

GLocalFlex



Funded by
the European Union

WP2 – South Western Pilot Group

French pilot

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Remote/28.09.2023

The approach will be demonstrated in the city of **Clamart**









French pilot

Overview and scope

Objectives : Demonstrate the GLocalFlex approach to implement **demand response programs** based on smart HEMS (Home Energy Management Systems) solutions

Pilot lead : EDF



 <i>17 Rue de bourgogne</i>	 <i>Résidence des Leux</i>	 <i>Panorama district</i>	 <i>Public school « Les Rochers »</i>
 <i>Centre Desprez</i>	 <i>PV Panel over Résidence des Leux rooftop</i>	 <i>Public market « Marché du Troisy »</i>	 <i>Public school and EV infra</i>

40 appartements with Linky smart meters and a diversity of appliances and heating systems (heat pumps, solar panels for collective sanitary hot water ...)

Smart Hems solutions will be deployed on the households

Flexibility will be simulated based on real energy data and BIM

Main objectives

Practical deployment of smart HEMS to enable grid services into flexibility market

Pilot site characteristics

- **Energy actors** : DSO, TSO, aggregators, informed, EDF as seller
- **Local actors** : Vallée Sud Habitat (VSH)
- **Networks / grid involved** : Electricity
- **Size of demo** : 0,5 MW
- **Renewable sources** : 0,1 MW PV
- **Storage technologies** : Building thermal inertia, EV, water tanks
- **Consumption flexibility** : 15% of residential consumption / 20% of public building consumption
- **Flexible goods or systems** : V1G - EV, white goods, batteries, heat pumps



Pilot site characteristics

- **Residential housing**

- Deployment of smart HEMS (Home Energy Management System) in residential housings
- Flexibility forecast and verification with real data
- Remote activation of flexibility :
 - Behavioural (signal sent to the participant)
 - Appliances remote control (orders sent to smart plug or smart relays)





- **Non residential housing**

- Flexibility forecast and verification with real and simulated data
- Simulation of flexibility activation using CSTB simulation tool

- Flexibility market and aggregator simulation (simulated buyers)

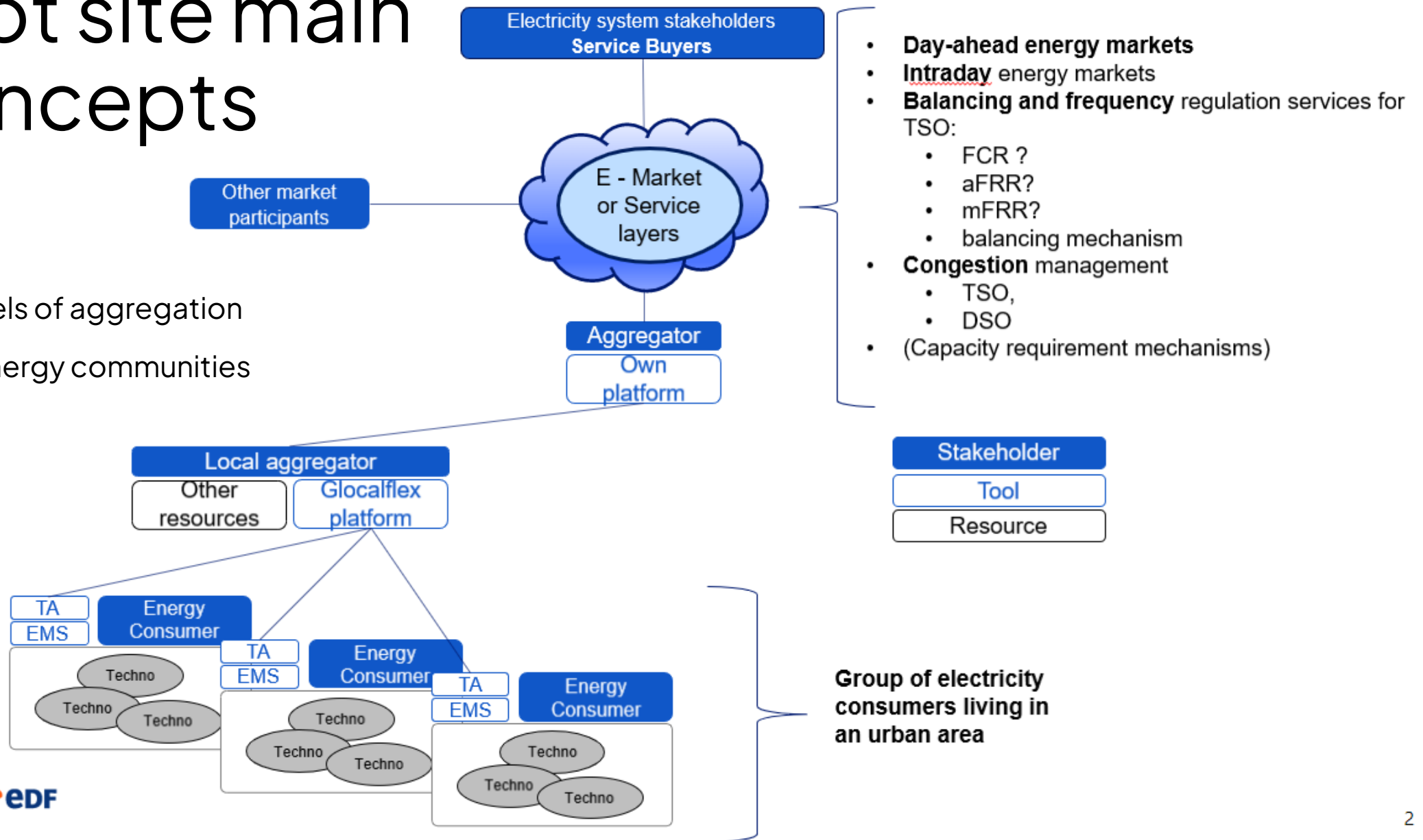


Partners

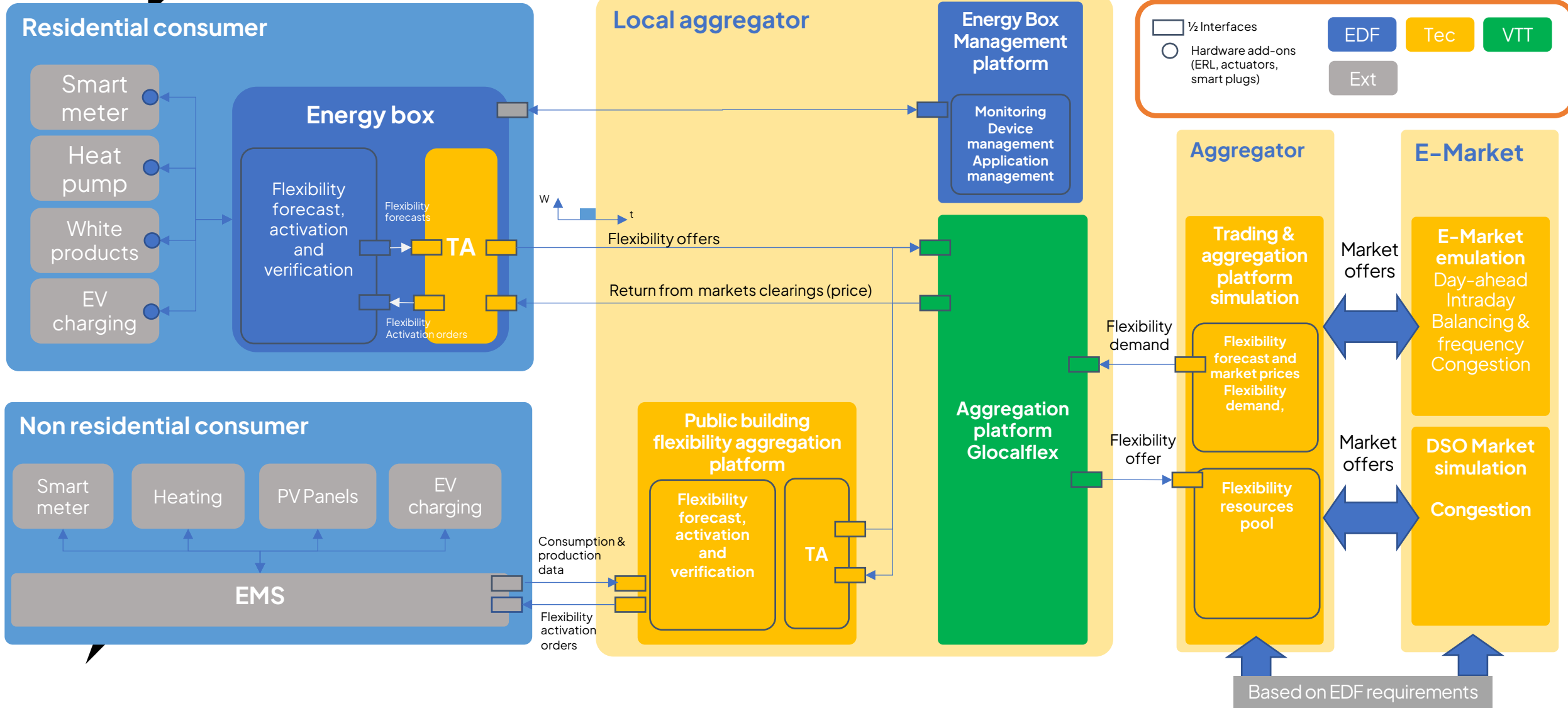
EDF  <i>Electricity supplier and producer</i>	Vallée Sud habitat  <i>Social housing based in the south of Paris</i>	TECNALIA  <i>Technology research centre</i>	CTSB  <i>Scientific and technical centre for building</i>
<ul style="list-style-type: none">- Pilot site management- User engagement strategy definition- Relevant business models identification- Solutions design & development for the flexibility services- Solutions deployment in the participant premise	<ul style="list-style-type: none">- Pilot site owner- Access to participants households- Communication campaigns for participants recruitment and project results dissemination	<ul style="list-style-type: none">- Trading agent development for integration with the GLocalFlex platform- Simulated buyers configuration and integration- Flexibility aggregation development for non residential participants- Flexibility market emulation	<ul style="list-style-type: none">- Simulation of non residential building behaviour against pilot test scenarios- Simulation of residential building behaviour against pilot test scenarios and comparison with measurement data

Pilot site main concepts

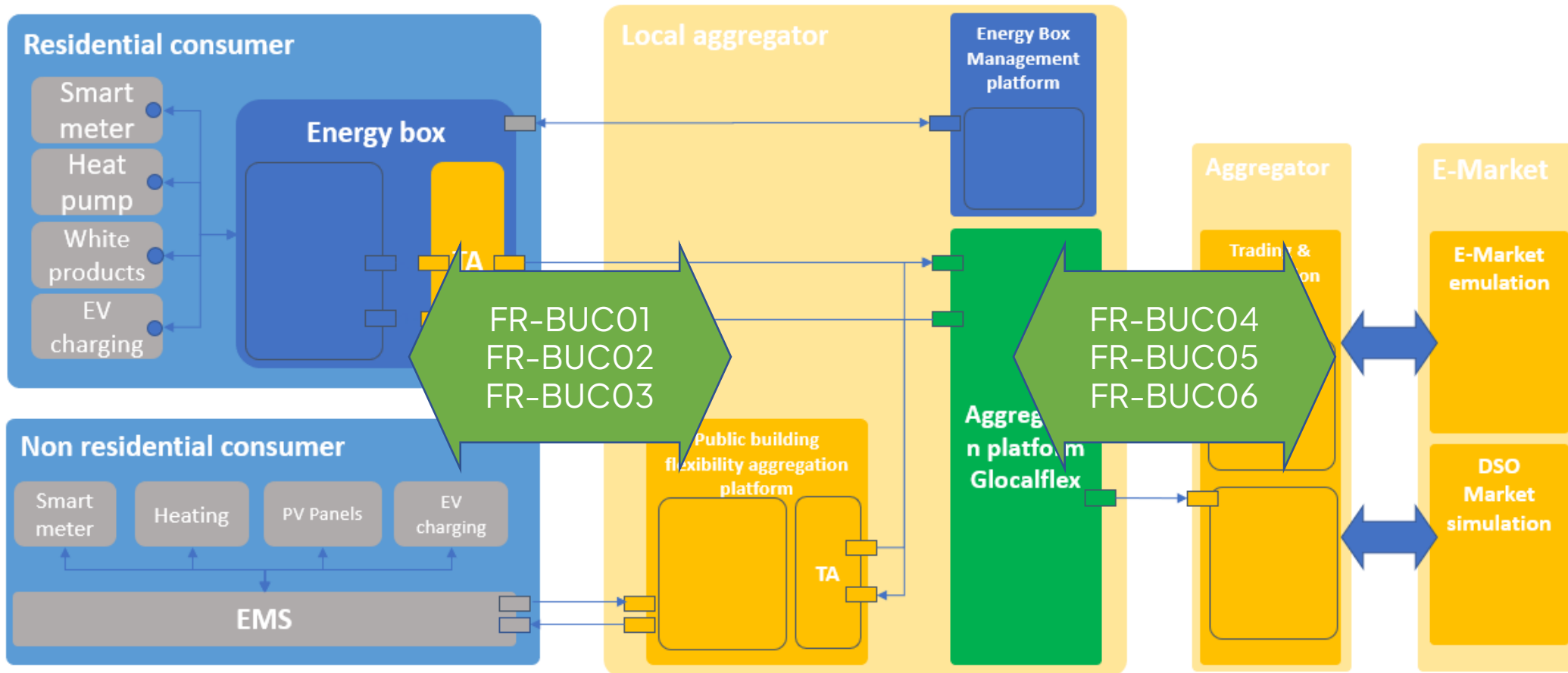
- ➔ Two levels of aggregation
- ➔ Local energy communities



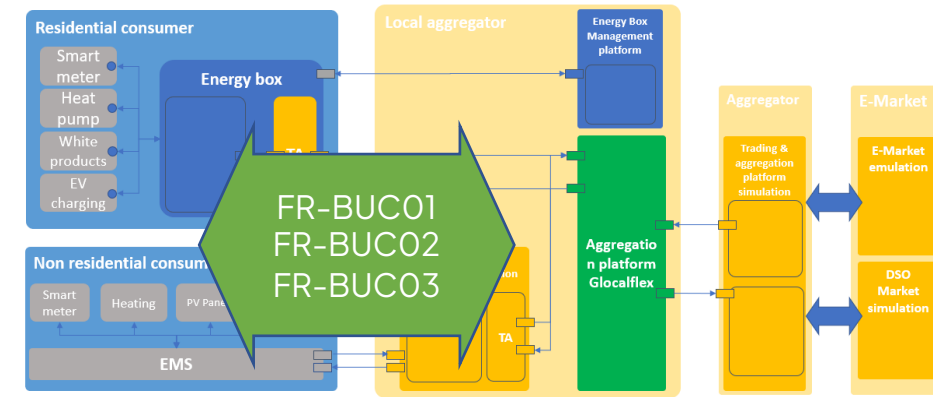
System architecture



High Level Business Use Cases

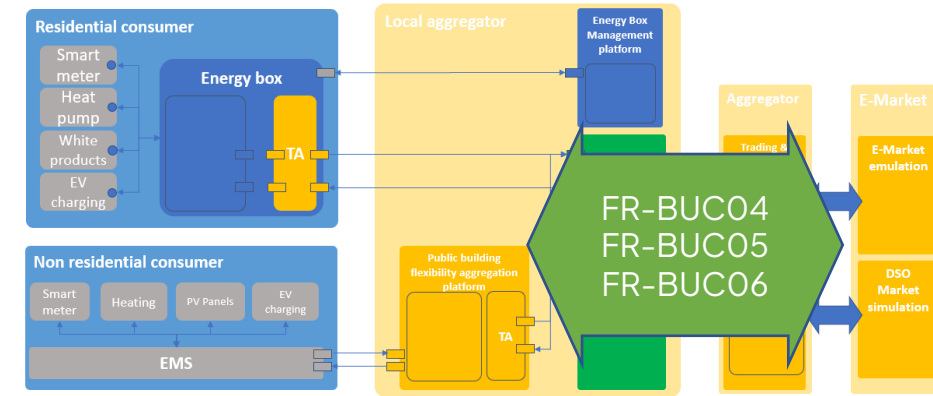


High Level Business Use Cases



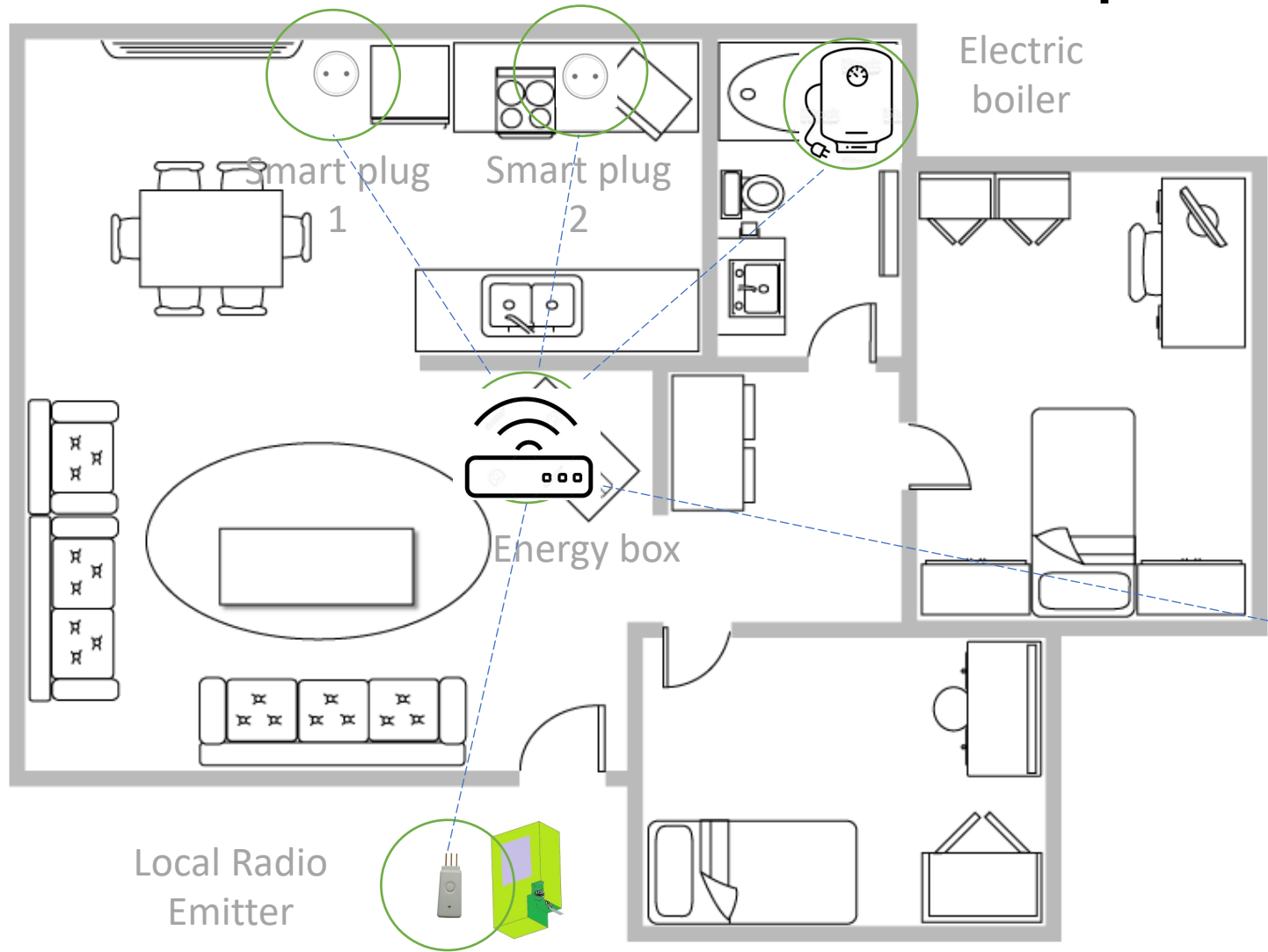
Id	Domain	Name
FR-BUC01	Residential consumers, energy management, flexibility provision	Enable the flexibility of residential consumers through a fully automated approach using an Energy Box and the associated IOT ecosystem
FR-BUC02	Residential consumers, energy management, flexibility provision	Enable the flexibility of residential consumers through a behavioural approach using an Energy Box and the associated IOT ecosystem
FR-BUC03	Public consumers, energy management, flexibility provision	Enable the flexibility of public consumers already equipped with an EM (Energy Manager)

High Level Business Use Cases



Id	Domain	Name
FR-BUC04	Aggregation, flexibility provision, energy markets, BRP	Provision of flexibility to the energy markets and to BRPs
FR-BUC05	Aggregation, flexibility provision, frequency ancillary services	Provision of flexibility to the TSO for balancing and frequency regulation services
FR-BUC06	Aggregation, flexibility provision, services to DSO	Provision of flexibility to the DSO at local level

Pilot site main concepts



Residential housing participant

Deployment of an energy box connected with an ecosystem of sensors and actuators for data harvesting and appliance remote control



Pilot site main concepts

Smart home connected objects

DEVELCO
PRODUCTS



OMWAVE
Innovation for Connected Things



Energy box



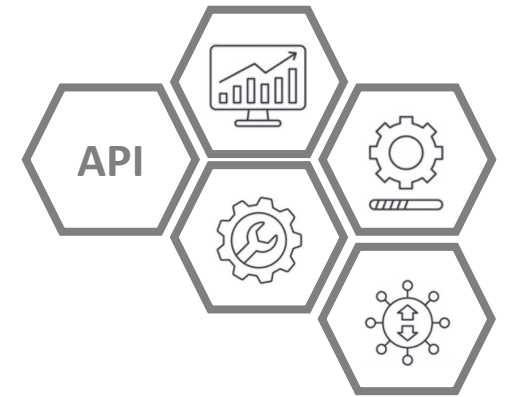
Designed to embed AI applications and to communicate with Zigbee compatible products

Mobile app



Mobile application for the participant to set up securely the energy box and the pairing with the connected objects

Service platform



Gateway and connected objects monitoring
Data harvesting and storage
Device management
Remote real time access

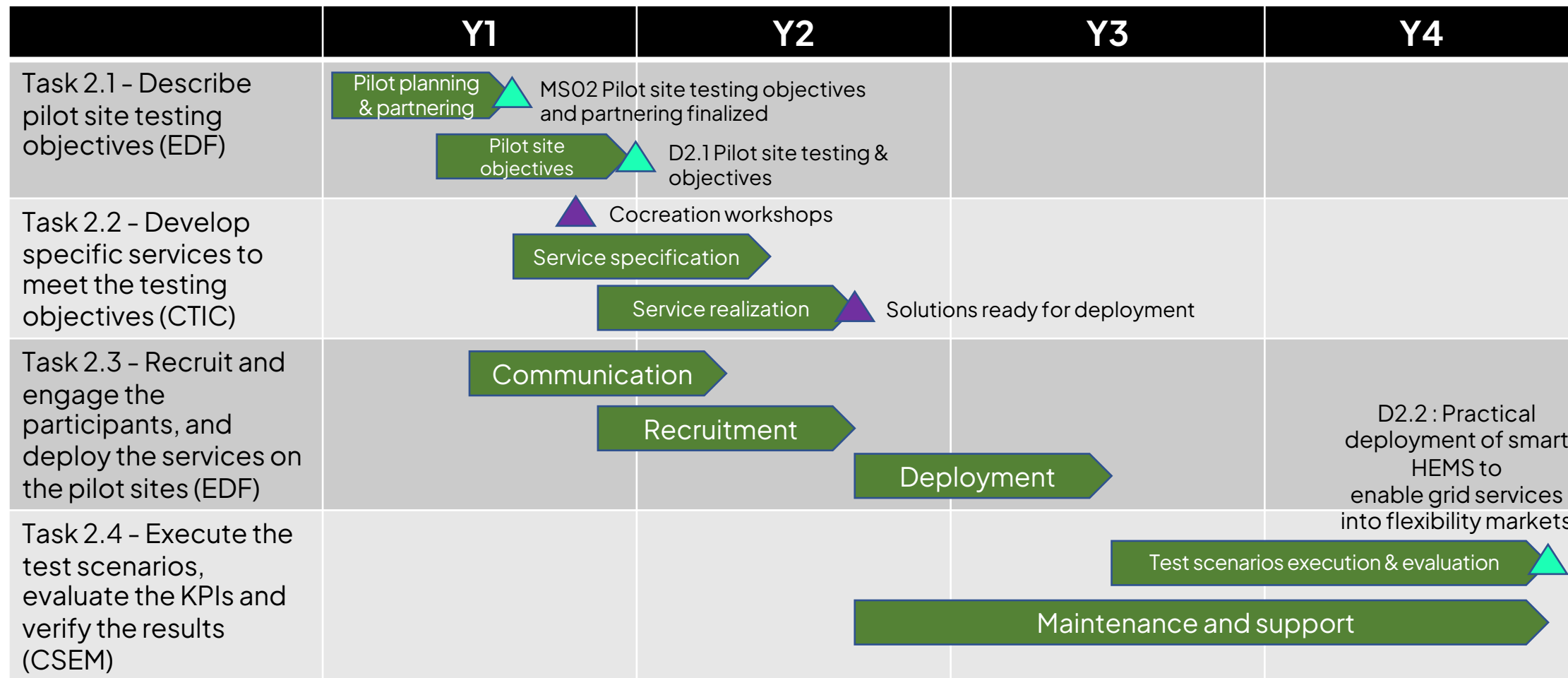
Tasks and Deliverables

A cross organization of tasks and deliverables to facilitate the coordination among the pilot sites

#	Task leader	Description	France	Spain	Switzerland
T2.1	EDF	Describe pilot site testing objectives	D2.1 (EDF) : Pilot site testing objectives (EDF)		
T2.2	CTIC	Develop specific services to meet the testing objectives	D2.2 (EDF) Practical deployment of smart HEMS to enable grid services into flexibility markets	D2.3 (CTIC) A Demand Response program to increase rates of flexibility at energy communities	D2.4 (CSEM) Flexibility management of electric vehicles and white goods in residential energy community context
T2.3	EDF	Recruit and engage the participants, and deploy the services on the pilot sites			
T2.4	CSEM	Execute the test scenarios, evaluate the KPIs and verify the results D2.4 D2.2			



Planning



Planning

Q #	Description of actions	Partners
Q1	Sharing of objectives, roles and responsibilities with project partners	EDF, VSH, TEC, CTSB, VTT
Q2	Review of business models to be prioritized with EDF business entities - Plan discussions to better understand how the GLocalFlex platform works	EDF, VSH
Q2	Pilot site scope review: - For residential customers, review of flexibility potential and discussion of participant recruitment strategy with VSH - Following the bail out of VDC, work on alternative solutions with EDF commercial entities to recruit non-residential participants - Start developing the participant engagement strategy with VSH and EDF - Acknowledge legal teams to start preparing customer consents	EDF, VSH
Q3	Participant engagement strategy and recruitment approach	EDF, VSH
Q4	Develop software development needs and define roles and responsibilities : - Market emulation - Flexibility aggregation simulation - Trading agent - Software adaptations to meet project requirements	EDF, VSH, TEC, CTSB, VTT

Focus areas and pilots

Changing the flow of future

Contact details



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Place / Date