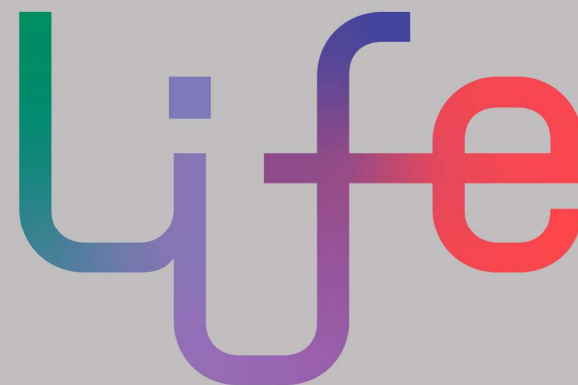


Annual public report

MOOI32019

Local Inclusive  
Future Energy (LIFE)  
City Platform project

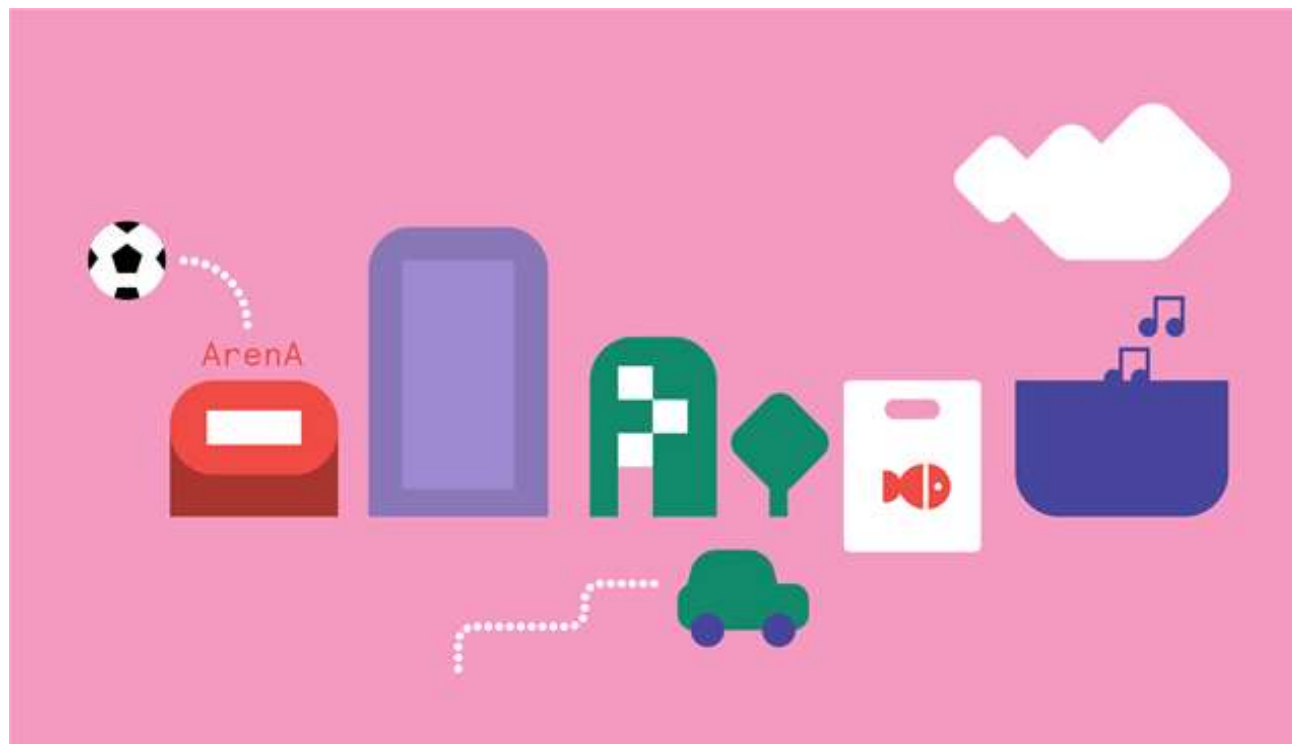
May 2024



Local  
Inclusive  
Future  
Energy

Publication date: 18<sup>th</sup> May 2024

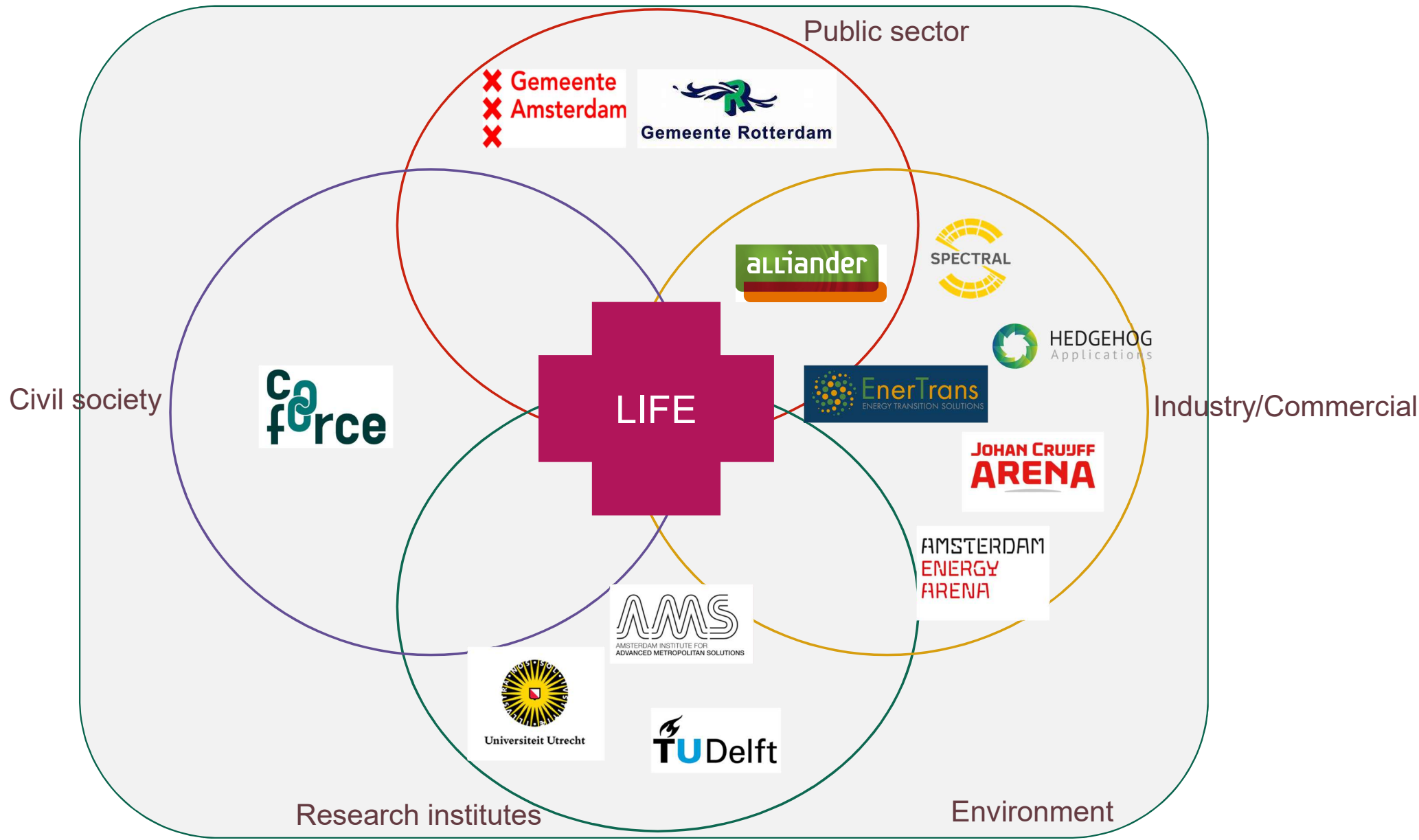
Publisher and author: Johan Cruijff ArenA



# LIFE project at a glance

- Start and end date: 28 April 2021 – 31 March 2025
- Total project budget: €6,638,262
- Location: Arenapoort, Amsterdamse Poort, Venserpolder (Amsterdam); Schiebroek (Rotterdam)

# LIFE project partnership



---

# Contributions to MOOI program objectives

---

# Contributions to MOOI program

Topsector Energie/RVO MOOI subsidy program round 2020.

The LIFE project contributes to a number of Innovation Themes within Mission B: Built Environment (Gebouwde Omgeving), including (in Dutch):

- Innovatiethema 4 – Slim energiegebruik in/tussen gebouwen door haar gebruikers
- Innovatiethema 6 – Flexibiliteit van/voor het energiesysteem (in de gebouwde omgeving)
- Innovatiethema 7 – Systemontwerp voor het elektriciteitssysteem in de gebouwde omgeving
- Innovatiethema 8 – Lokale flexibiliteit ten behoeve van het totale elektriciteitssysteem

# Contributions to MOOI program

The activities in LIFE will further technical, social, financial and regulatory know-how of Dutch companies, knowledge institutions, social engagement groups and governments in supporting further electrification of the built environment (to cut-off from natural gas usage) by developing solutions for a reliable and affordable electricity system based on local renewables, smart storage and flexible energy use.

Specifically, LIFE will develop an adaptable, inclusive smart energy system to allow for 1) better matched supply and demand to allow for more local renewable energy installation; 2) manage and optimise energy demand (incl. heat-net) at a district scale between buildings; and 3) utilise aggregated flexibility to solve local grid issues to set an example for the future of urban energy systems.

---

# Project principles & objectives

---



# Project principles & objectives

The Local Inclusive Future Energy City Platform (LIFE) project aims to develop a district-scale energy management platform to resolve grid problems by optimizing local energy infrastructure, integrating renewable energy, and creating public support, focusing on the needs of end-users and local stakeholders in its design and implementation.

The key focus of this project is to lay the groundwork for the creation of a grid-integrated local energy market, and to do so in an inclusive manner. In short, can we avoid net congestion through flexible sharing of energy assets and provide an inclusive return, in a replicable and scalable way?

# Project principles & objectives

The proposed outcome of the project is to:

- **research the technical, economic and organizational possibilities** of creating such a platform, and
- **develop the necessary constituent parts** that will make up and connect to the platform, most notably the Digital Twin (result 2), MultiMarketModel and LIFE applications (result 5), the Next-Generation Grid Management System (result 4), and
- **demonstrate the successful control, operation and integration of certain asset submodules** within the platform (such as batteries and ATES systems), in some cases virtually, and
- **develop a strategy for the successful future demonstration of the whole LIFE platform** with various stakeholders involved, and
- **generate and spread knowledge and know-how** amongst both the consortium partners and end-users of the platform.

---

# Project narrative

---

# How does LIFE tackle net congestion?

## Utilisation

- Improve usage of grid capacity by collective agreement between grid users, identifying the collective energy profile and opportunities to improve utilisation

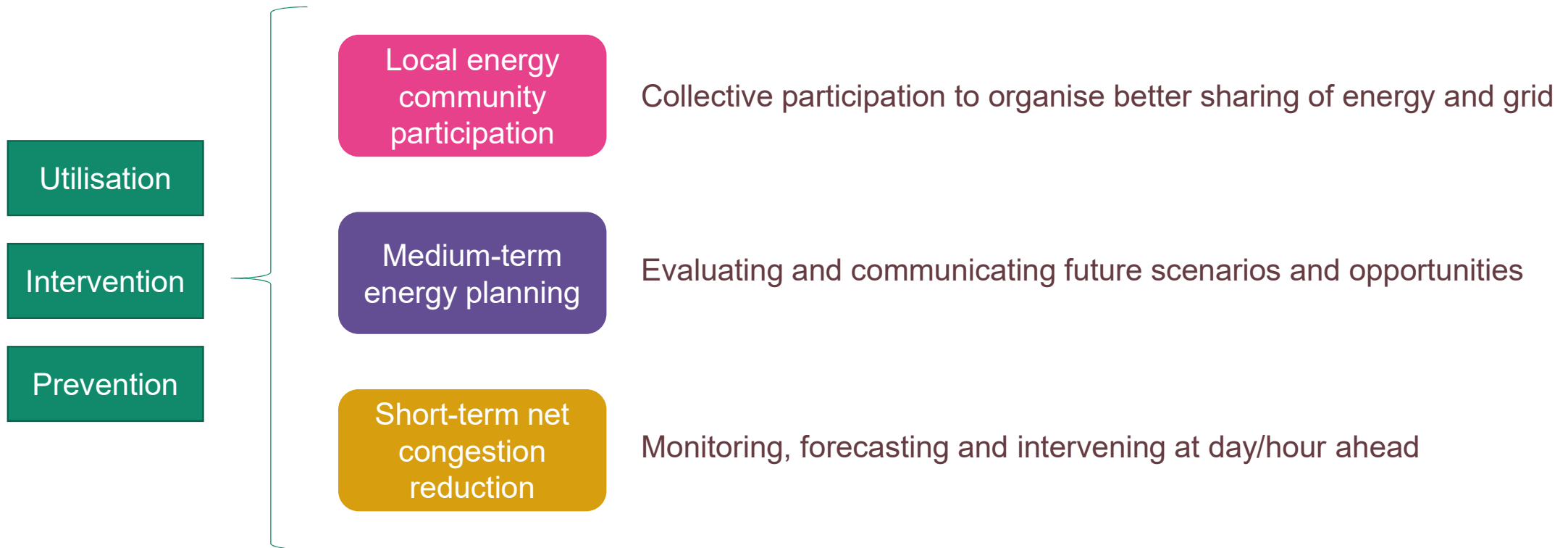
## Intervention

- Respond to super-peak demand moments with an energy management system at district-scale using flexible assets

## Prevention

- Ensure future developments fit into local energy profile and avoid congestion by enabling energy planning as a part of the area development process

# What does the LIFE system do?



Local energy community participation

✘ Gemeente  
✘ Amsterdam  
✘

Facilitates

LIFE Social Platform

Energy Hub  
Bijlmer-  
Noord

Energy  
Cooperative  
Venserpolder



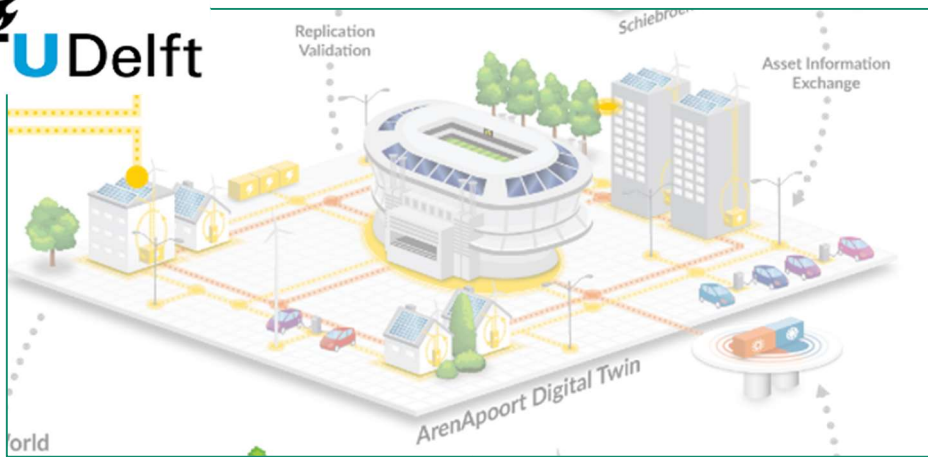
Collective decision to invest in local assets & programmes



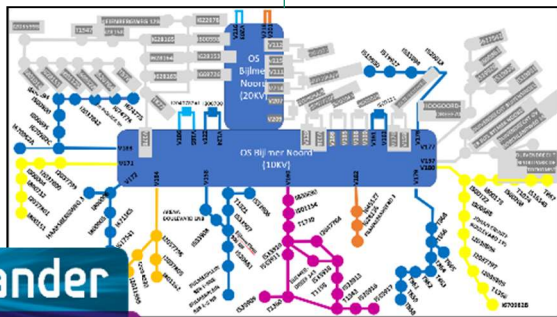
Medium-term energy planning



Digital Twin model of grid



Local grid network



Testing future/transition scenarios for congestion

Gemeente district development planning

Energy transition scenarios for local residents and companies

Identify areas that will benefit from flexibility

Short term net congestion reduction

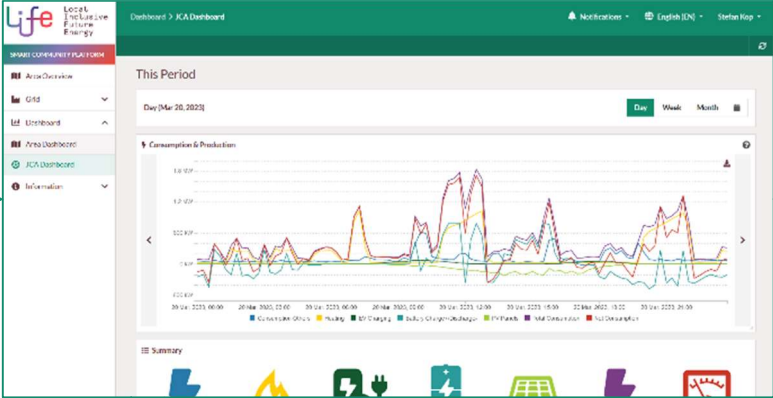


Grid management system



Request congestion solution

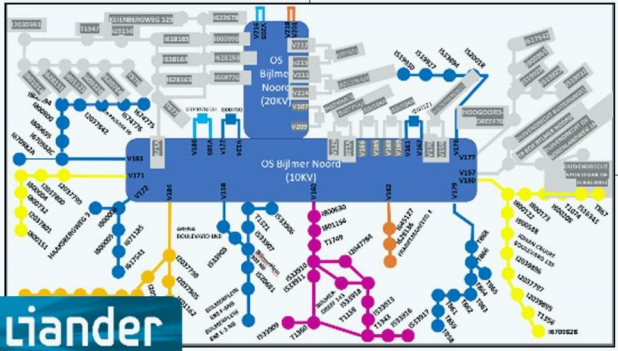
Collective energy management system



Use flex asset

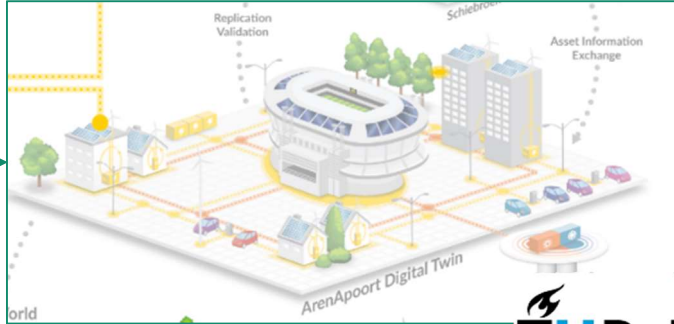
Data

Local grid network



Data

Digital Twin model of grid



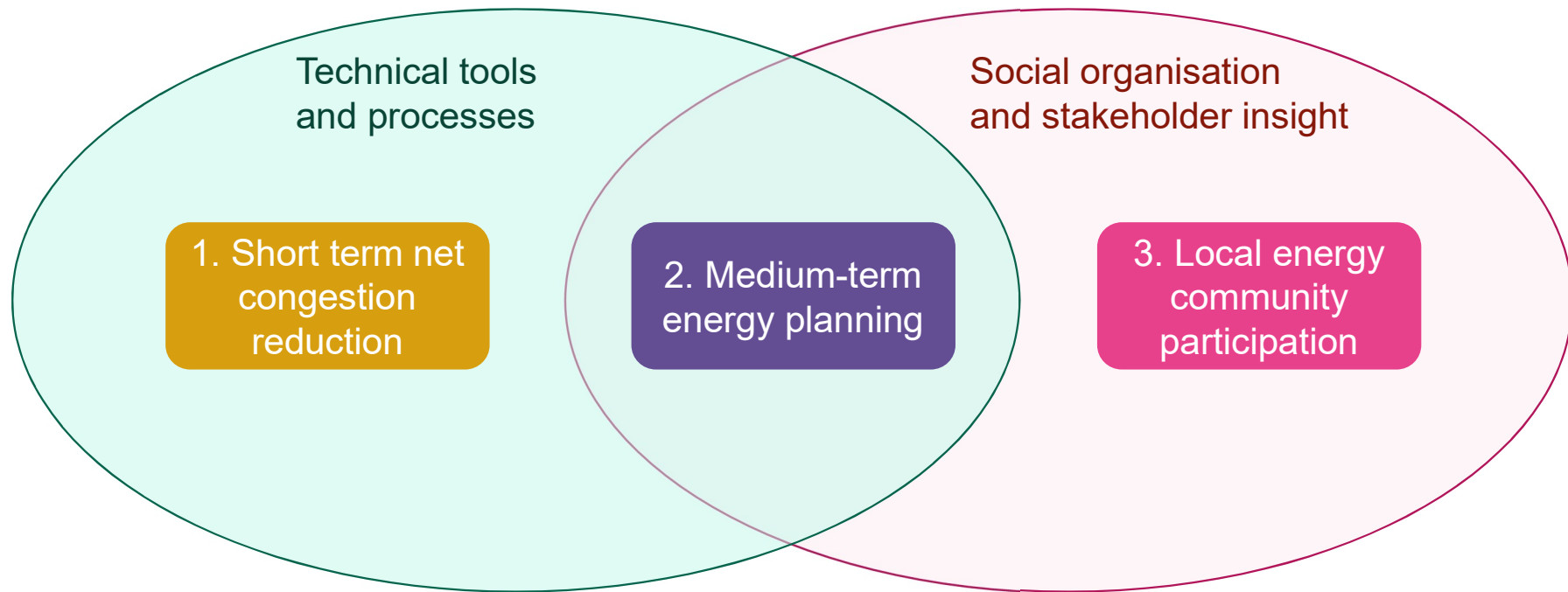
Validate solution

e.g. Large battery system





# Contributions of the LIFE Project

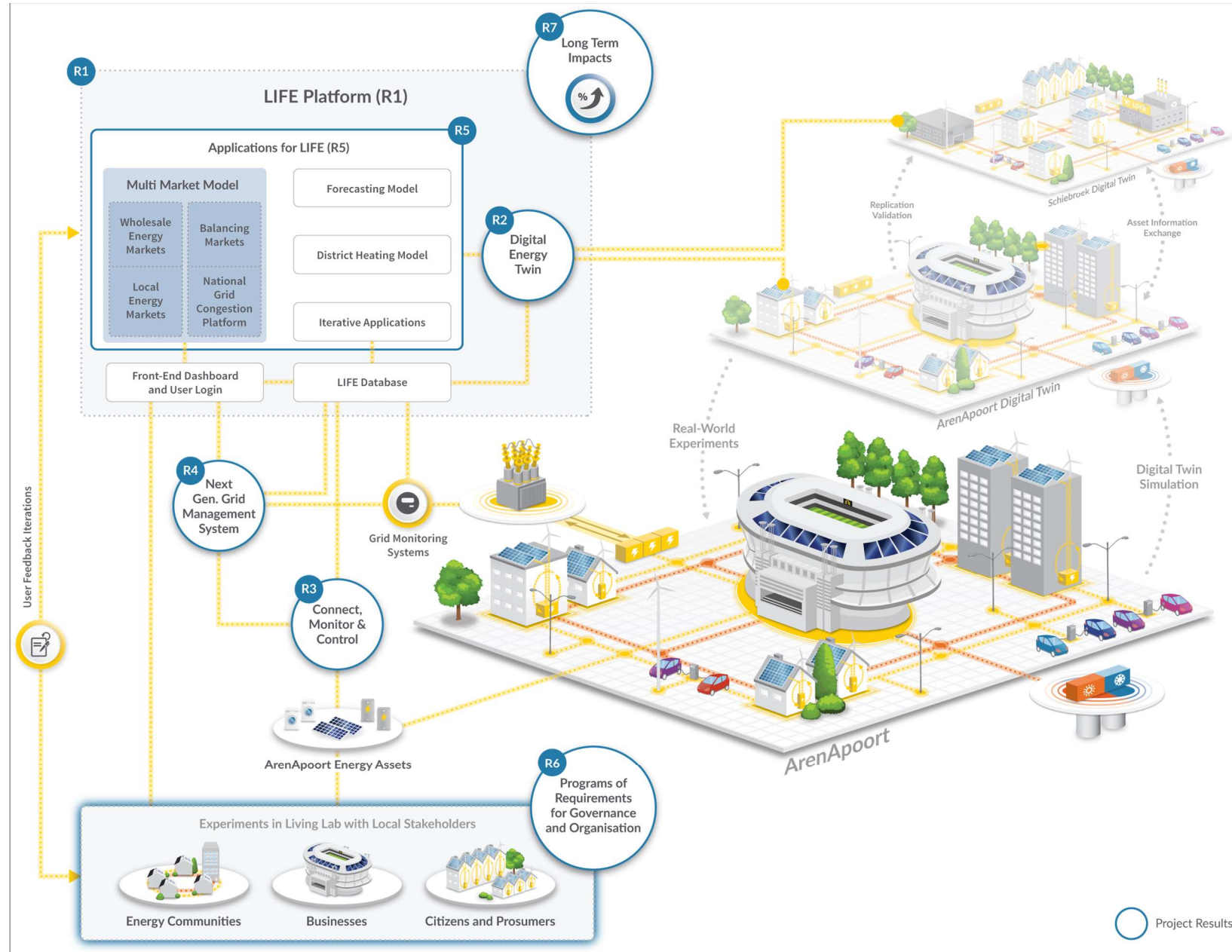


---

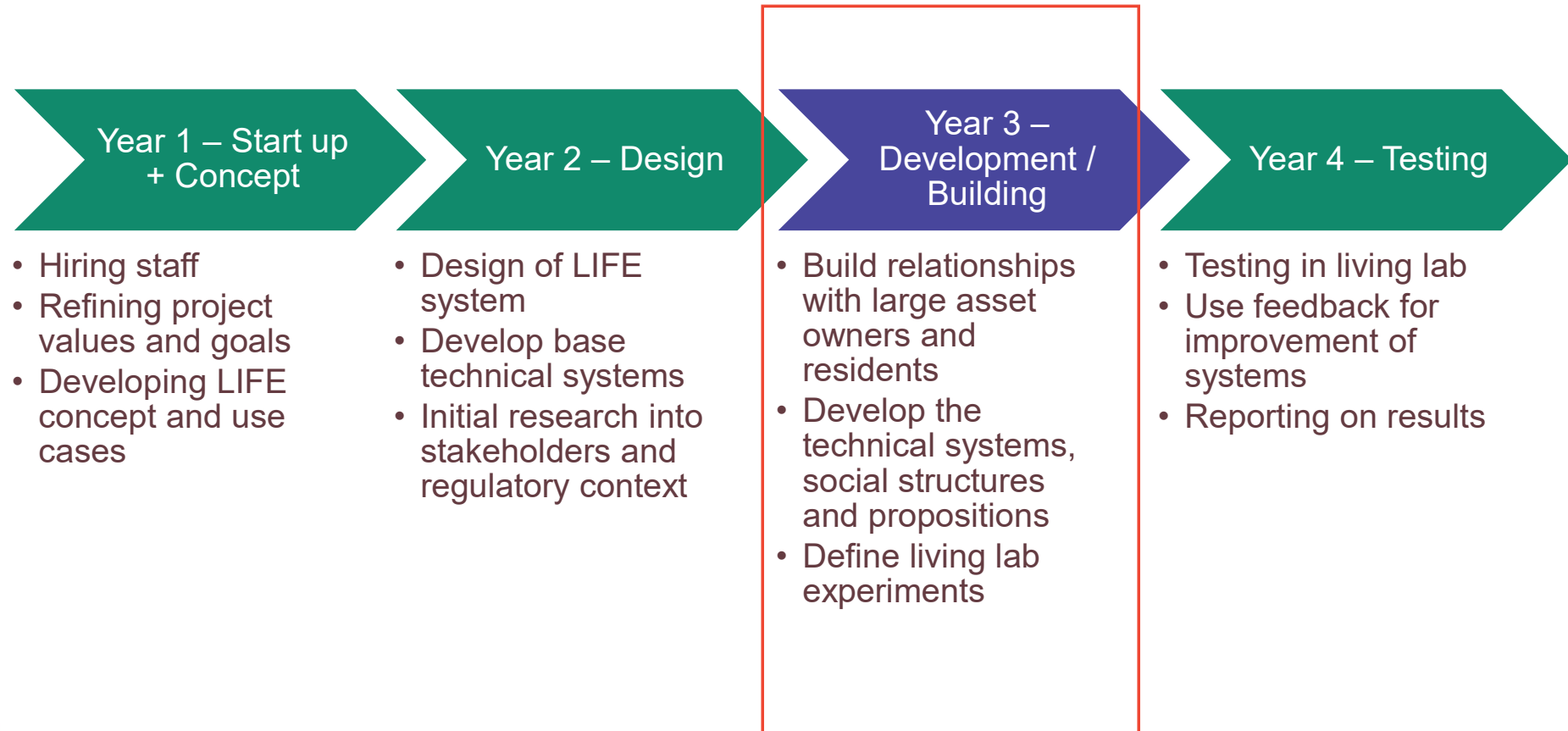
# Activities in year 3

---

# Overview of LIFE project results (R1-R7)



# Project phase



# Activities year 3 summary

2023-2024 (year 3) was a period to build relationships with local stakeholder, develop technical systems and refine the propositions for the use of the systems.

A detailed electricity and heat model was created for the Venserpolder area to analyse the impact of the energy transition on grid congestion and potential solutions. The results were then used to engage local companies and residents regarding how they can participate in managing this. A front-runners group of companies in Bijmer-Noord are being engaged to investigate the benefits of collective collaboration (in an Energy Hub).

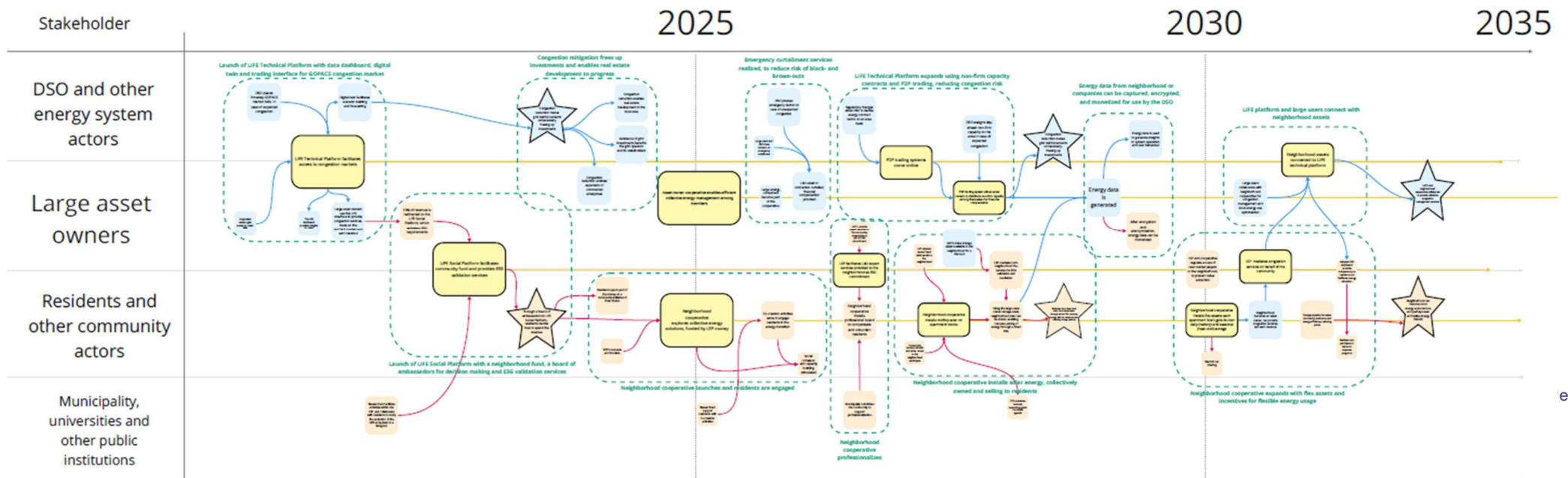
A multi-market approach to using the JCA battery was analysed, and preparations are underway to bid the battery capacity on the GOPACS market to test the Grid Management System as well as control systems.

# Stakeholder events



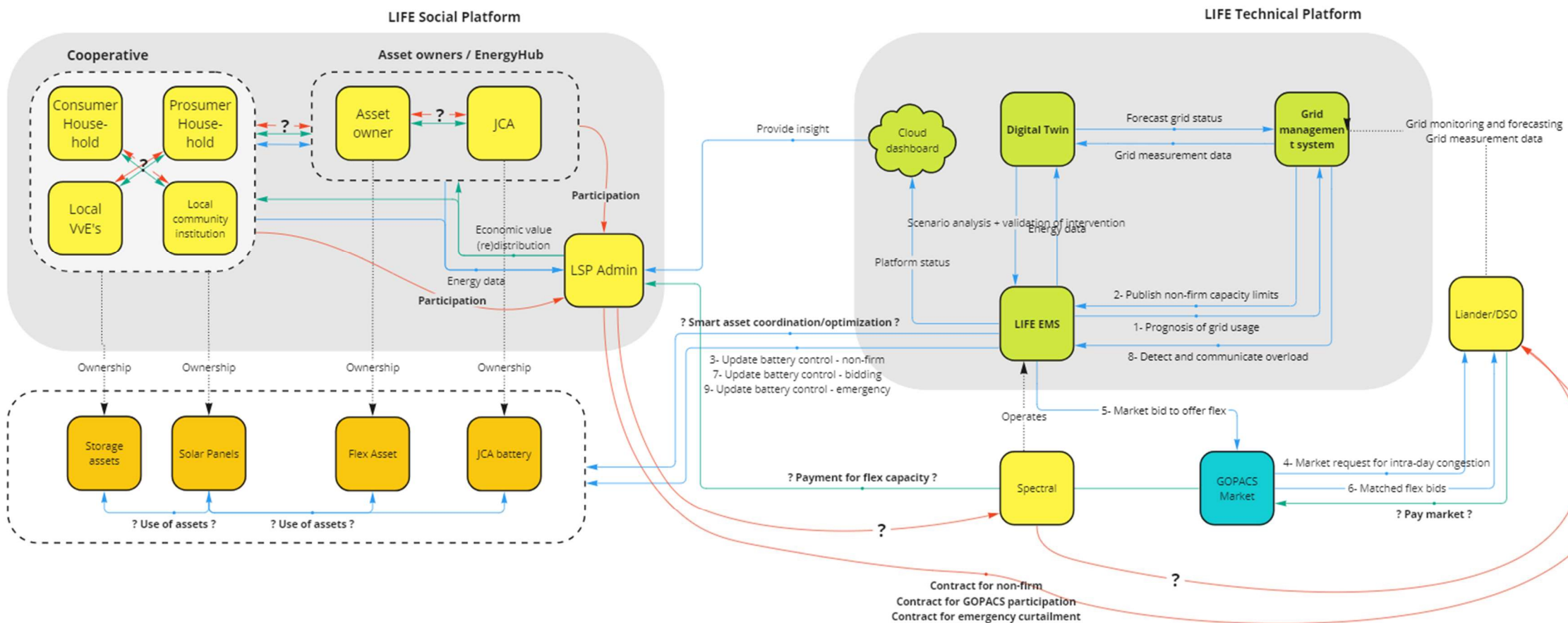
# LIFE system roadmap

- Based on the discussions from the 16th May consortium event and previous workshops, TU Delft's design team have formulated a narrative/roadmap for how the LIFE system can develop within an area, in the context of electrification of mobility etc. and worsening grid congestion issues.
- It is a win-win narrative for local companies and residents: by investing in local renewable and flexible energy assets for the residents via the Social Platform, companies contribute to a stable grid (at substation level) by allowing the local energy cooperative to take part in the local Energy Hub.



# System architecture – collective scenario

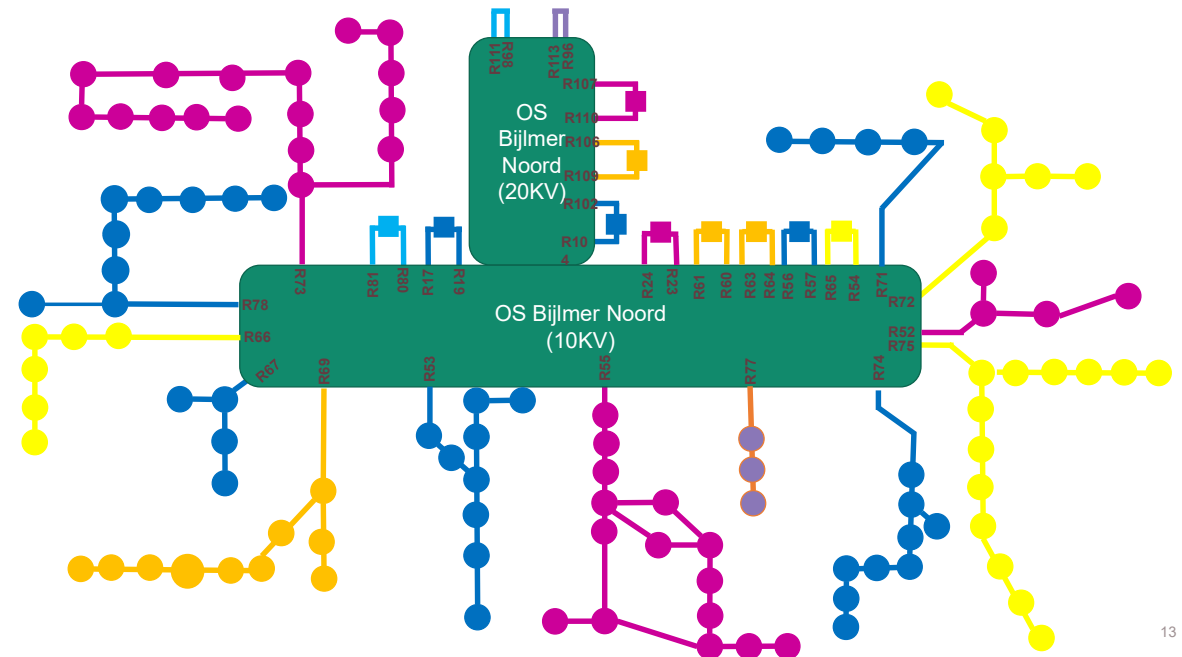
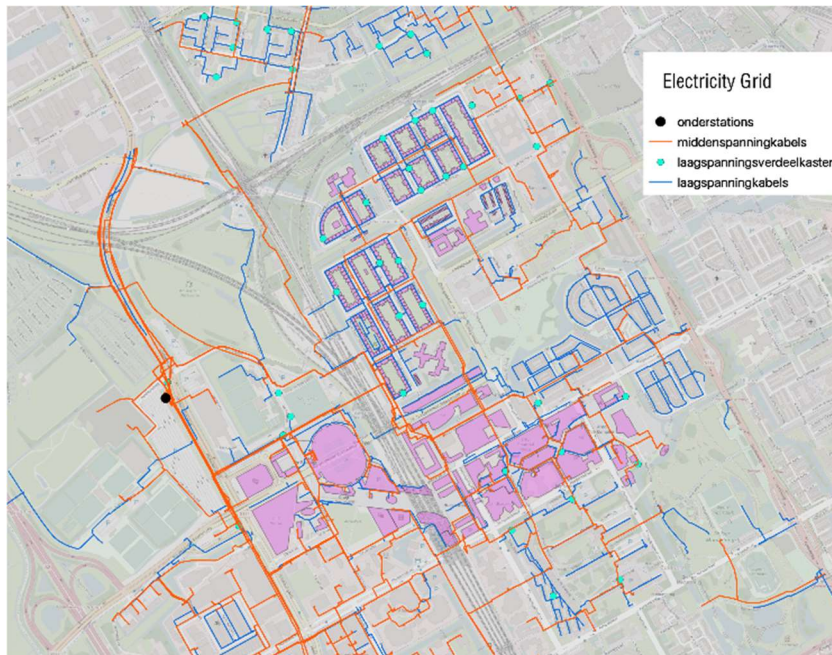
- Value network diagrams have been developed for various scenarios to illustrate the working of the LIFE system in different contexts / steps of the roadmap. Below is the concept for the scenario where collective participation in grid congestion reduction is realised.



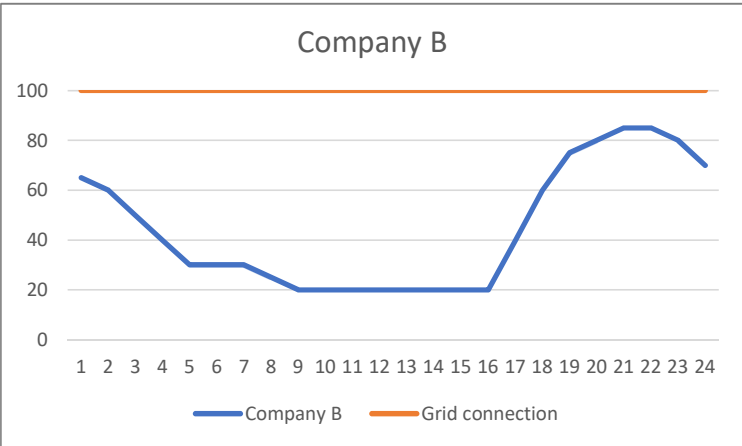
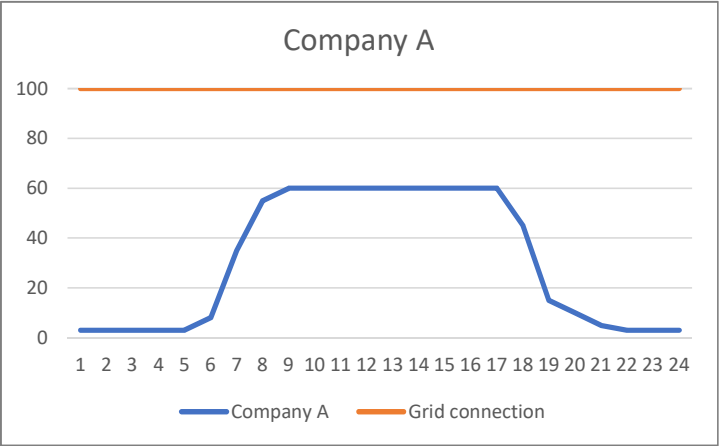


# Metro-kaart

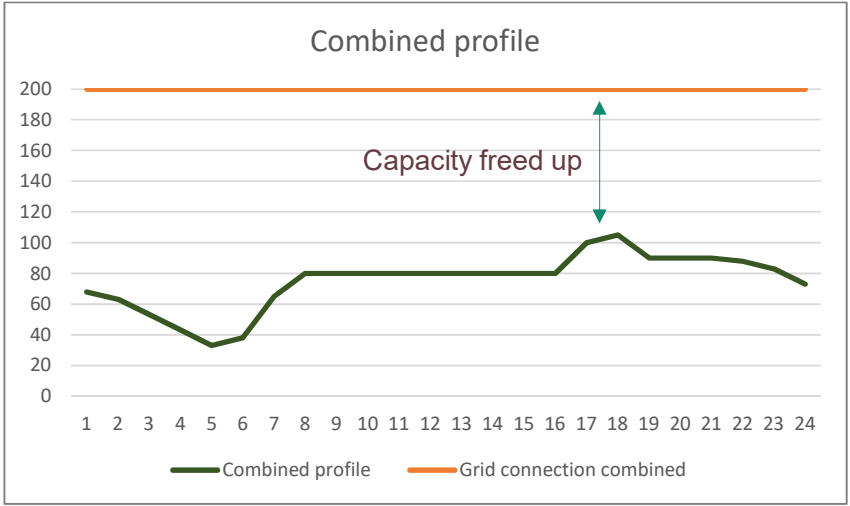
Alliander developed a 'metro-kaart' map format for sharing network data and congestion expectations in a location-specific visualisation while protecting commercially- or privacy-sensitive data. This format is being further developed within Alliander as a product for supporting planning and congestion reduction solutions.



# Energy Hub proposition

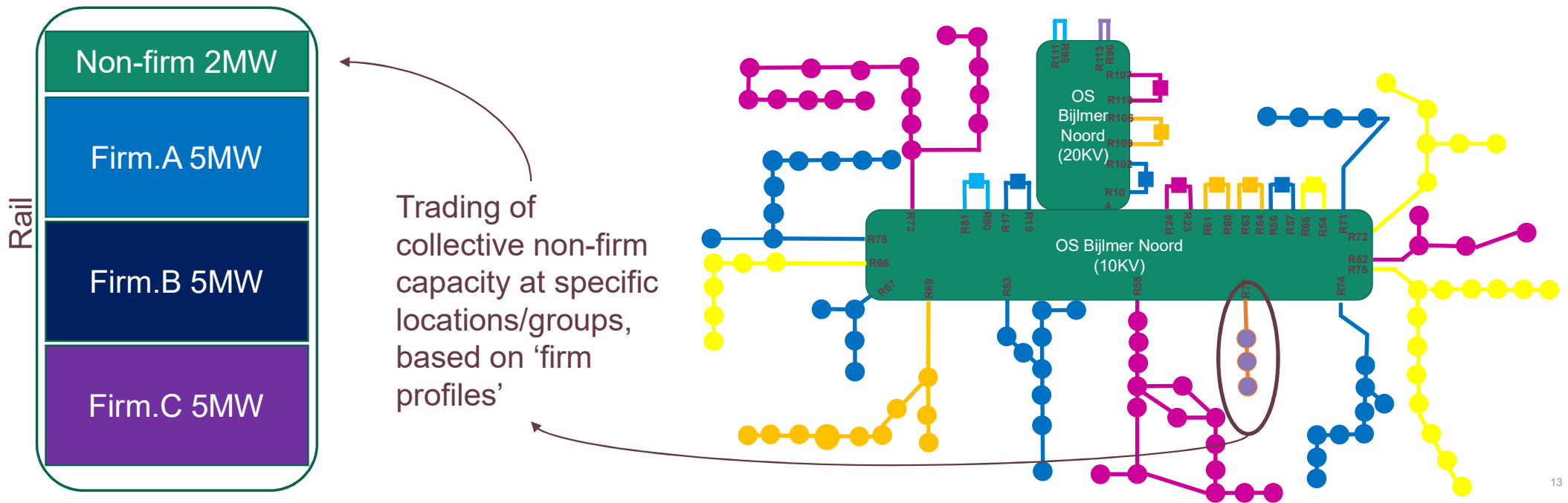


- By contracting grid connection as a **collective**, we can find opportunities to combine demand profiles and lower the contracted capacity (GTV), thus lowering costs and freeing up extra grid capacity.



# P2P capacity market

- Working on potential solutions at MSR, Rail/string and substation (OS) level:



---

# Spin-offs

---

# Learning from other projects and organisations

Contact has been made with several related projects & organisations to learn from their experiences, among others:

- Community Virtual Power Plant (cVPP) project, led by TU Eindhoven
- CleanMobilEnergy (CME) project, led by Gemeente Arnhem
- COBEN (Civic Energy) project, led by University of Oldenburg
- Om|Nieuwe Energie, an energy supplier that has launched a 'direct PPA' model in 2022 for energy cooperatives to sell energy directly to Gemeente's at cost-plus pricing. CEO André is on LIFE's Advisory Board.
- De Groene Hub, a donut-deal style community initiative in Holendrecht (zuid-oost)
- EIGEN, a MOOI project which is focusing on setting up Energy Hubs to solve net congestion, and has succeeded in setting up a collective in Amsterdam's Western Port.
- Local4Local, a MOOI project led by Energie Samen which began in 2023 to develop the direct PPA model to serve households with cost-plus energy prices.
- RESCHOOL, a Horizon Europe project which began in late 2022 with a pilot in Amsterdam to setup a local energy community in the Eastern Harbour Area.
- GO-e, a MOOI project led by TNO developing ways how energy flexibility can replace network upgrades.

# Spin-off projects

- Local grid congestion Quick Scan tool – lead Gemeente Amsterdam
  - The Gemeente Amsterdam is working together with EnerTrans, TU Delft and Spectral regarding possible development of a local Quick Scan tool to allow the City's area managers to advise local companies regarding their future plans and grid congestion. This is based on the Digital Twin, heat model, databases and interfaces developed within the LIFE project.
- Buurt-analyse tool – lead Alliander
  - Based on the Metro-kaart network data sharing format developed within the LIFE project, Alliander is further developing this concept into an official tool which can be used to provide information on the grid to third parties to inform advices regarding grid congestion and possible solutions. This has now been applied to several locations with DSO grid congestion, such as in Amsterdam's West Port.
- Investigation on setting up/joining local energy cooperative – lead CoForce
  - CoForce has had several co-creation sessions with residents (together with TU Delft) regarding setting up a local energy cooperative to engage locals and provide tangible benefits.

---

# Publications

---

# Publications

- Date: Q2 2023 – Q1 2024
- Title: Openresearch: Local smart energy systems
- Contents: Various articles, presentations and thesis that have been made during this time period within the LIFE project.
- <https://openresearch.amsterdam/en/page/71786/lab-1-local-smart-energy-systems>

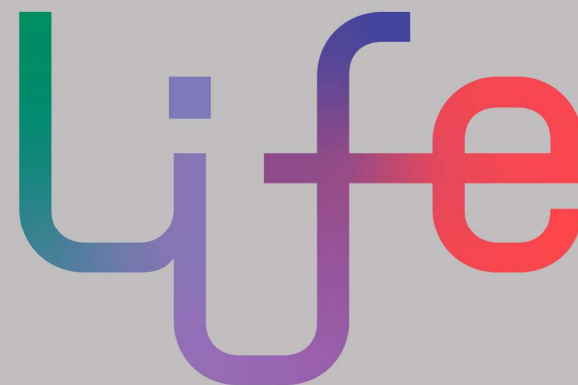


*Het project is uitgevoerd met Topsector Energie subsidie van het Ministerie van Economische Zaken en Klimaat, uitgevoerd door Rijksdienst voor Ondernemend Nederland. De specifieke subsidie voor dit project betreft MOOI-subsidie ronde 2020.*

For further information, please contact:

**Luc Mureau** – Project Manager LIFE,  
Johan Cruijff Arena

[l.mureau@johancruijffarena.nl](mailto:l.mureau@johancruijffarena.nl)



Local  
Inclusive  
Future  
Energy