Towards a consumer-centric & sustainable electricity system

Breaking down barriers to better consumer services

August 2021 – Information Session CCMD

Agenda

1. Introduction and context	10:00 – 10:15
2. The Consumer Centric Market Design	10:15 – 11:30
	15 min break
3. Use Cases • ODYSSEE • Virtual Balancing Area	11:45 – 12:15
4. Conclusion and Next steps	12:15 – 12:30

Objective and guidelines of the info session

- ✓ **Objective** of the session:
  - In depth presentation of the CCMD
  - Gather feedback and questions from market actors on the proposed design

- ✓ **Questions** can be asked in the **chat box**
  - ✓ After each section questions from the chat will be answered
  - ✓ Dedicated **roundtable discussions** will be organized in September, October and November to deep-dive on the remaining open questions

We are transitioning towards a more renewable and digital world

RES deployment
To achieve the 2030 targets

38-40%
of RES at EU by 2030

Digitalisation & connectivity
EU Smart metering Benchmark

92%
smart meter penetration by 2030

17%
Annual growth of IoT devices

Electrification of uses
Sustainable and Smart Mobility Strategy

100 European cities
Will be climate neutral by 2030

30 million
Electric vehicles in Europe by 2030

Consumer expectations are changing

From a commodity towards a service-oriented market…

New digital tools such as digital meters, cloud computing and IoT

Expecting tailor-made "Energy as a Service"

Willing to engage in energy transition

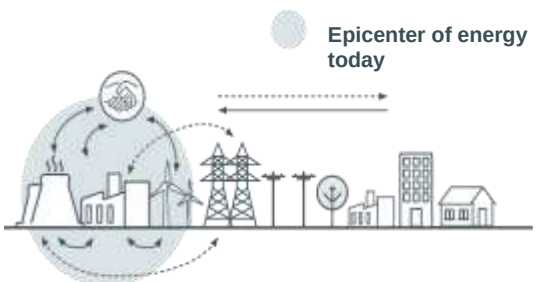
With more electrification and flexibility at home

The Energy Transition will transform the energy system at its core

Massive uptake of distributed assets

Powered by decentralized RES generation

Optimized locally by digital technologies

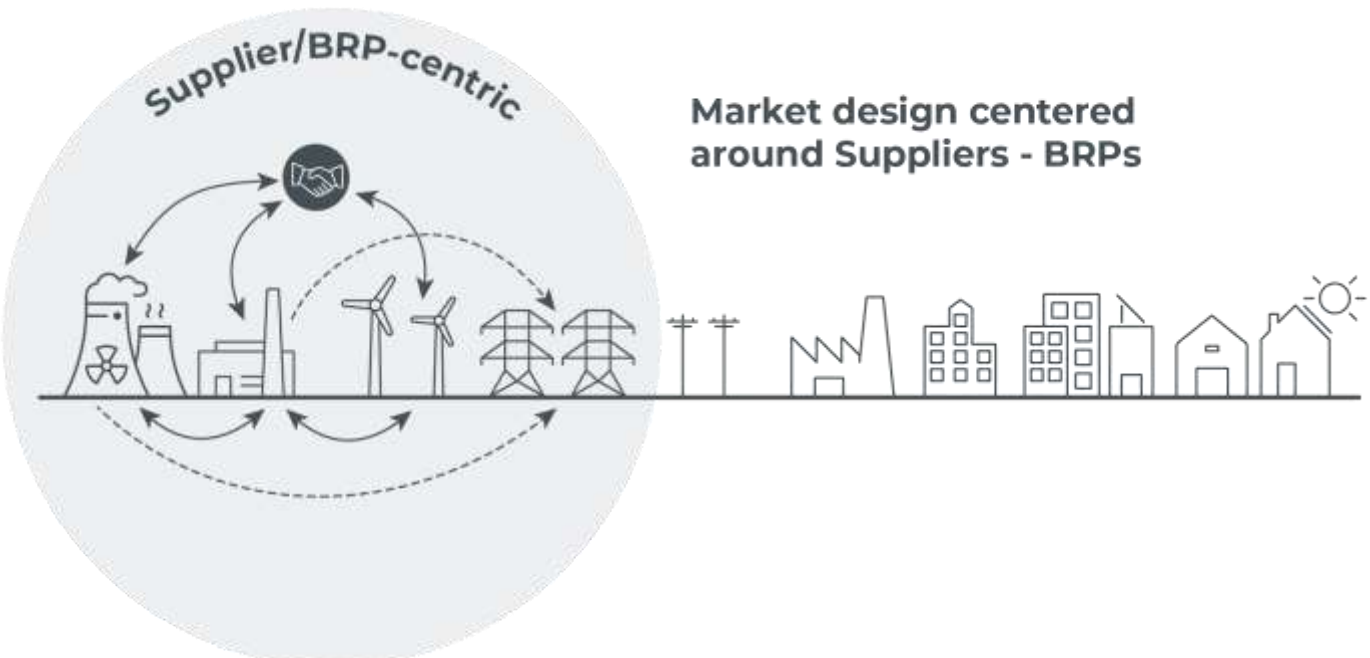


Generation follows consumption

Giving consumers the chance to participate needs digitalisation as well as an appropriate market design

Today, however, consumers are not truly at the center

Current markets arrangements are mainly focused around generators and suppliers…

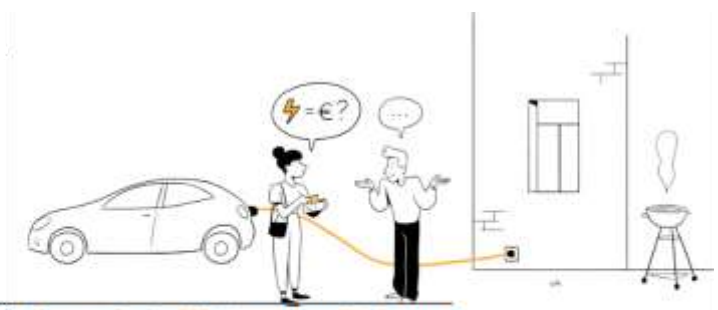


Leading to a limited consumer experience

End consumers cannot easily sell excess PV production when going on holiday...

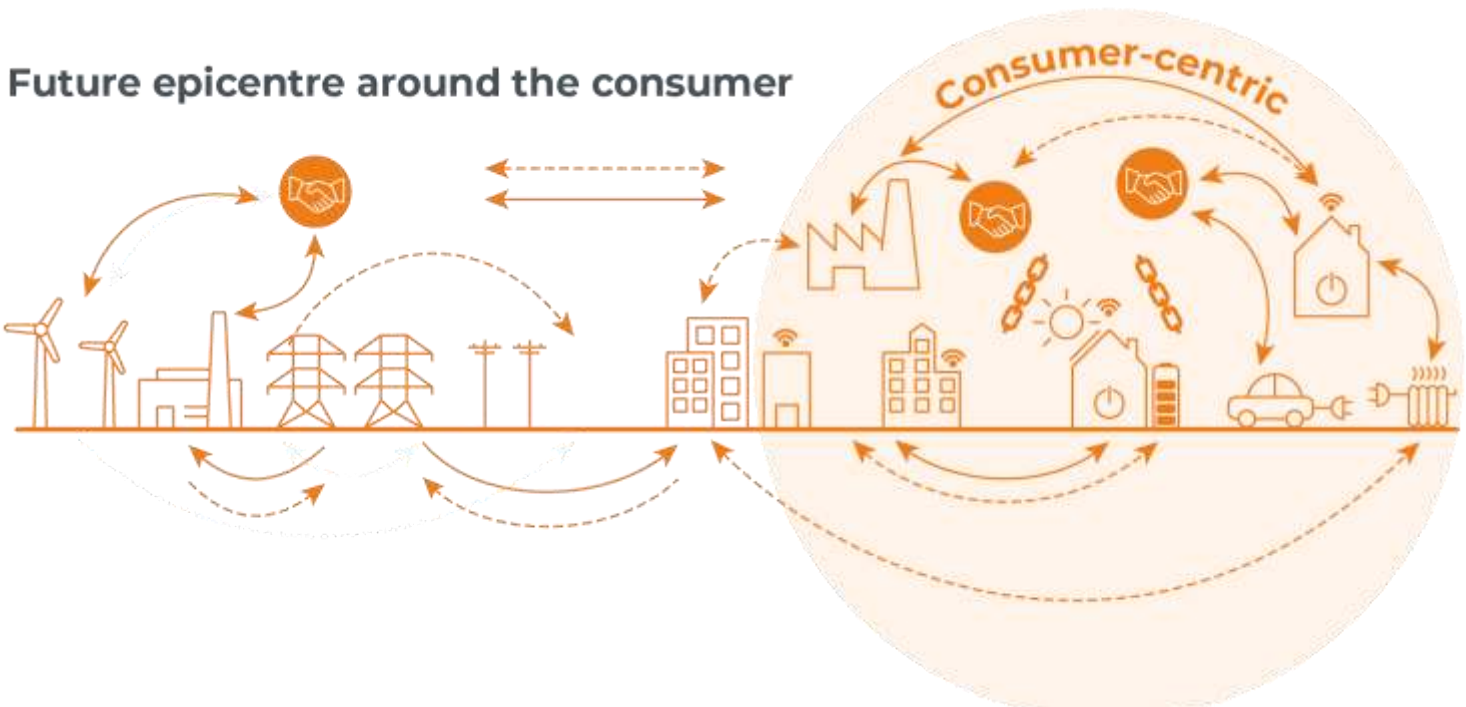
... do not know where the electricity they consume comes from

...and need submetered hardware solutions when subscribing for a service.

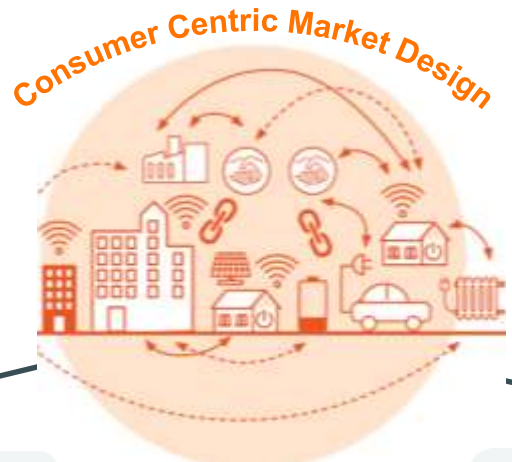


... cannot charge their EV at a friend's house while still being invoiced by their own supplier

A new market design is needed to deliver the benefits of tailor-made services



The changing energy system causes new requirements for the market design



Unleash flexibility potential

- Connection of single assets at low costs
- Easy marketing of distributed assets by independent service providers (ISPs)
- Integration of non-stationary assets

Enable new services

- Multiple Supplier concepts to provide Energy as a Service
- EV charging everywhere with same supplier (virtual balancing areas)
- Peer-to-peer trading
- Transparency on energy source

So that innovation is truly unlocked, leading to a wide range of new consumer-centric services

End consumers can sell excess PV production whilst away on holiday...

...can decide which electricity sources they want to buy their electricity from

...and, thanks to the Internet of Things, which ensures connectivity between their different appliances, no additional submetering hardware is needed

...can charge their EVs anywhere they want and receive one consolidated energy bill from their supplier

Todays flexibility potential remains inaccessible under the current market organisation

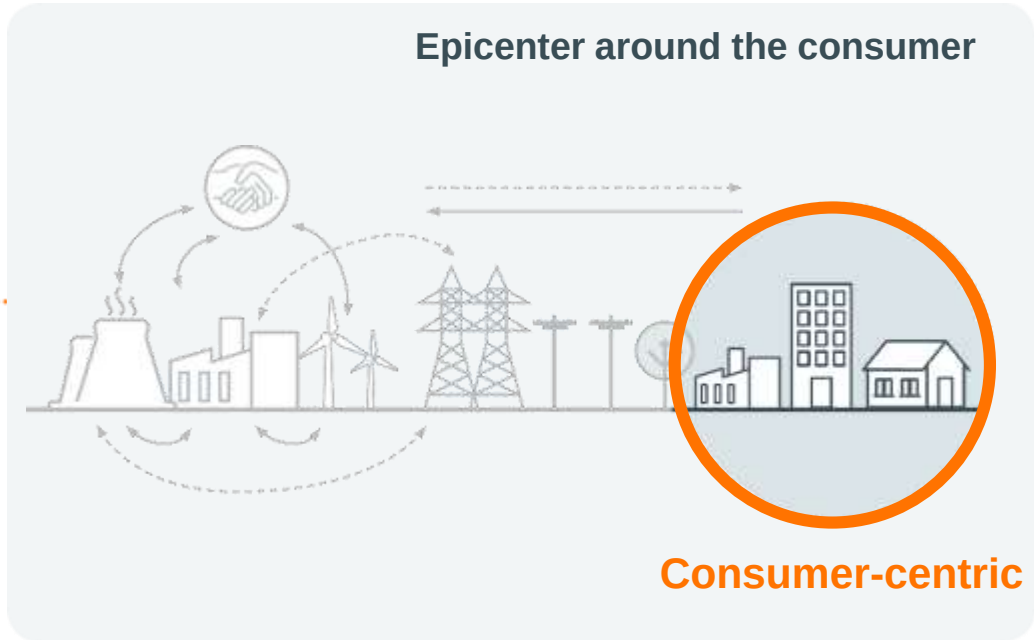
Epicenter around the Supplier/BRP

Supplier/BRP-centric

The Supplier/BRP is responsible for all consumption and injection behind the access point:

- Consumers cannot easily access the panel of innovative services behind the meter
  Consumers mainly rely on the services proposed by their main Supplier
- “One-size-fits-all” certified approach to monitoring and settlement
  results in unnecessary and costly hardware-intensive solutions behind the meter (duplicating meters and access points)
- The workaround needed to engage with third party service providers is complex
  Administrative workaround solutions exist to neutralize all the impacts on the main Supplier/BRP (ToE), but are complex.

A transition towards a market model centred around the consumer is needed



End-consumer getting more freedom to fulfill current and future needs

Empowered end-prosumers
Free to exchange electricity with other parties and have access to multiple types of contracts & service providers

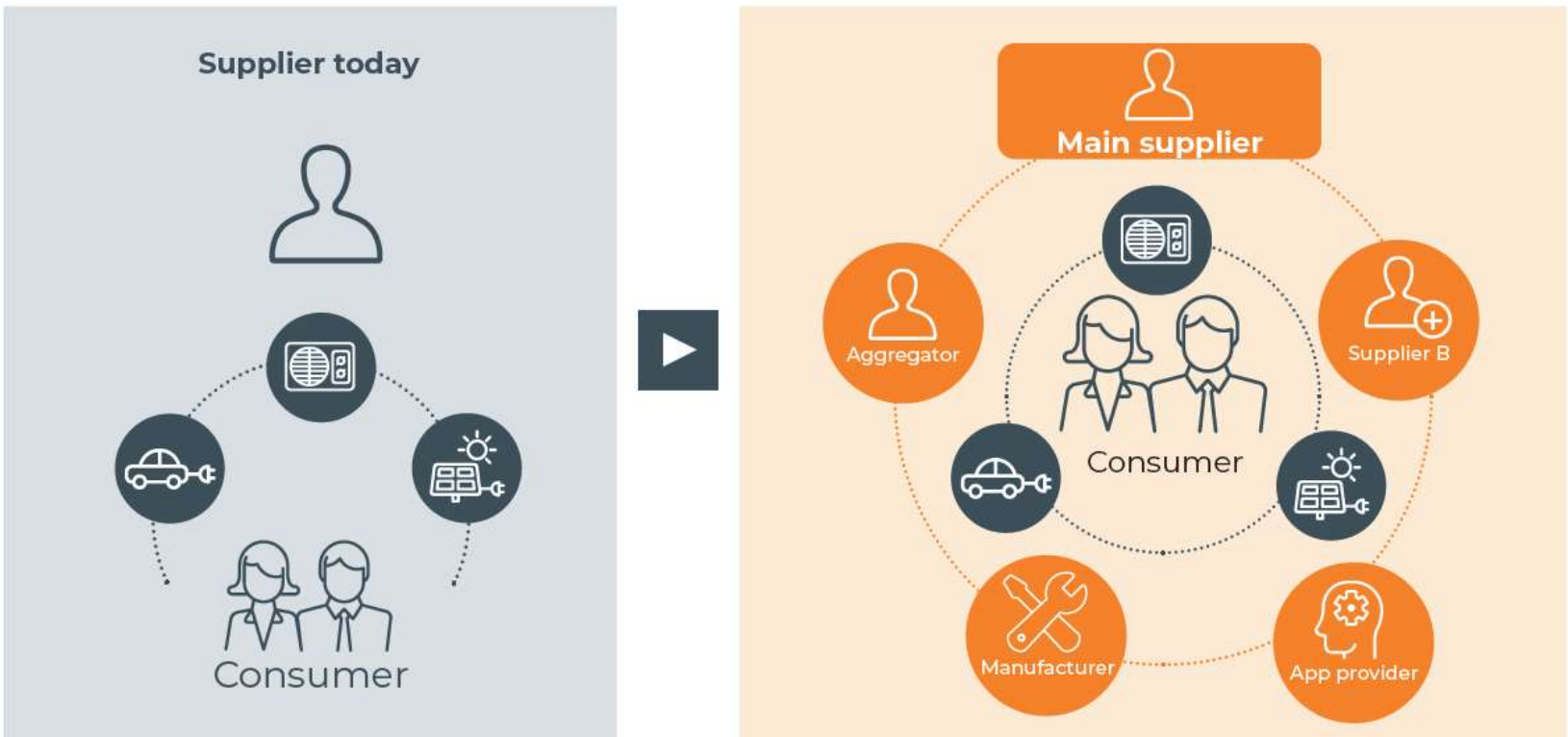
Generic service model
Various types of players can be active behind the same access point. It allows different configurations and facilitates the organisation in a simple way

Robust/agile market model
Allowing unlimited number of different players specialized in particular services. It facilitates unlimited innovation and the emergence of a services market

The consumer-centric market design enables market parties to develop a wide range of services

The CCMD is a simple future-proof framework that supports the development of new consumer-centric services.

And fully unleashes competition behind the meter



The consumer-centric market design benefits the overall energy system

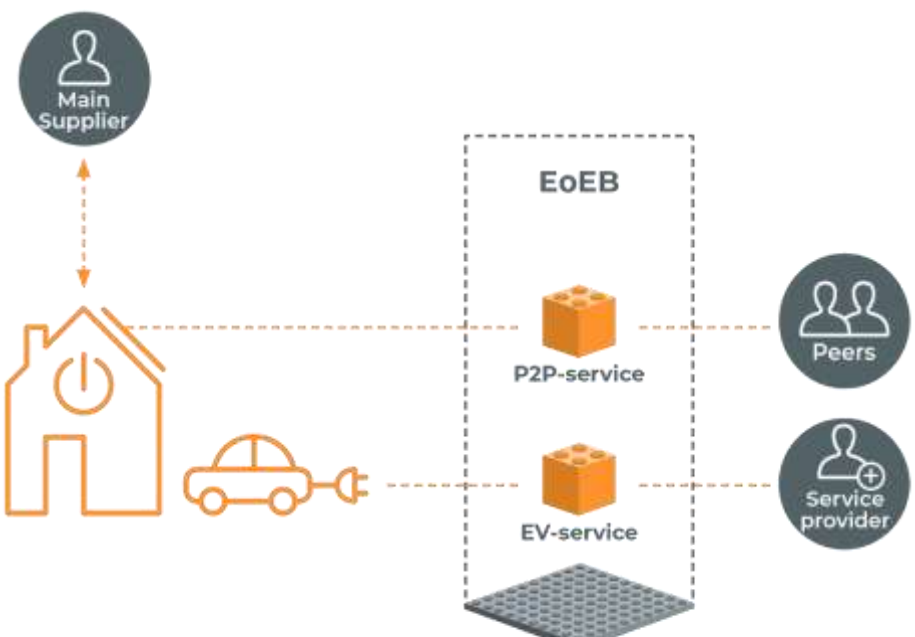
Flexible appliances are necessary features of an energy system that includes a high amount of renewable energy sources. As the share of intermittent RES grows and electrification spreads, supporting demand side participation and flexibility is key.

Two key features delivering major benefits

1

Exchange of Energy Blocks (EoEB)

A decentralised exchange of energy blocks between consumers and many other parties, on & behind the meter

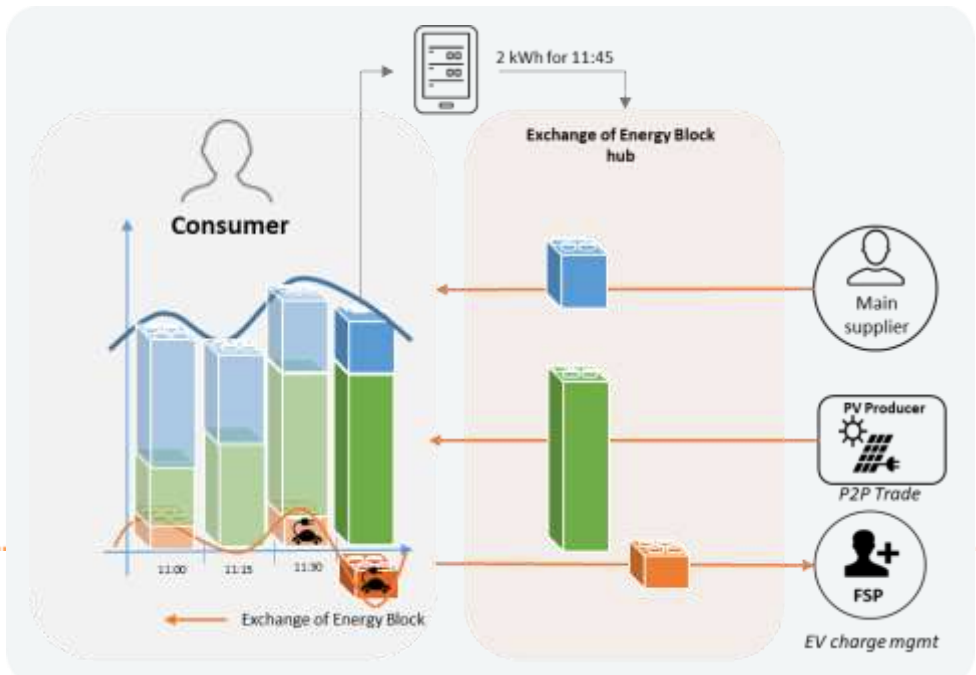


2

A real-time market price to reveal the true value of flexibility to consumers

With the “Exchange of Energy Blocks” (EEoB) as key digital enabler

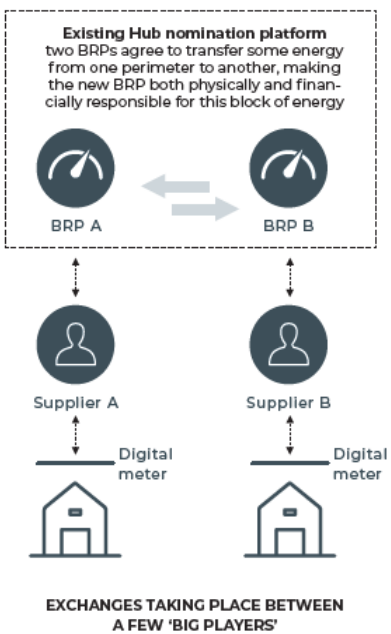
Allowing consumers to consume, produce or trade energy the way they want



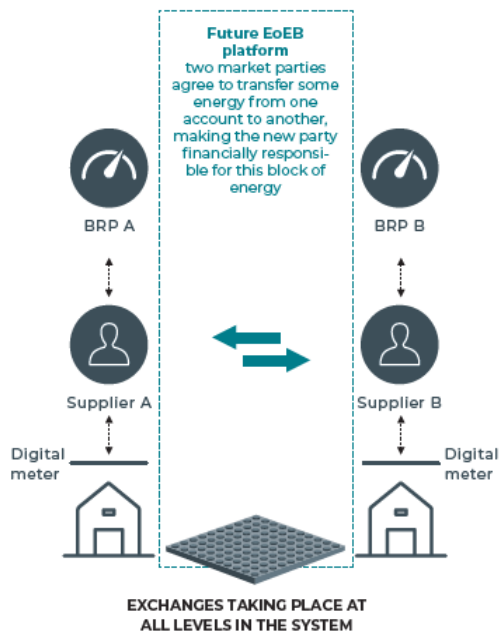
- Giving freedom to consumers to enter into commercial relations with parties, and get access to multitude of services behind the meter on appliance level, or to keep current contract
- Transactional mechanism allowing multiple service providers without requiring standardized sub-metering or complex data validation (i.e. dedicated mobile app coupled with an online payment system)
- The hub supporting EoEB is a regulated digital infrastructure accessible to any grid user and market party (simple extension of existing BRP hub)

The EoEB hub is simply an extension of the current BRP hub

Enabling market actors from all sizes to exchange blocks of energy for a predefined set of quarter hours



EXCHANGES TAKING PLACE BETWEEN A FEW 'BIG PLAYERS'



EXCHANGES TAKING PLACE AT ALL LEVELS IN THE SYSTEM

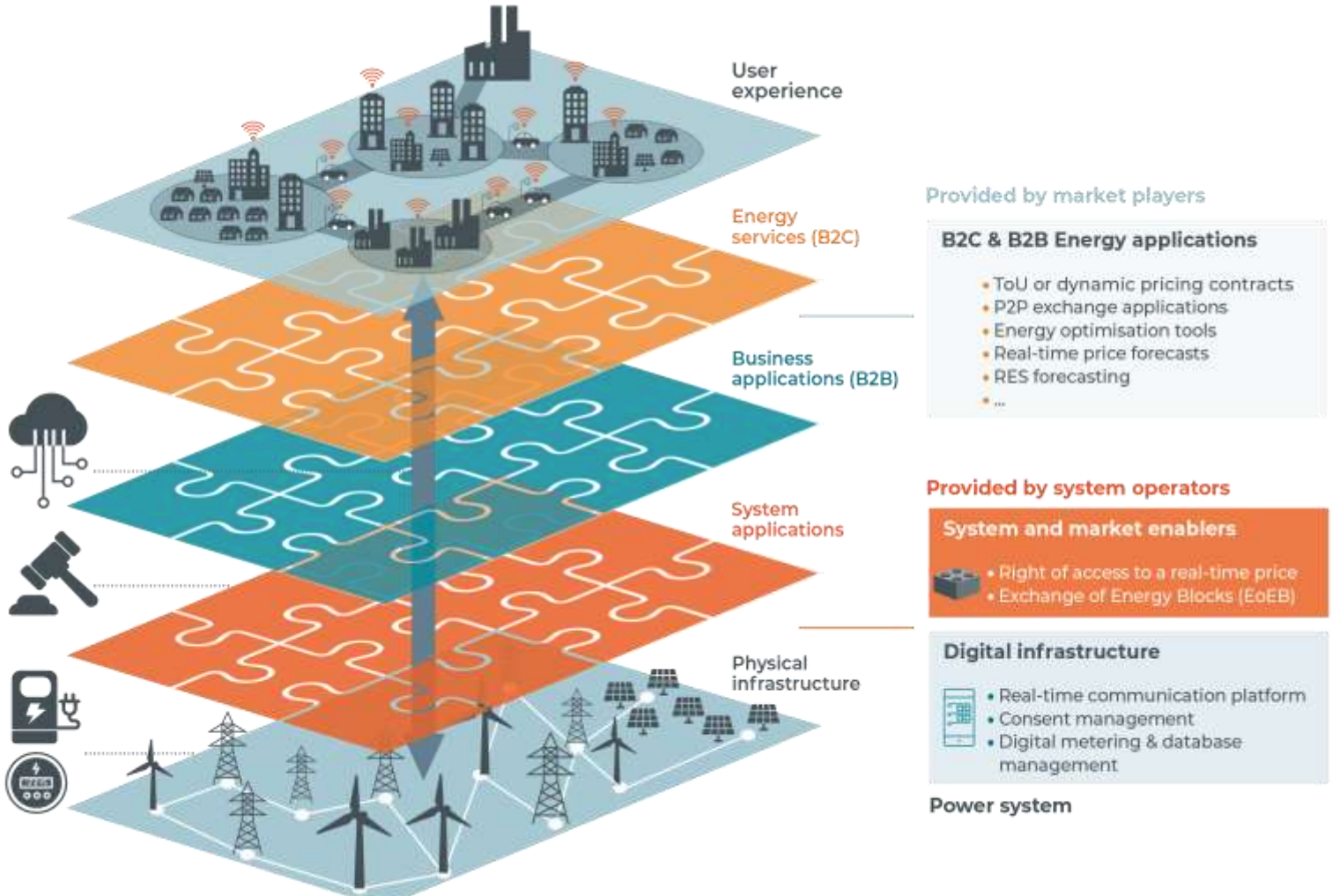
- **An exchange on the hub is simply the mutual agreement between two BRPs** to exchange the real-time pricing exposure of a certain volume of energy for a predefined set of quarter hours.
- **No metering is needed** to facilitate these transactions.
- **Mutual matching is validated by a neutral third party** (usually the TSO) and is considered in the settlement.
- This also means that the **EoEB is also compatible with cross-border trading and congestion management** within a price zone

Together with a real-time market price accessible to all market parties

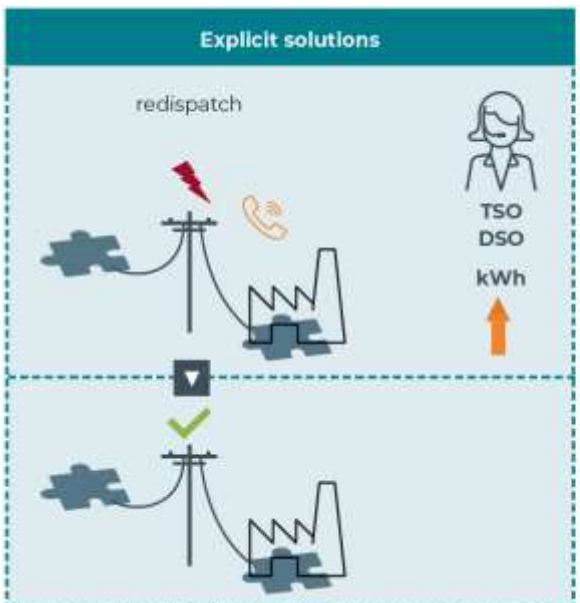
- Today, variable price signals are underdeveloped and difficult to access for end consumers.

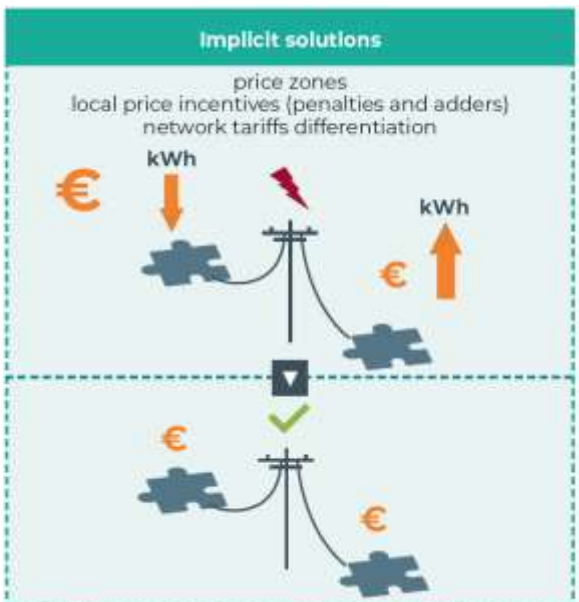
- Tomorrow, a real-time market price will be made accessible to all market participants, allowing consumers to define their desired individual approach towards demand side management and hedging, thereby unleashing further demand side flexibility.

The future consumer-centric value chain



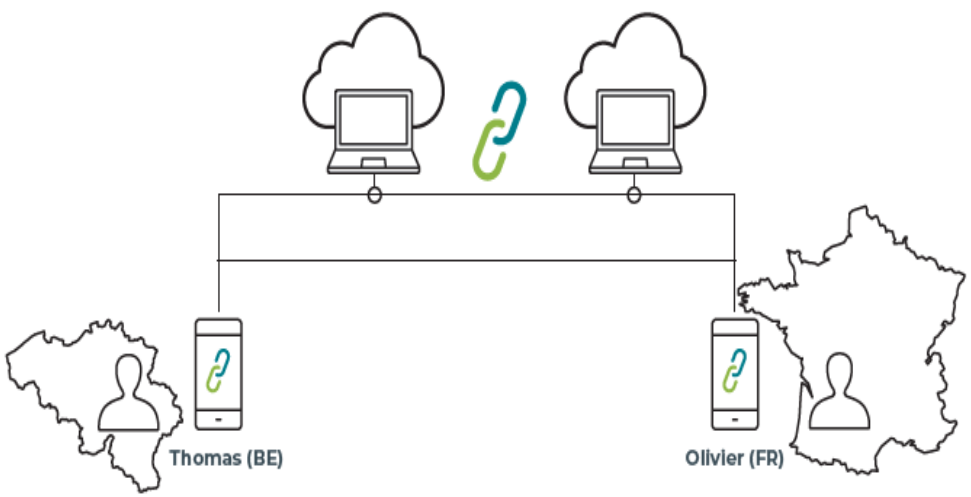
The proposed CCMD is compatible with local congestion management schemes





- CCMD solely focuses on the settlement of the electricity as a commodity. This implies that any scheme that does not affect the commodity price is by construction compatible.
- CCMD can create opportunities to develop more efficient schemes to manage congestion, as EoEB facilitates the way the stakeholders involved in a local transaction settle their financial and physical positions
- CCMD provides the required flexibility to adapt to each national situation, being compatible with any congestion management scheme

… and compatible with cross-border trading



- As the EoEB hub is an extension of the BRP hub, we assume there is one single EoEB hub per price zone which enables exchanges of energy within the zone
- By construction, it is not possible to directly do EoEB between grid users across price zones, because grid users in different price zones use different EoEB hubs.
- However, we can achieve the same result with “electricity roaming services” across the different price zones and offered by any market party
- Hedging cross-zonal prices is possible via the existing capacity allocation mechanisms, e.g. PTRs/FTRs, or CfD

The new consumer-centric market design is within our reach

Compatible with current EU legislation

Smooth adaptation of existing framework

Ambition to have it fully operational by 2024

Resulting in a greener & digital world, benefitting everyone

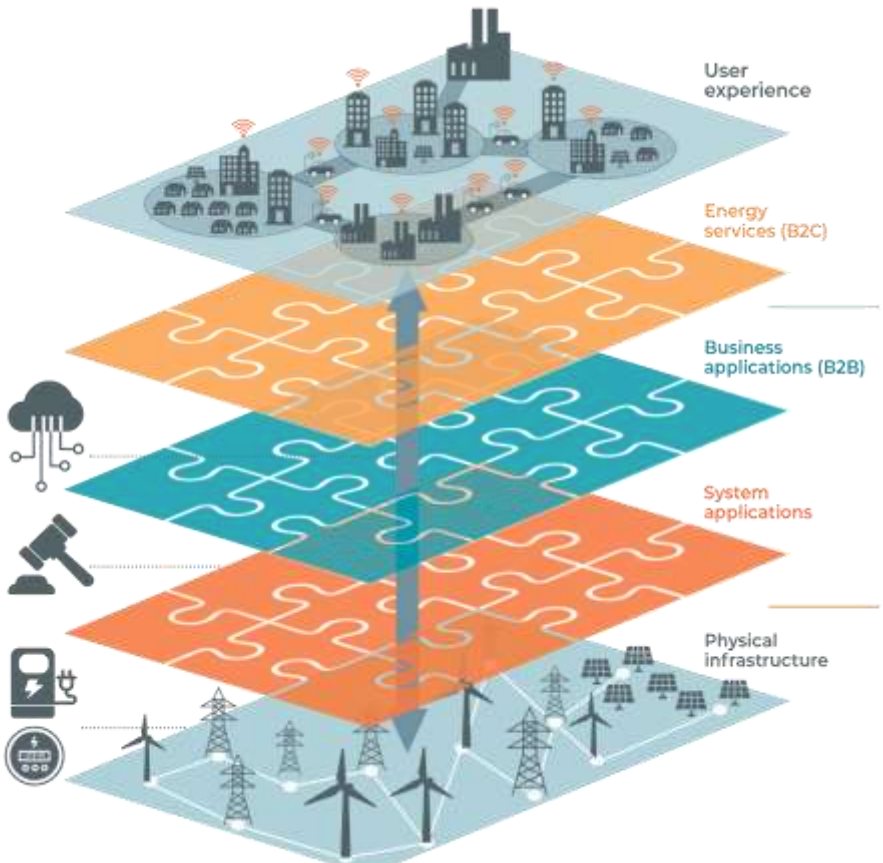
Easier integration of RES into the electricity system

Reduction of the overall CO_2 emissions

Reduction in the cost of the electricity system and the cost for individual grid users

While increasing comfort and the overall experience for the end consumers

In a nutshell



Empowers end consumer
- Enables: EaaS, P2P, Supplier/appliance, Locational,Time of Use

Is Generic & Future Proof:
- EoEB as neutral facilitator – no “per service” design/solution – technology neutral

Fully opens the market
- Much lower entry barriers for new players
- New service offerings/business models possible
- From competition “for the meter” to competition “behind the meter”

A priori manageable change management
- no big bang needed
- Potentially limited regulatory/legal changes (tbc)

A simple uniform framework for all services:
- EoEB approach facilitates independent FSPs and provides alternative for complex ToE mechanism

Consumer Centric Market Design……. Consumer wins twice!

More/better services

More efficient system operations

Questions

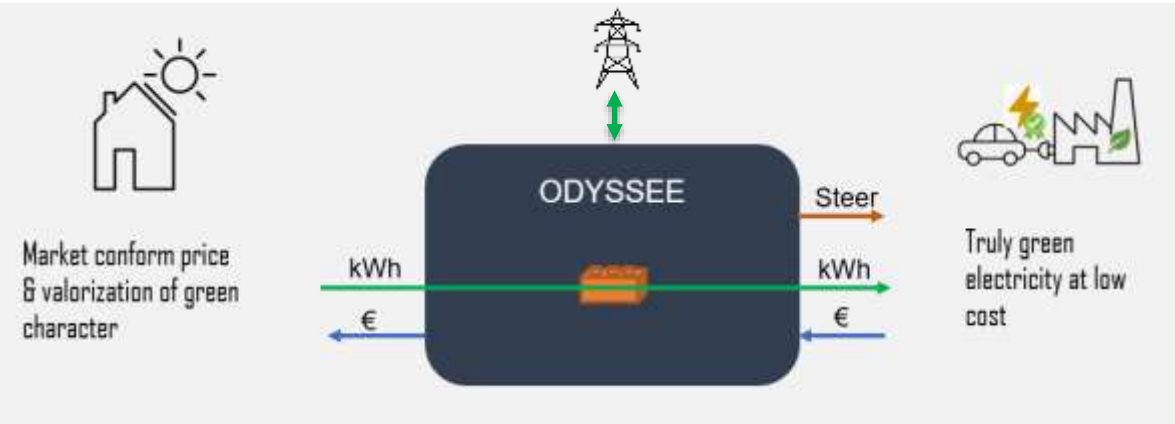
Coffee Break

ODYSSEE – Consuming truly green energy

Solution for companies wanting to

- consume 100% real time provable green electricity
- coming from local resources
- at a low/reasonable costs,
- for a specific asset, independent from the supplier at the access point.

ODYSSEE – How does it work?
In a nutshell:

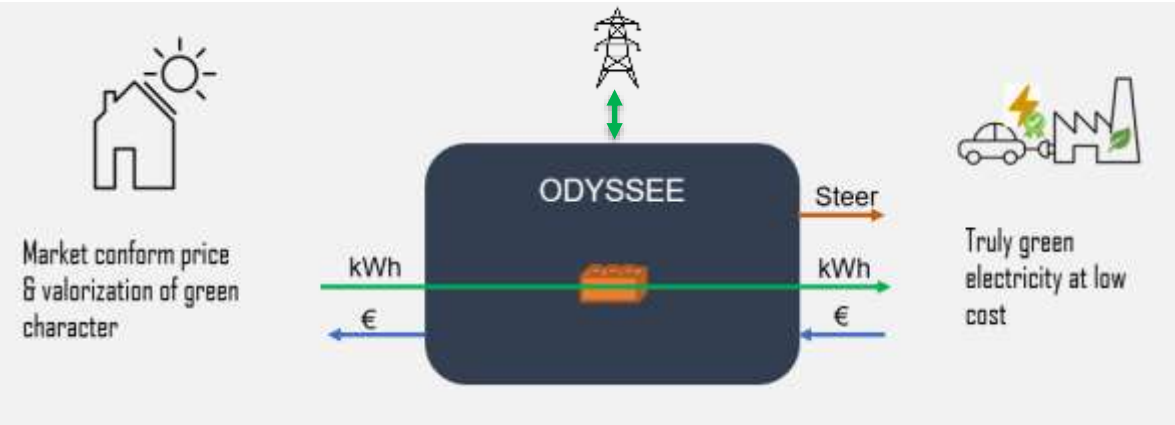


1/ ODYSSEE measures, optimizes & steers, ensuring truly green consumption at the most interesting moment.

ODYSSEE – How does it work?
In a nutshell:

2/ Green energy coming directly from prosumers, valorizing both energy and green character of their excess generation

Exchanged with the green consumer through a transparent & traceable P2P (EoEB) transaction

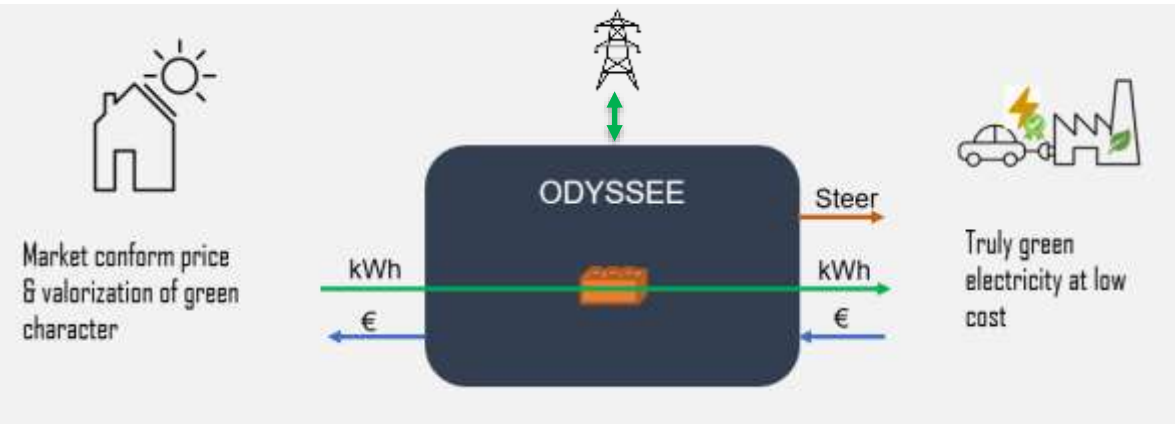


1/ ODYSSEE measures, optimizes & steers

ODYSSEE – How does it work?
In a nutshell:

3/ helping the grid with the excess generation.

2/ P2P (EoEB) transaction for excess generation



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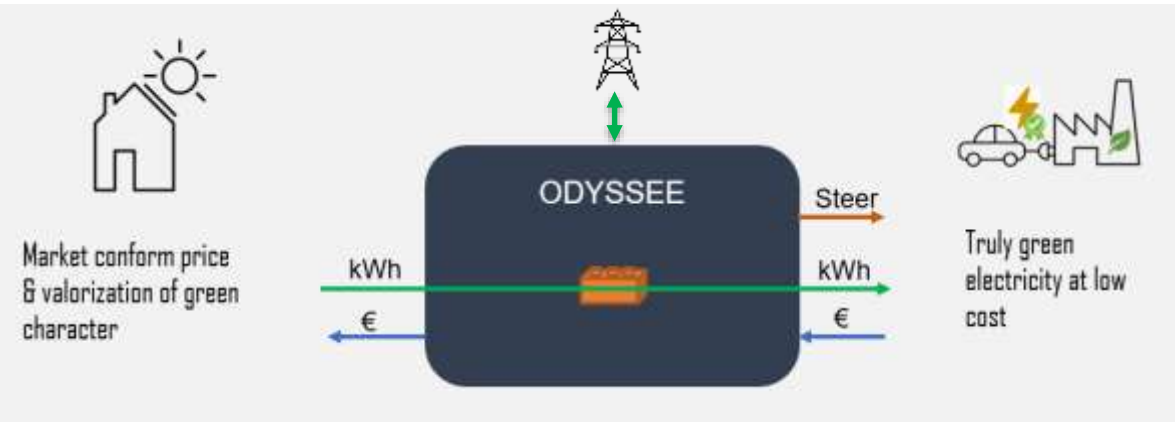
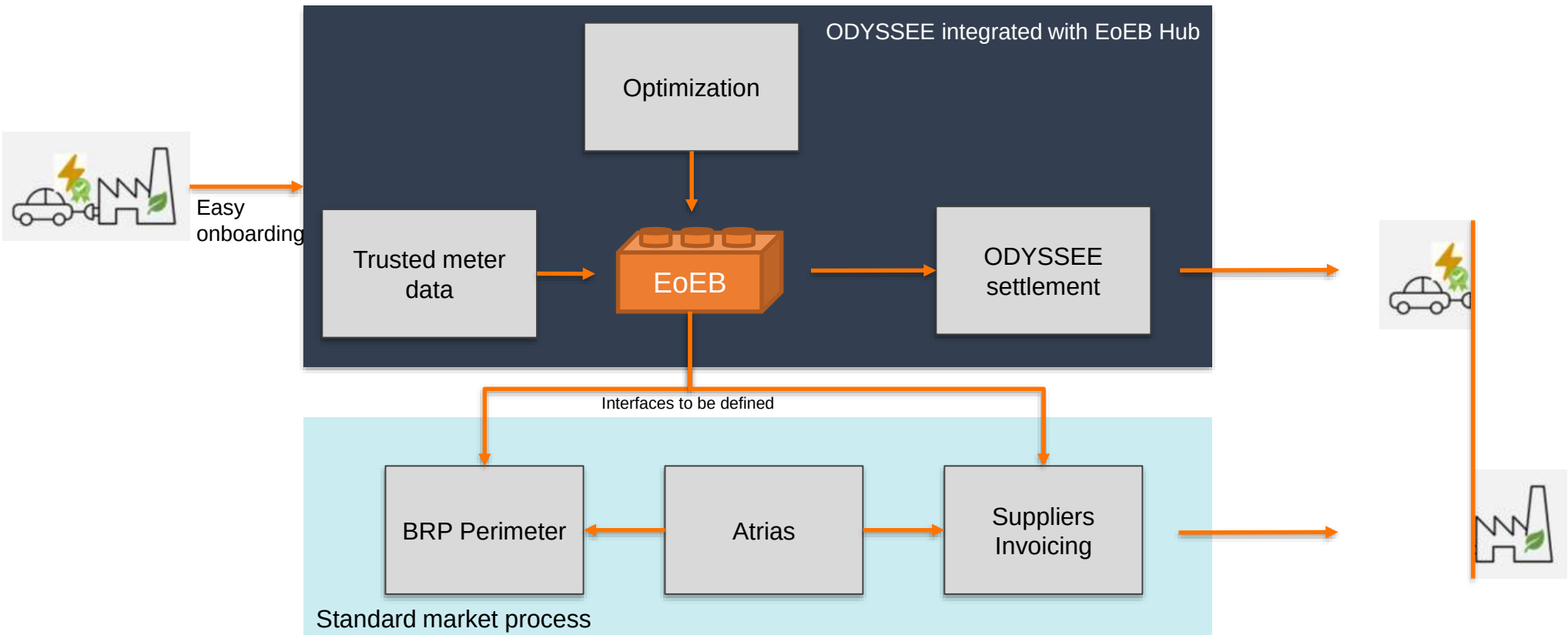


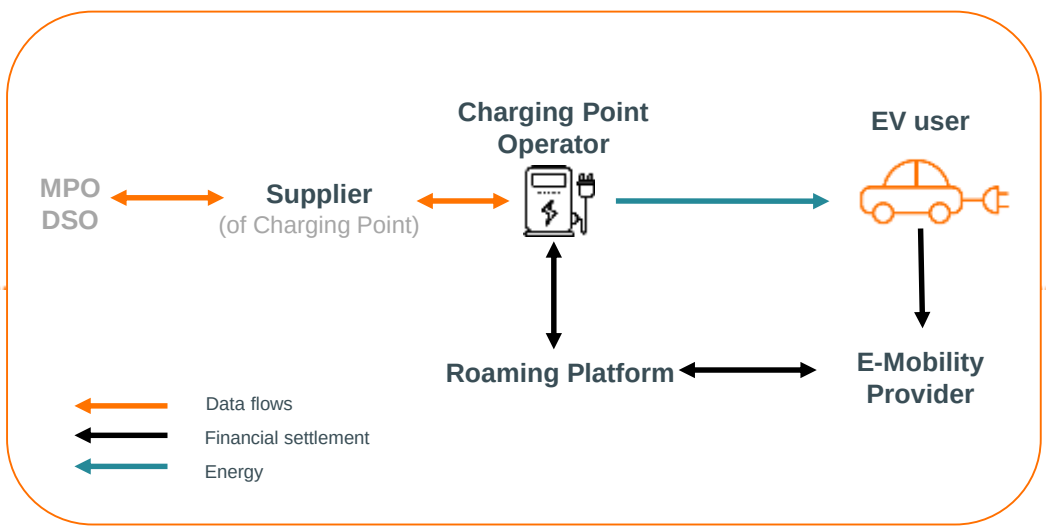
4/ ODYSSEE selling truly green energy for the participating asset in a transparent & provable manner, at low(est) cost

1/ ODYSSEE measures, optimizes & steers

ODYSSEE - making use of the of EoEB, a process on top of the standard existing market process



Todays way of accounting discourages EV users from active market participation.

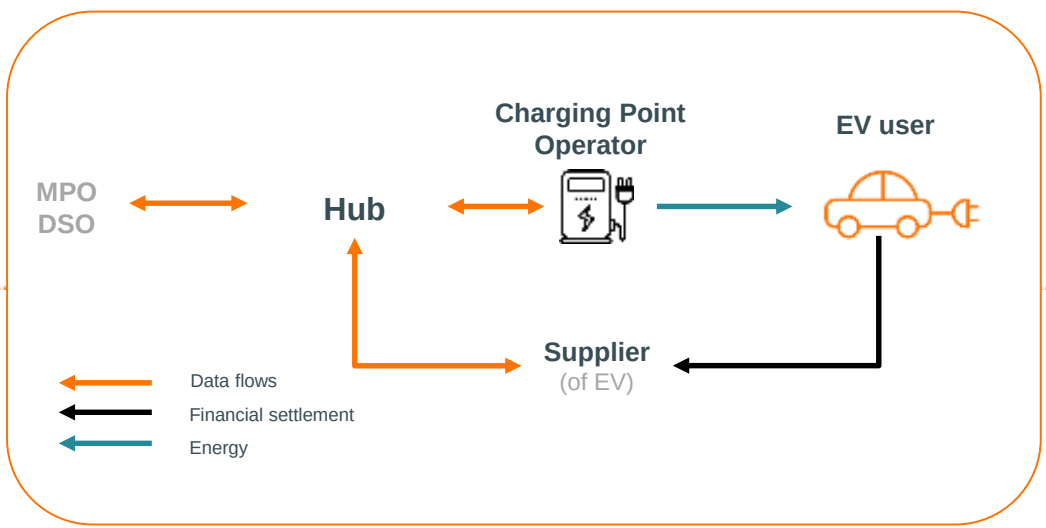


- Today, EV users don't have the free choice of supplier at public charging infrastructure. The CPO chooses a supplier who is permanently responsible for supplying the charging point.
- The DSOs are responsible the accounting of consumption of charge points within their balancing areas. For this they use synthetic load profiles that prevent active participation by customers.

EV – electric vehicle
CPO – Charge point operator

MPO – Metering point operator
DSO – Distribution system operator

EV users need to participate as integrated consumers in the energy systems and markets

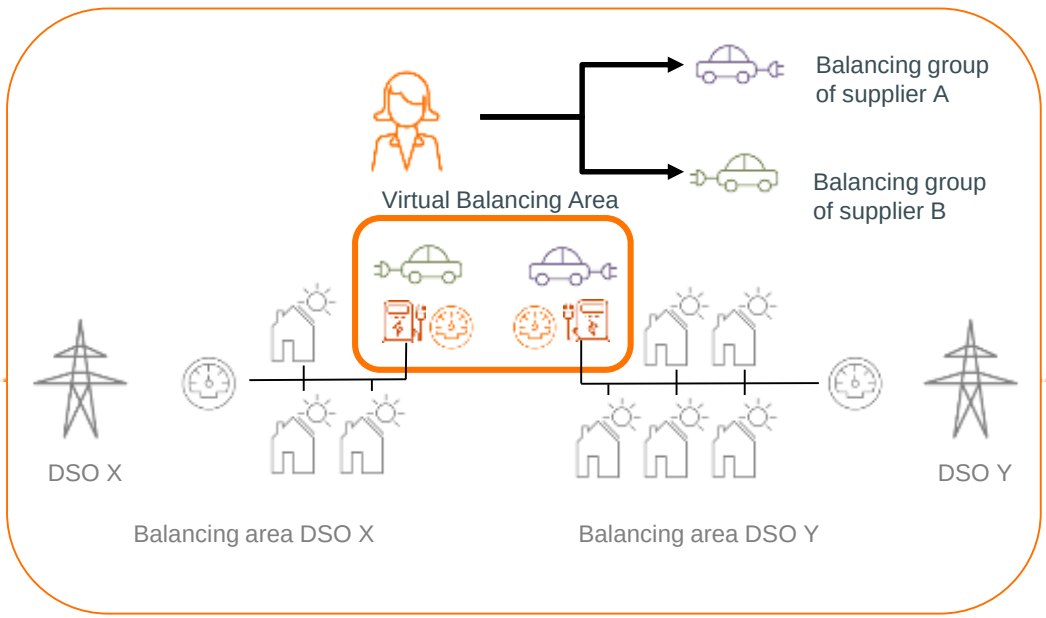


EV – electric vehicle
CPO – Charge point operator

MPO – Metering point operator
DSO – Distribution system operator

- Free choice of supplier and high market transparency for the EV user including the possibility to have one single EV charging supplier.
- EV supplier can manage the entire EV consumption over long periods of time, allowing the valorisation of flexibility and the provision of mobility needs.
- No complicated post-processing for charging pole supplier, which bills corrected metered data to charging pole operator.

Virtual Balancing Areas offer an alternative way to use information and share responsibilities.



- The charging points are removed from the DSO's balancing areas and merged into a common virtual balancing area.
- One responsible party will use all available data to allocate the consumption of each charging session individually to the EV user. This makes optimized delivery and accounting available for each customer.

EV – electric vehicle
DSO – Distribution system operator

Questions?

Next steps to achieve our ambitions

Q2 2021

CCMD Whitepaper
Making the CCMD vision public

Q3-4 2021

Demonstration projects
Demonstrate, test & learn

Q1 2022

Implementation roadmap
Regulatory & Technical

2023

Demonstrate XB EoEB
European implementation

Involve stakeholders:

CCMD info session
Explain & Clarify

31/08 Info session

Hackathon
Involve market parties

13 - 15/10 Hackathon

CCMD round tables
Collect feedback

29/09 Round Table 1
29/10 Round Table 2
29/11 Round Table 3

Q3-Q4 2021

GO Live TSO grid

End 2023

GO Live DSO grid

End 2024

Involving stakeholders – the round tables

~ 3 weeks prior to round table

Submission of questions/topics you, the stakeholders.

~ 2 weeks prior to round table

Elia communication of the different topics to be addressed

~ 1 weeks prior to round table

Deadline to request active participation

Round Table(s)

Scope – Open discussion on roles & responsibilities, data & communication, specific implementation questions.

Expected output: Input for the implementation roadmap: Identify concerns/issues that need to be tackled during the implementation

Practical - Hybrid session:

- Limited **physical presence** from whom an **active participation** in the session is expected.
  - Anyone can subscribe.
  - In the event of high number of subscriptions, Elia will select participants to ensure a correct representation
- Unlimited **online participation**, additional questions can be raised

Questions after this meeting? ConsumerCentricity@elia.be

Thank you

For questions
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