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SmartNet project

Horizon 2020

EU R&I program

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Innovation Projects & Living Labs  
Global Infrastructure & Networks  
Endesa



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# SmartNet Pilots

  
**Pilot  
realisation**



**Italian Pilot (A)**



**Danish Pilot (B)**



**Spanish Pilot (C)**

## Motivation

To proof in real field  
the feasibility of the  
*Shared balancing  
responsibility model*  
of SmartNet project

ICT layer

Market layer

Physical network layer

## Goal achievements

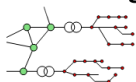
- Validation of TSO-DSO interactions

Balancing



(TSO level)

Congestion management

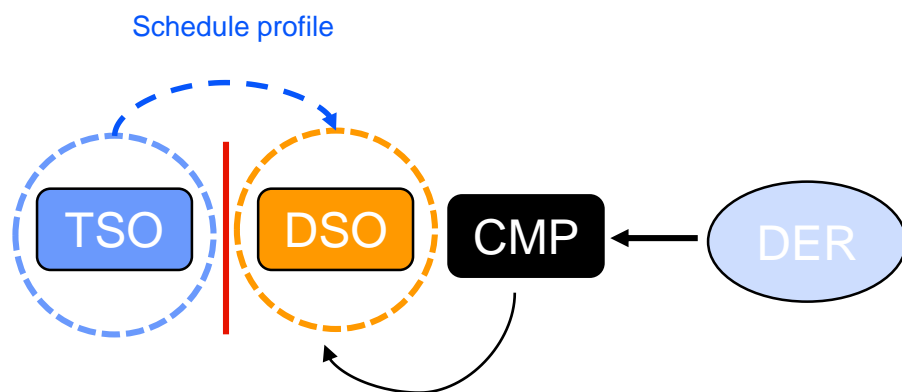


(DSO level)

- ✓ Flexibility Aggregation
- ✓ Demand Response (Base stations)
- ✓ ICT communications
- ✓ Simulations

# Spanish pilot

## Shared balancing responsibility model



TSO

Transmission system operator

DSO

Distribution system operator

CMP

Commercial market parties

DER

Distributed energy resources

Local market operator

Local market operator

AS market operator

AS market operator

Schedule profile



Balancing responsibility transfer

Two different  
markets

AS market for resources connected at TSO-grid

Local market for resources connected at DSO-grid

Ancillary  
services

**Balancing** in the interconnection point by  
respecting schedule profile (on behalf of TSO)

**Congestion management** in the distribution grid

How?



By using **flexibility** from  
DER owners through  
Commercial market parties

# Spanish pilot

## Roles in the pilot



TSO

Balancing at interconnection level (S)

DSO

Developing the TSO-DSO interaction (R/S)

Market operator

By doing congestion management services for itself at local network (R/S)

Local AS market (S)

CMP

Virtual nodes emulating other CMP's (smarthouses, PV's and V2G charging stations) (S/R)

CMP

Managing the portfolio of Vodafone radio base stations (R)

DER owner

Owner of the base stations (flexible resource) (R)

Connectivity services

Provider of connectivity services to CMP's (R)

Consultant

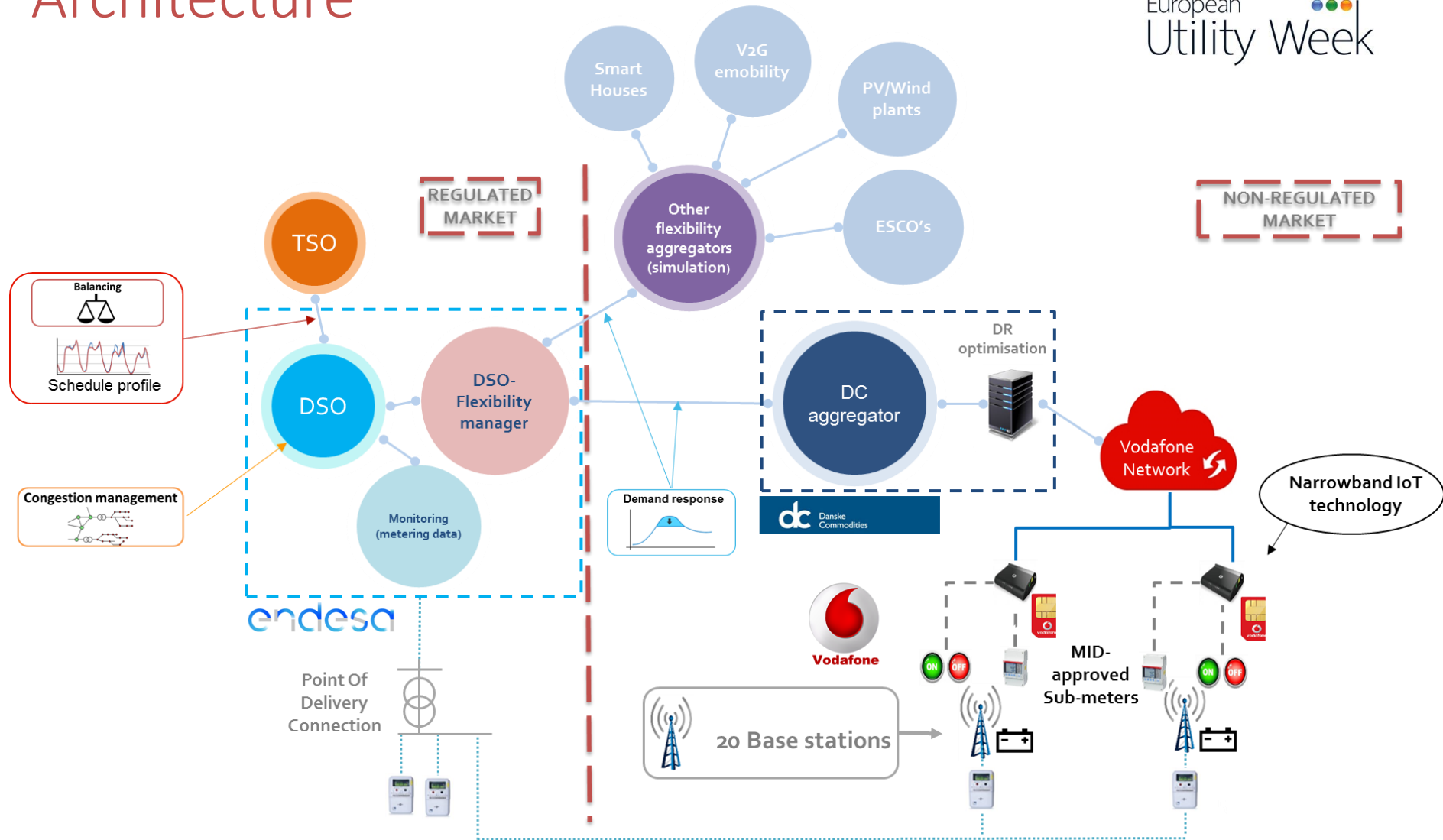
(S) *Simulated*

(R) *Real implemented*




— Regulated parties

- - Competitive parties

# Spanish pilot Architecture



# Progress of work

- Designing the architecture for the pilot 
  - Functional document
  - Technical specification (on going)
- Designing DSO flexible manager (on going) 
- Identification of MV power lines and 3 primary substations 



- Validation of CUPS send by Vodafone
- Identification of the connection of those consumptions to some specific MV/HV power lines
- Identification of 3 primary substations: Vilanova, Tanger and Besòs

- Identifying around 20 base stations in Barcelona
  - Vodafone sent initial list of Base stations to Endesa (CUPS of meters)
  - Endesa validates the location of BSs for the project (suitable or not)
  - Physical audit of base stations and report (on going)
  - Final list selection (20 BSs)

# Spanish pilot

## Next steps



- Installation of Demand response devices in Vodafone base stations

 December 2016



- Implementation of demand response algorithm

 March 2017



- Implementation of Endesa flexibility manager algorithm

 March 2017



- Experimentation on field

March 2017  to March 2018 in Barcelona (All partners)

- Report of experimentation





European  
Utility Week



[SmartNet-Project.eu](http://SmartNet-Project.eu)

This presentation reflects only the author's view and the Innovation and Networks Executive Agency (INEA) is not responsible for any use that may be made of the information it contains.





# Thank You

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