

The image is a promotional banner for dcbel. It features a silhouette of a person standing in a field, looking towards a bright sunset or sunrise. The sky is a mix of orange and yellow, and the field is dark with some light reflecting off the grass. The person's head is positioned directly in front of the sun, creating a strong backlight effect. The overall mood is serene and hopeful.

dcbel

# Energy on your own terms

So you can live a life without compromise

BUY DCBEL

**Revisiting the integration of self-consumed PV, energy storage and V2X at residential level**

Laurent SCHMITT, Head of Utility & European developments  
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# Home energy is facing an exponential disruption with EV



New EV by 2030 in Europe

**60M**

EV charging at Home

**88%, 29M** home chargers in Europe  
by 2030

Extra energy flowing through European homes worth

**+29BEUR** by 2030



Convergence of technology  
Home + Mobility



Grid flexibility required to reach 2050 targets

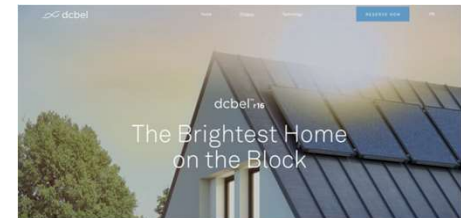
**X4**

Home Flexibility potential moving from

**1-2 to 10-15KW**

Energy Management Revenue gain opportunities  
per family per year

**2000 to 3000EUR**



Current Home Solar installations

**7M, 10%** of European Homes

New solar rooftop and EPBD objectives targeting

**40M, 50%** of European Homes

## 1. Choose most relevant tariffs



*How to mitigate my energy bill increase ?  
How to take advantage of energy sharing ?*

## 2. Calculate Climate Impact



*What is my impact to Climate Change ? How am I doing versus my community ?*

## 3. Take advantage of my Home IoT



*How to best use my energy data ? How to further monetise my flexibility with Services Providers ?*

## 4. Maximise my self generation



*How to size my PV installation and best monetize my PV surplus ?*



# New BYODER approach and data exchange requirements

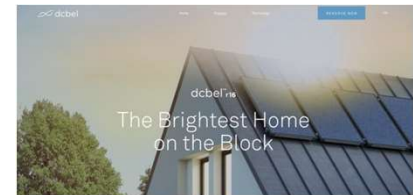
## Controllable Demand Side Flexibility



## Storage devices & V2X



## Residential solar self consumption



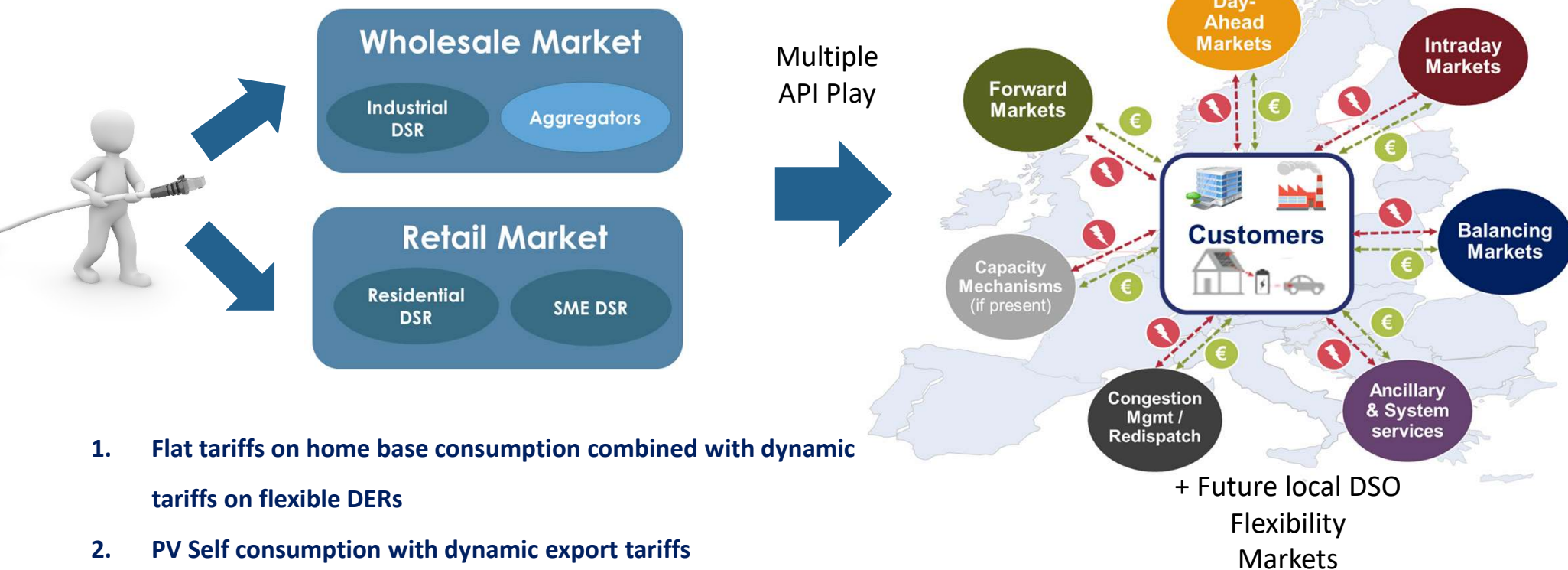
All of them digitally connected, some  
embedding edge computing & virtual  
submetering





# Anticipating future Flexibility market designs

1. Integrate wholesale and retail market, automate flexible residential DER implicit participation, foster energy data exchanges from Dedicated Measurement Device



## New digital flexibility market interactions

**Self-generation,  
storage, flexibility  
provision**



**Smart  
Consumption**



- **Free choice**/change of supplier and Flexibility Service Providers per DER
- **Digital twin** based price benchmarks
- **Consent based** interoperable data exchanges
- **Near real-time baseline nominations** for non time dependant DERs
- **Harmonised flexibility data spaces** for all mass produced DERs
- **Real-time data streaming** for DER telemetry and observability
- Enable peer to peer exchanges for energy sharing

# Target Flexibility markets for residential DERs

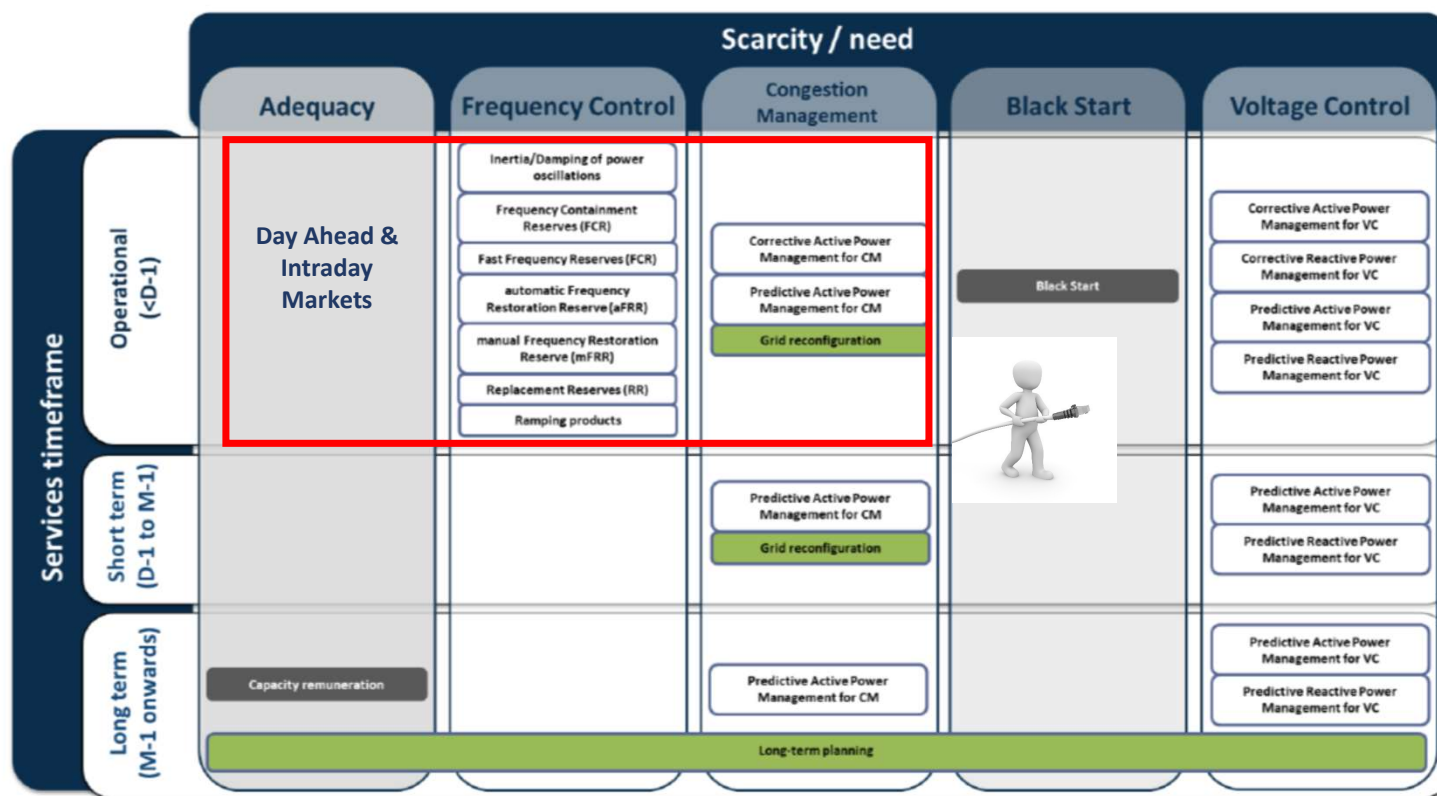
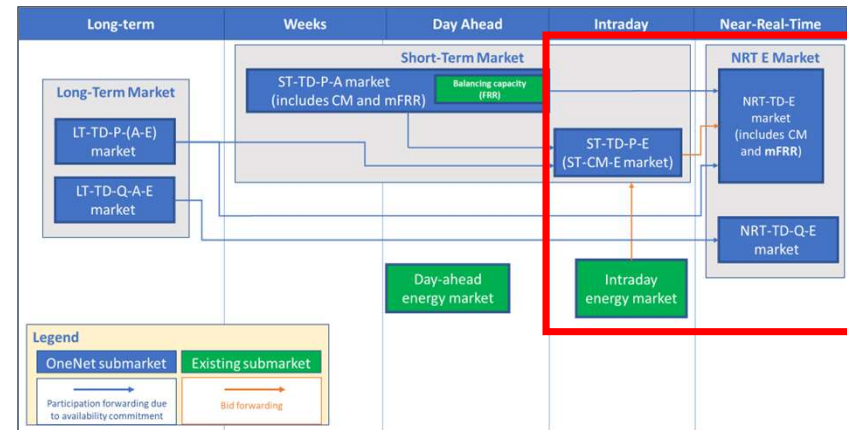
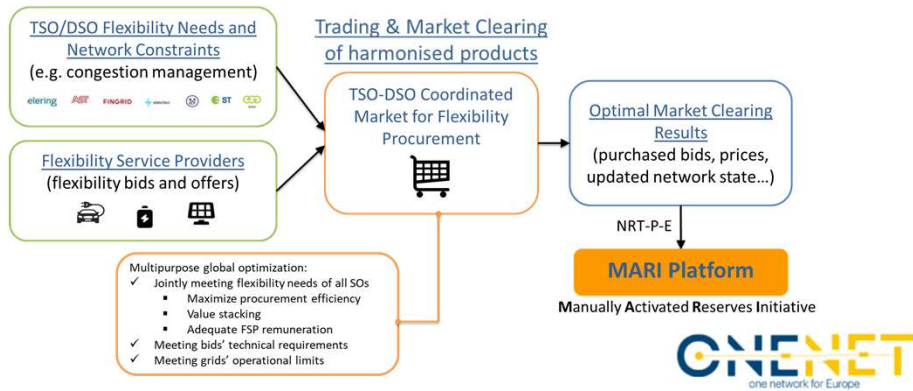


Figure 3-1 - System services identified in OneNet

# Opportunity to automate DER end to end market participation



## Flexibility Product & Grid Prequalification

## DER Self Nomination & Flexibility Bidding

## DER automated Activation

## DER Flexibility & Imbalance Settlements



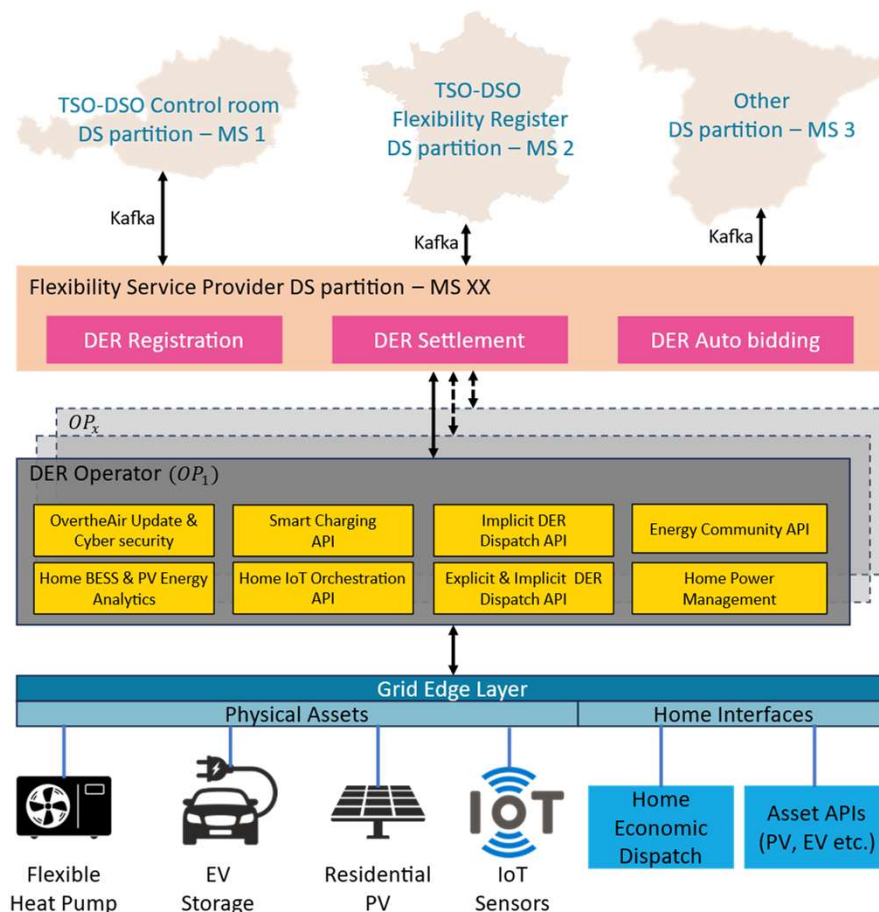


# 3 key dataspace developments required for mass produced DERs

**1. Pan European Dataspace for DER market participation**  
IEC62325 data exchanges

**2. Pan European Dataspace for Flexibility Service Provider Interactions**  
IEC62746 data exchanges

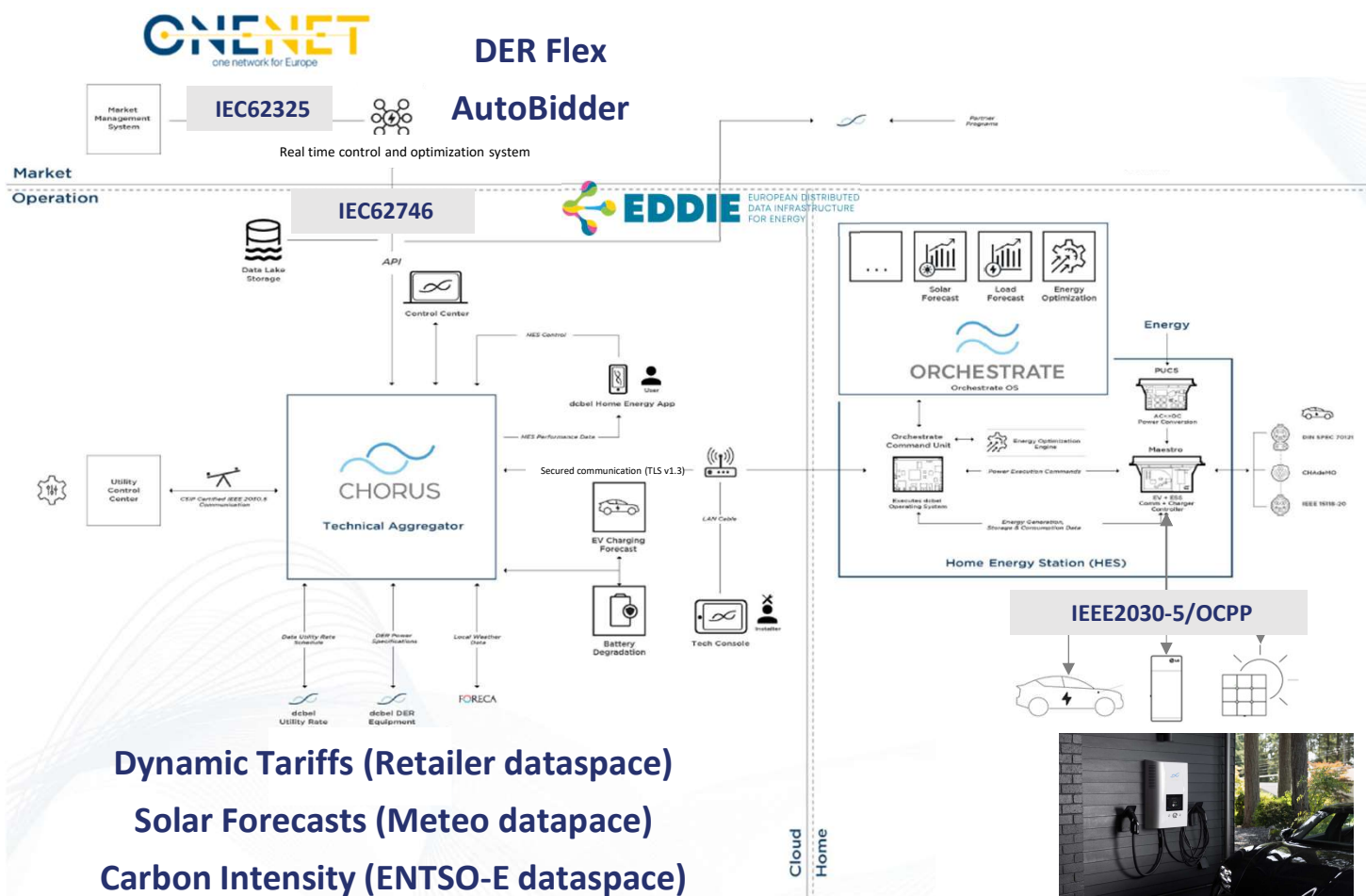
**3. Pan European Dataspace for mass produced DERs & CEMS interfaces**  
OEM specific data exchanges  
(EEBus, KNX, Matter, OCPP, IEEE2020-5/IEC61850-7)



**End to end Consent Based Data exchange platforms**



# Target data space for residential energy management



Edge Digital Twins  
Tariff Simulators  
Edge Economic Dispatch  
Optimisation

Dynamic Tariffs (Retailer dataspace)  
Solar Forecasts (Meteo dataspace)  
Carbon Intensity (ENTSO-E dataspace)





At the heart of residential energy.