

IREC^R

Institut de Recerca en Energia de Catalunya
Catalonia Institute for Energy Research

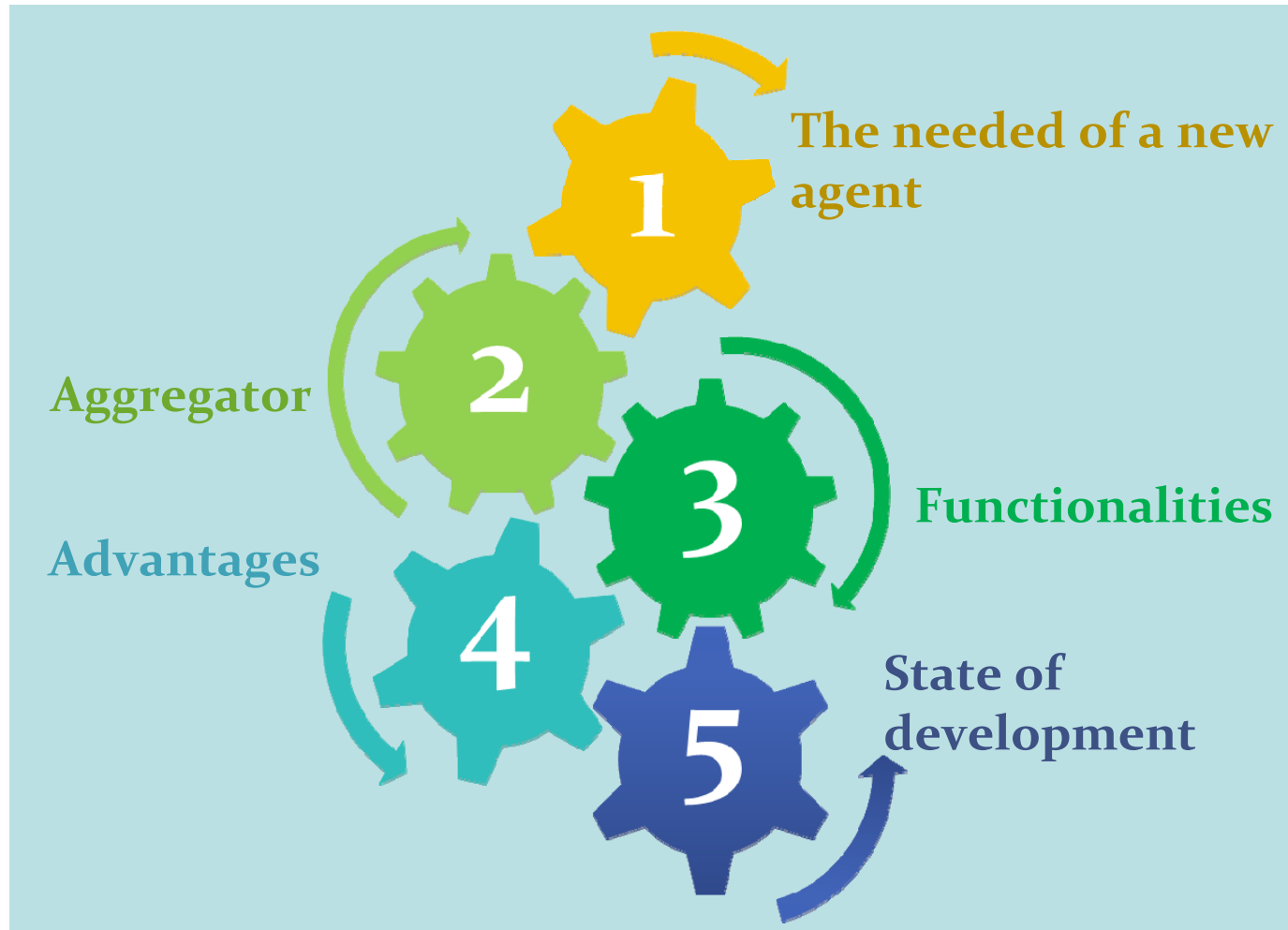


**Els agregadors, nous agents de flexibilitat energètica al
mercat elèctric**

Institut de Recerca en Energia de Catalunya (IREC)

Barcelona, Maig, 2018
www.irec.cat

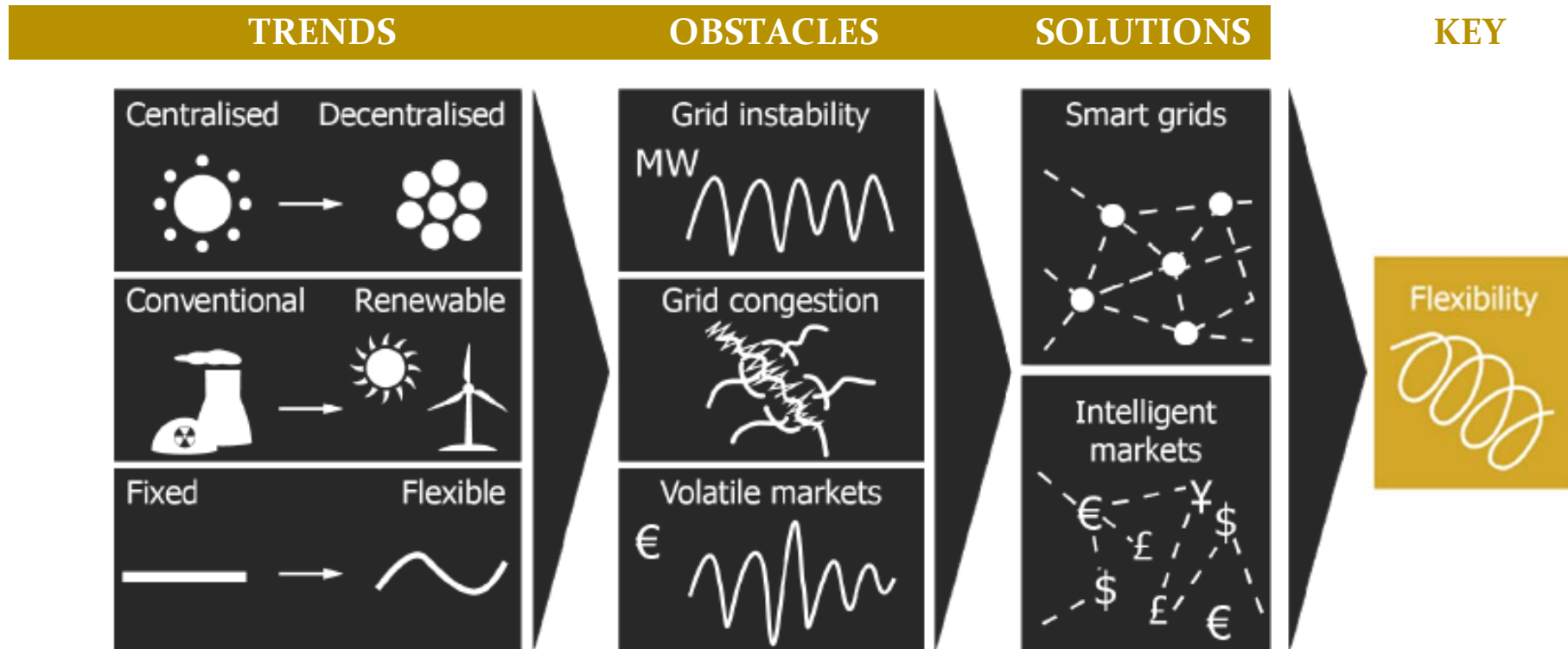
Aggregator - 5 key questions to be answered





The needed of a new Agent

Significant change of energy systems





The needed of a new Agent

Significant change of energy systems

Energy Efficiency Directive 2012/27/EU, art 15.8

Member States shall promote access to and participation of demand response in balancing, reserve and other system services markets

EU winter package “Clean Energy for All Europeans”, 2016

The role of the aggregator is reinforced and countries are incentivized to promote DR



Aggregator Concept

Key enabler of “FLEXIBILITY”

Aggregator is the **key mediator** between the consumers and the markets and the other electricity system participants

WHAT?

Collecting **flexibility products** from its **prosumers portfolio**.

HOW?

Optimizing its trading in electricity markets aiming to maximize its profits.

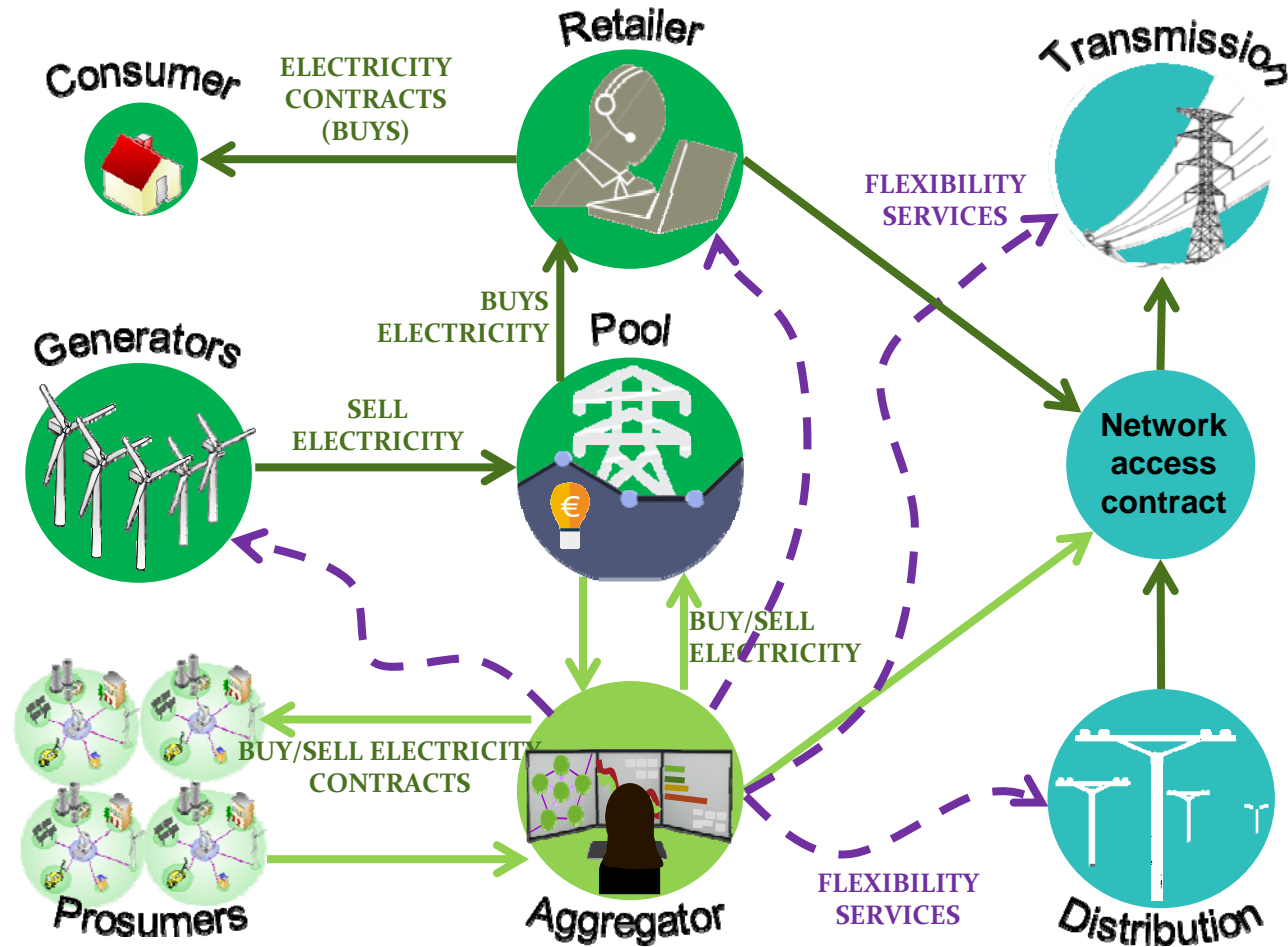


This new agent would provide direct revenue to the businesses and homeowners, besides ensuring higher **stability** and efficiency in the grid



Aggregator Concept

Key enabler of “FLEXIBILITY”





Aggregator Concept

Key enabler of “FLEXIBILITY”

- Commercially active
- Partial opening
- Preliminary development
- Closed
- Not assessed

TECHNICAL REQUIREMENTS

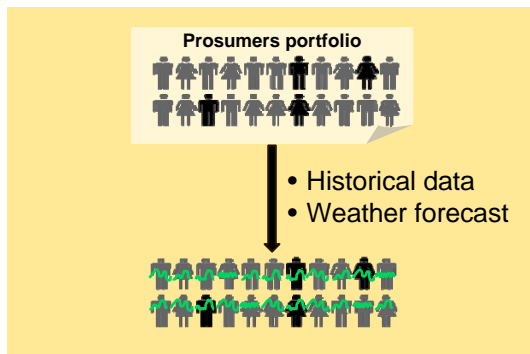
- Prequalification
- Minimum bid size
- Notification time
- Max. activations per day
- Product resolution^o
- Symmetricity
- Duration of delivery



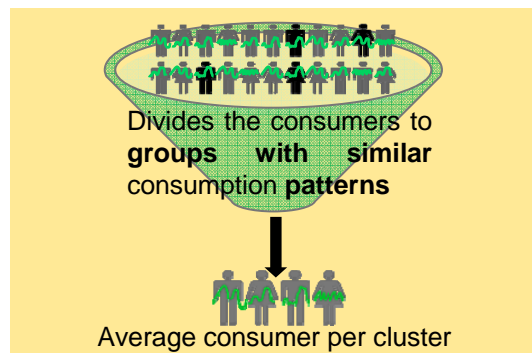


Functionalities

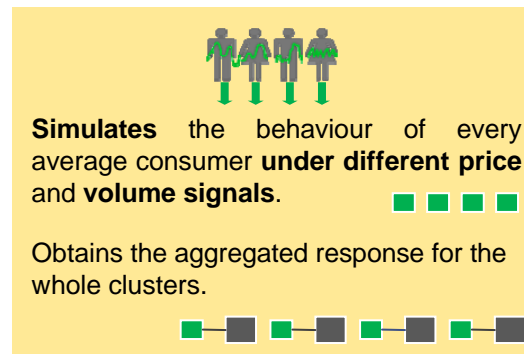
1 Consumption Forecasting



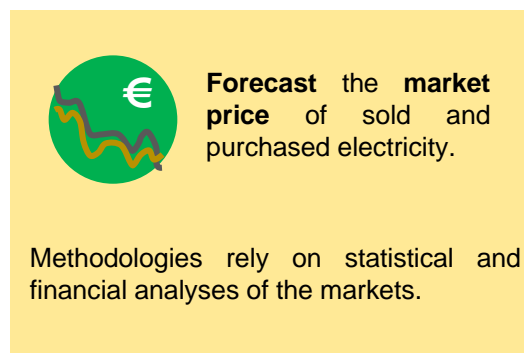
2 Consumer Segmentation



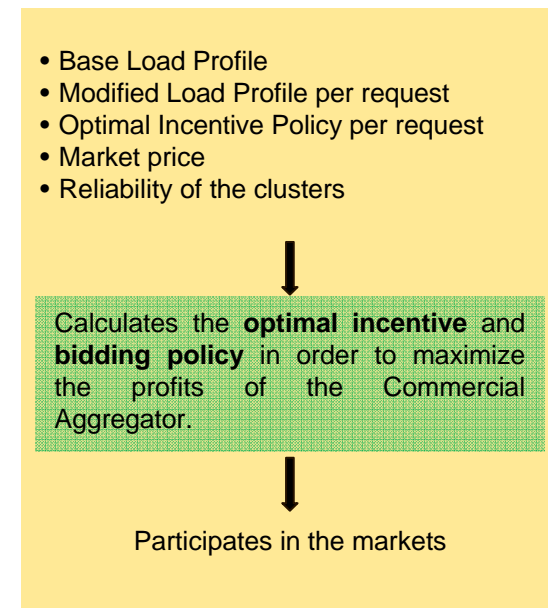
3 Flexibility Forecast Tool



4 Market forecasting



5 The Commercial Optimal Planning Tool



Commercial Aggregator



Applications and advantages

Aggregation is considered as a key innovation on the power system to face future challenges posed by growing demand and RES integration

Consumers deal with only 1 agent

More efficient solutions

Less contracts and less connections

Easier to forecast consumption and flexibility

Contracts easier to handle. Billing is easier

Validation of flexibility Products

To validate flexibility products prior to its activation.

Procurement of flexibility products

The DSO can access and procure flexibility products offered by aggregators to use them for a number of purposes:

- distribution network reinforcement deferral
- congestion management, etc.

Responsibility

The aggregator is totally responsible for their own imbalances, so they will have to deal with their own energy paybacks when participating in wholesale markets.



State of development

Adaptation and deployment for a real demo site in a public facility

Implementation and validation in IREC SmartEnergy Lab

Theoretical and experimental development



Our experience



Commercial aggregator developed and tested in IREC SmartLab with real data from A2A Reti Electriche.

<http://ide4l.eu/project/>



- Overview of the regulation on aggregator agent in Europe
- Aggregator tool for a set of tertiary buildings (public library) with RES and storage systems (on going)



Aggregator and market simulator software the aggregation of a set of radio base stations to build up about 50 kW of flexible demand.
(on going)

<http://smartnet-project.eu/>



Cloud based aggregator tool to exploit synergies between electrical flexibility and thermal inertia of buildings. (on going)

<http://sabina-project.eu/>