal insulation as well as support an fixings for BIPVs.



Highlights at building scale IWER

- Large **photovoltaic generator (**BIPV and BAPV), **910 kWh** by the end of the project
- **Lithium batteries of 150kWh**
- **Smart-Converter** (CENER)
- **Low GWP heat pumps for HVAC**
- **Thermal energy storage**
- **HMI** for **multivector energy management** (CENER)
- **User interfaces** [oPEN Calls] to allow new user interaction with the energy system

Project timeline



Benefits in joining our endeavour

- Unfortunately no funding provided
- Access to Pamplona Living Lab environment:
  - Participate in co-creation access to final users.
  - Enhancement of products and solutions by extensive testing in real conditions.
  - Work hand in hand with local partners, potential future collaborations.
- As we are targeting close to market solutions (SMEs and start-ups) you will benefit from a support program:
  - Developing a roadmap for commercialisation and market entry
  - Information about access to business support programs form the EIT KICs and marketplaces.

Benefits in joining our endeavour

- Big replication opportunities could mean future market demand:
  - San Pedro group: 75% of all 42 buildings still pending deep renovation.
  - Therefore products and technologies validated could become standard requirements for future renovations.
  - Technologies targeting the neighbourhood also benefit from the demonstration and because of the very active role of PCC this could mean future market demand.
  - IWER building: First phase target the renovation of 7.000 sqm of a nursing home, and renovation of commercial areas and office spaces could also provide a relevant testing ground to fine tune your products.
  - Engage with operators that if satisfied could recommend or include your products or services in analogous settings.

Agenda

- **TECHNICAL CHALLENGE 1:** Support tools for co-creation and management of LECs

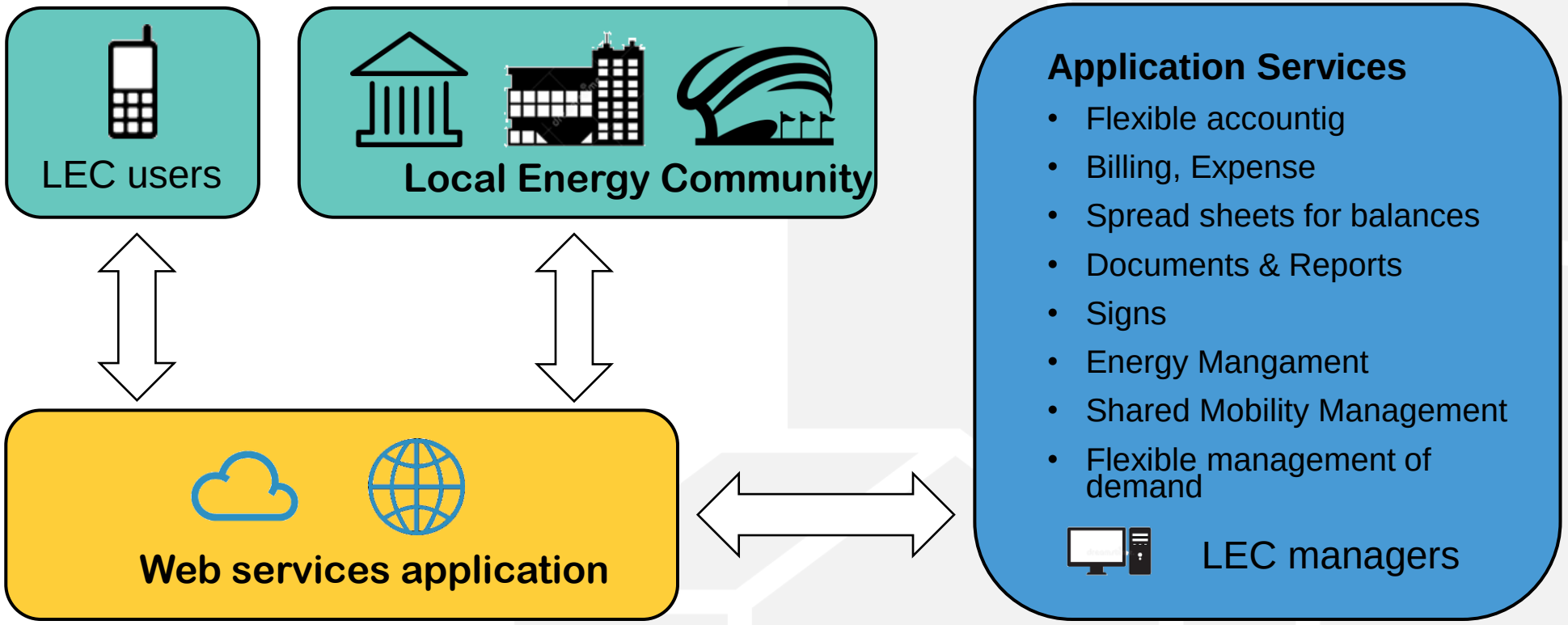
- **TECHNICAL CHALLENGE 2:** Innovative energy solutions for energy generation and storage

- **TECHNICAL CHALLENGE 03:** Innovative and cost-effective user interfaces for management and remote maintenance systems of the building's energy systems

TECHNICAL CHALLENGE 1: Support tools for co-creation and management of LECs

- Operable and accessible web services provided to carry out billing management in LECs
- Shared mobility management system as part of the services of the LECs
- Improve dissemination, awareness raising and knowledge about LECs.

TECHNICAL CHALLENGE 1: Support tools for co-creation and management of LECs



TECHNICAL CHALLENGE 2: Innovative energy solutions for energy generation and storage

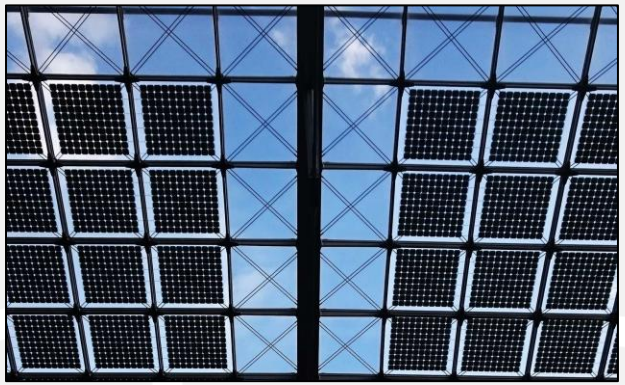
- Innovative storage systems
- Novel PV elements
- Innovative re/generation systems

TECHNICAL CHALLENGE 2: Innovative energy solutions for energy generation and storage

Electro kinetics road ramps

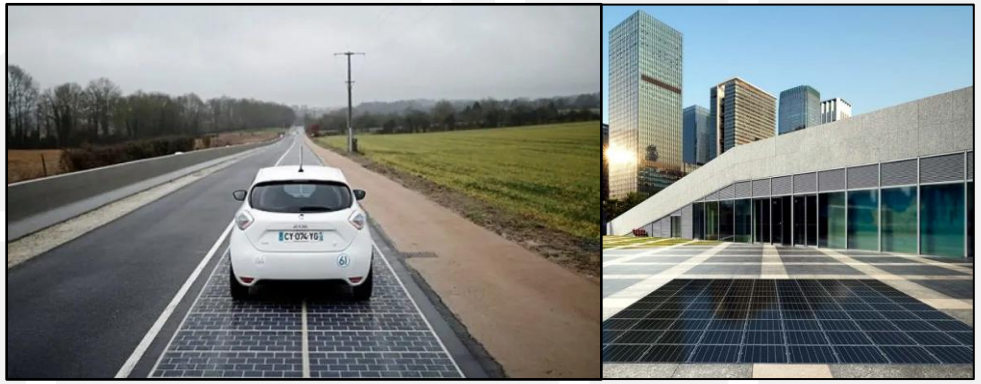
Roadside vertical wind turbine

solar canopy



Semi-transparent PV modules

façade PV modules

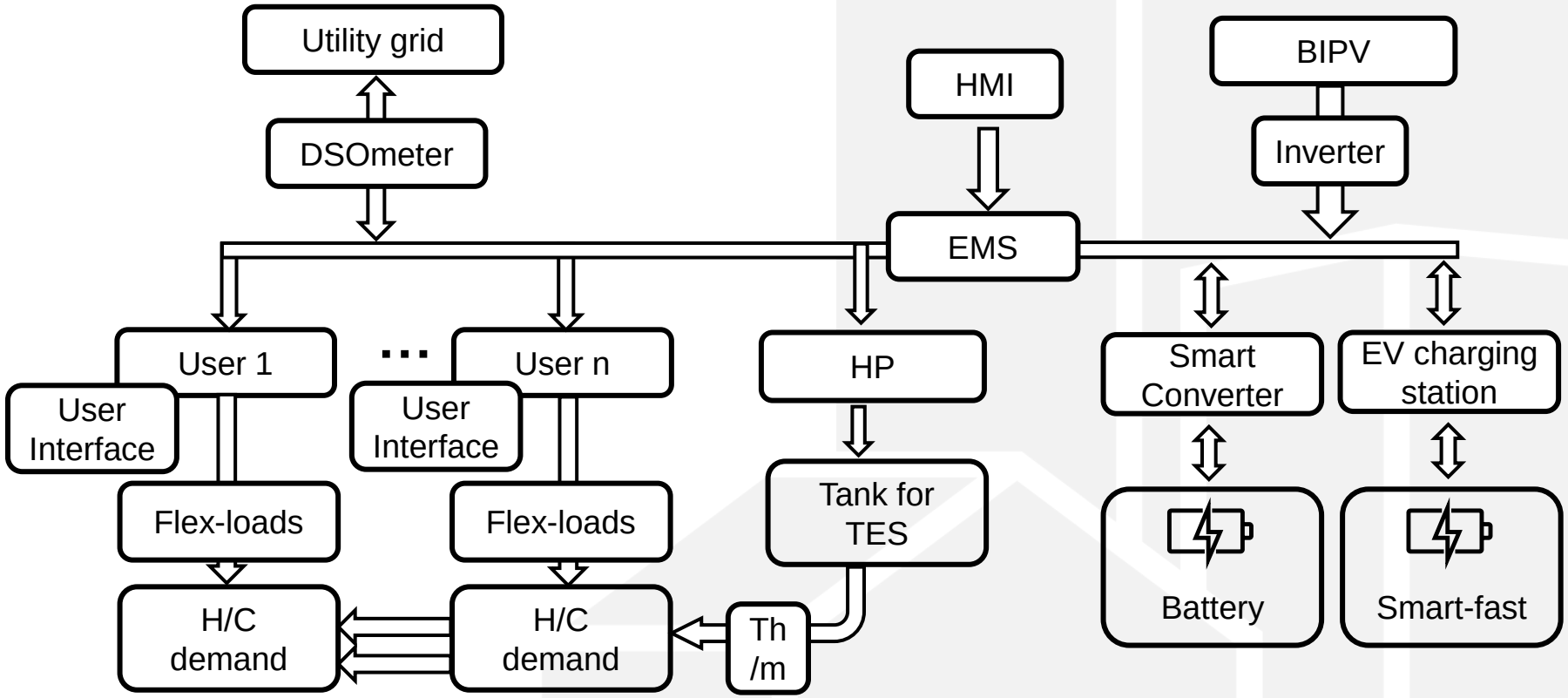


Solar pavements

TECHNICAL CHALLENGE 03: Innovative and cost-effective user interfaces for management and remote maintenance systems of the building's energy systems

- Real time consumption of electricity, gas and water
- Information about abnormal consumption patterns
- Corrective measures
- Forecasts and recommendations
- Timely information about last minute incentives or rewards to provide flexibility
- Interoperability with usual home automation systems and actuators
- Greater potential for flexibility of demand applied to the houses/building through a flexible control of the facilities

TECHNICAL CHALLENGE 03: Innovative and cost-effective user interfaces for management and remote maintenance systems of the building's energy systems



Q&A

THANK YOU FOR YOUR ATTENTION!

CONTACTO

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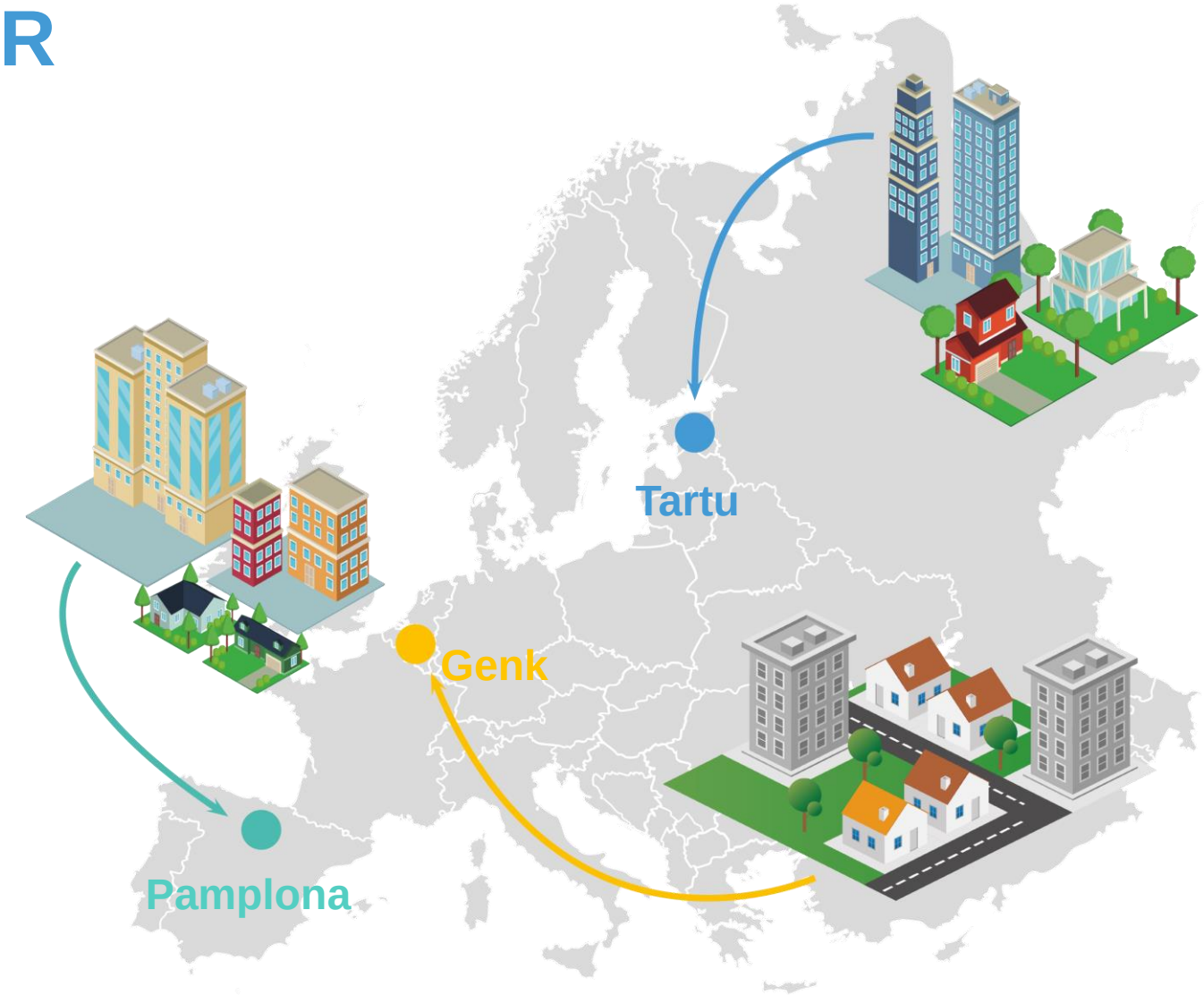

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