

Universal Smart Energy Framework

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Amsterdam, October 4th 2017

A solid foundation for
smart energy futures





European
Commission

Clean energy for all



NEW ELECTRICITY MARKET DESIGN: A FAIR DEAL FOR CONSUMERS

EU Clean Energy package:

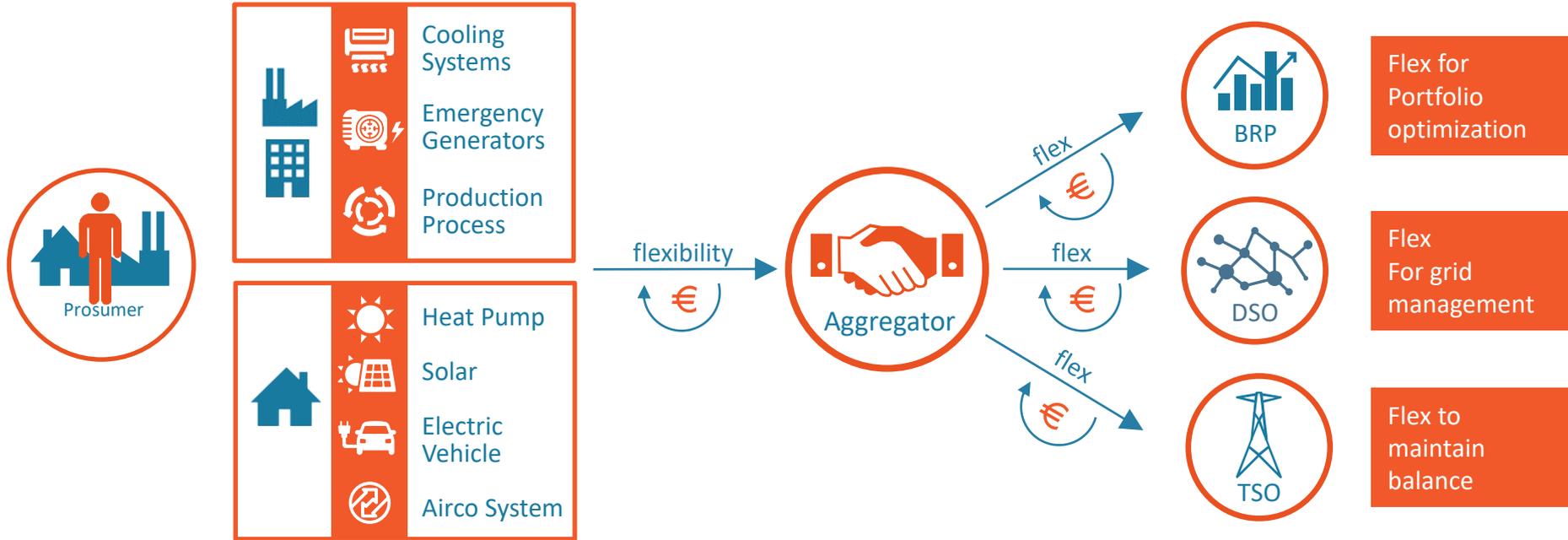
“Consumers and communities will be empowered to actively participate in the electricity market and generate their own electricity, consume it or sell it back to the market while taking into account the costs and benefits for the system as a whole”.

“Every consumer will be able to offer demand response and to receive remuneration, directly or through aggregators”

Source: https://ec.europa.eu/energy/sites/ener/files/documents/technical_memo_marketsconsumers.pdf

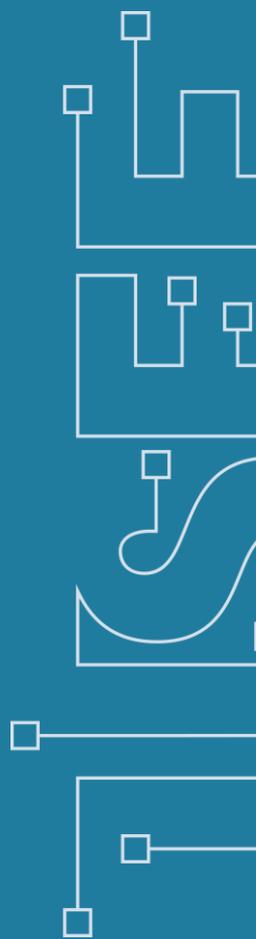


How is value created from flexibility? – The Market perspective



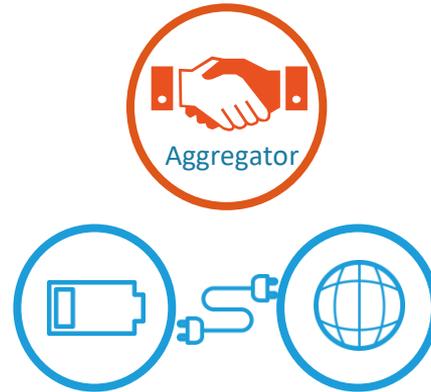
Assessing the viability of a flex market in 6 steps

A checklist



ASSESSING THE VIABILITY OF A FLEX MARKET

1. Find an aggregator that can bring your flex to the market



ASSESSING THE VIABILITY OF A FLEX MARKET

2. Aggregator to find flex products that best fit process constraints



3. Is there a positive business case?



ASSESSING THE VIABILITY OF A FLEX MARKET

4. Organize external control of your asset(s)/processes by aggregator

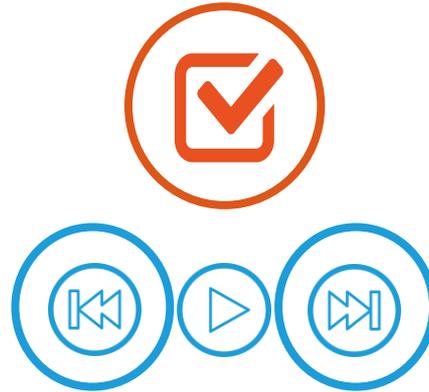


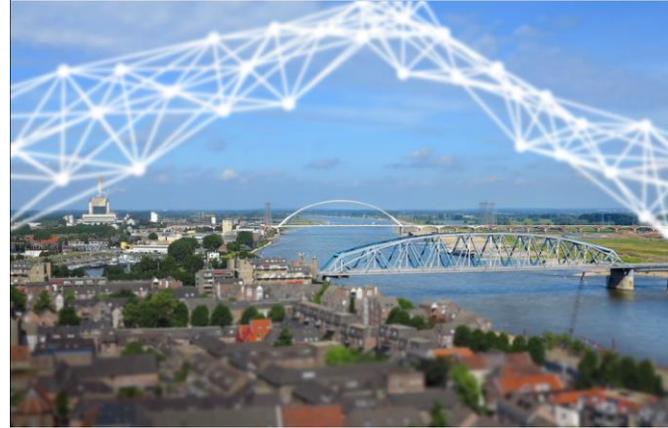
5. Start flex assessment
(measurement & control response)



ASSESSING THE VIABILITY OF A FLEX MARKET

6. Go/ no go





USEF in practice: Residential versus Commercial & Industrial

USEF implemented: Residential domain



Heerhugowaard

- 200 x 0.5 kW of controllable flexibility
 - PV
 - electric boilers
 - heat pumps
 - fuel cells
- Flex exchange between AGR, BRP, DSO
- Flex fees, no dynamic pricing



Conclusions

- Flexibility is easily unlocked
- Flexibility brings additional value for the BRP
- Flexibility can be used to relieve grid congestion
- Aggregator can bring value to Prosumer
- Aggregator needs to manage its risk position
- DSO and BRP requests not always in line (16%), coordination mechanism needed

C&I flex solutions for Nijmegen

Nijmegen

- 8000 new houses
 - Commercial area under development
 - Additional wind power
 - Solar farm
- 5 MW extra capacity needed (temporary)

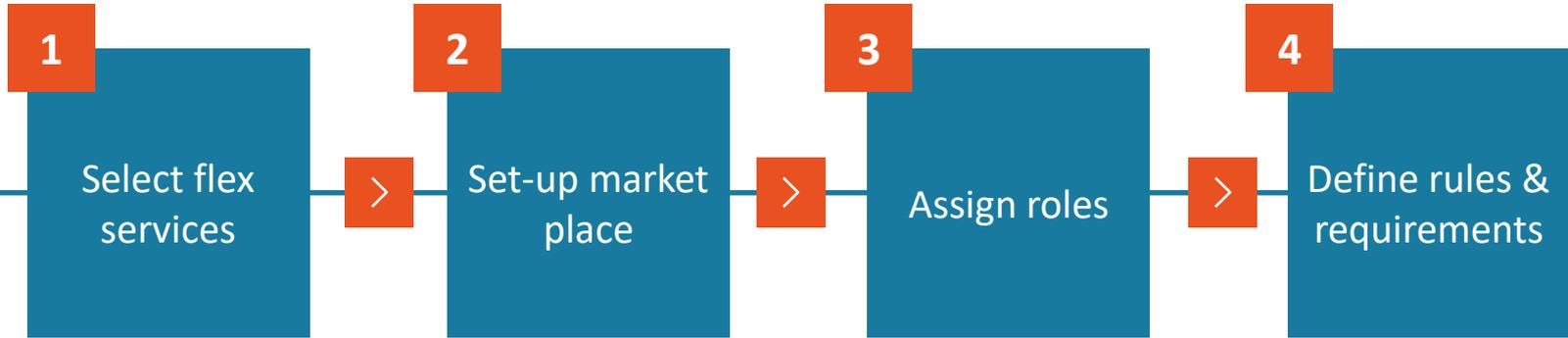
allander

C&I flex solutions for Nijmegen

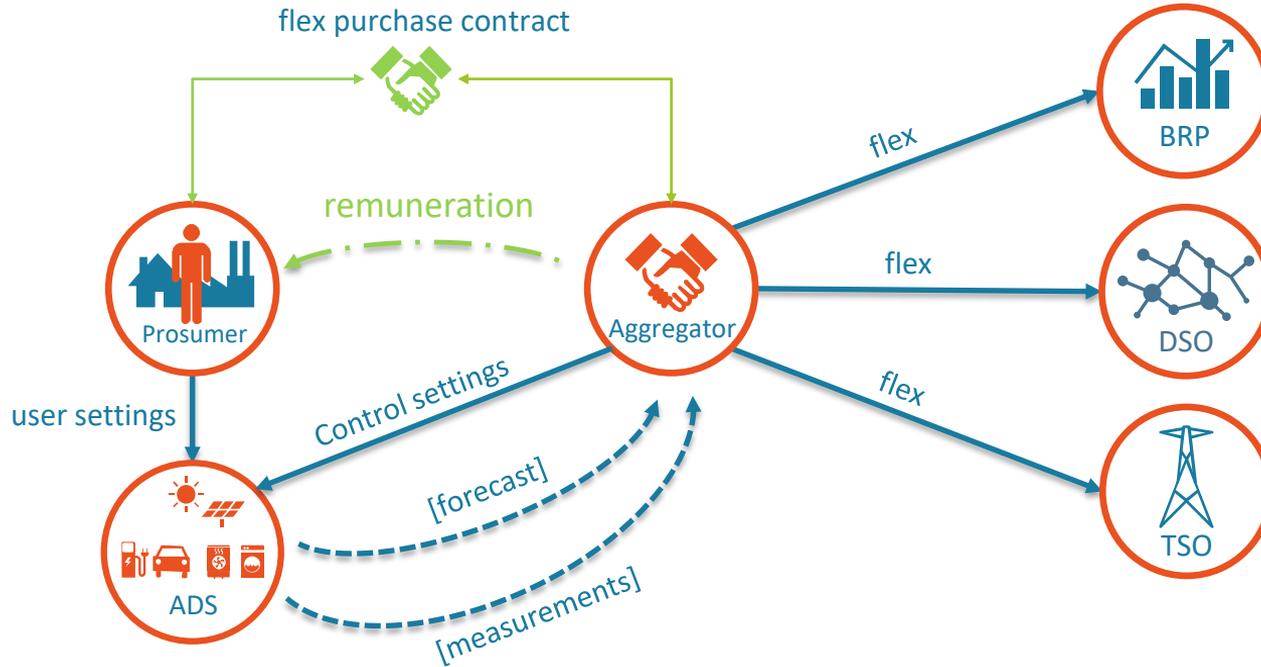
Next steps

- USEF Flex market, DSO only
- Clear flex need
 - 1 MW
 - during winter period
 - 5 – 8 pm
- Tendering process
- Firm contracts as fallback

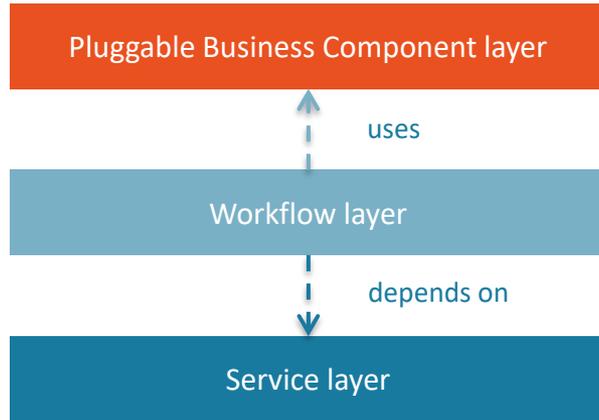
HOW TO SET UP YOUR FLEX MARKET?



Establish control to assets



USEF's Reference Implementation

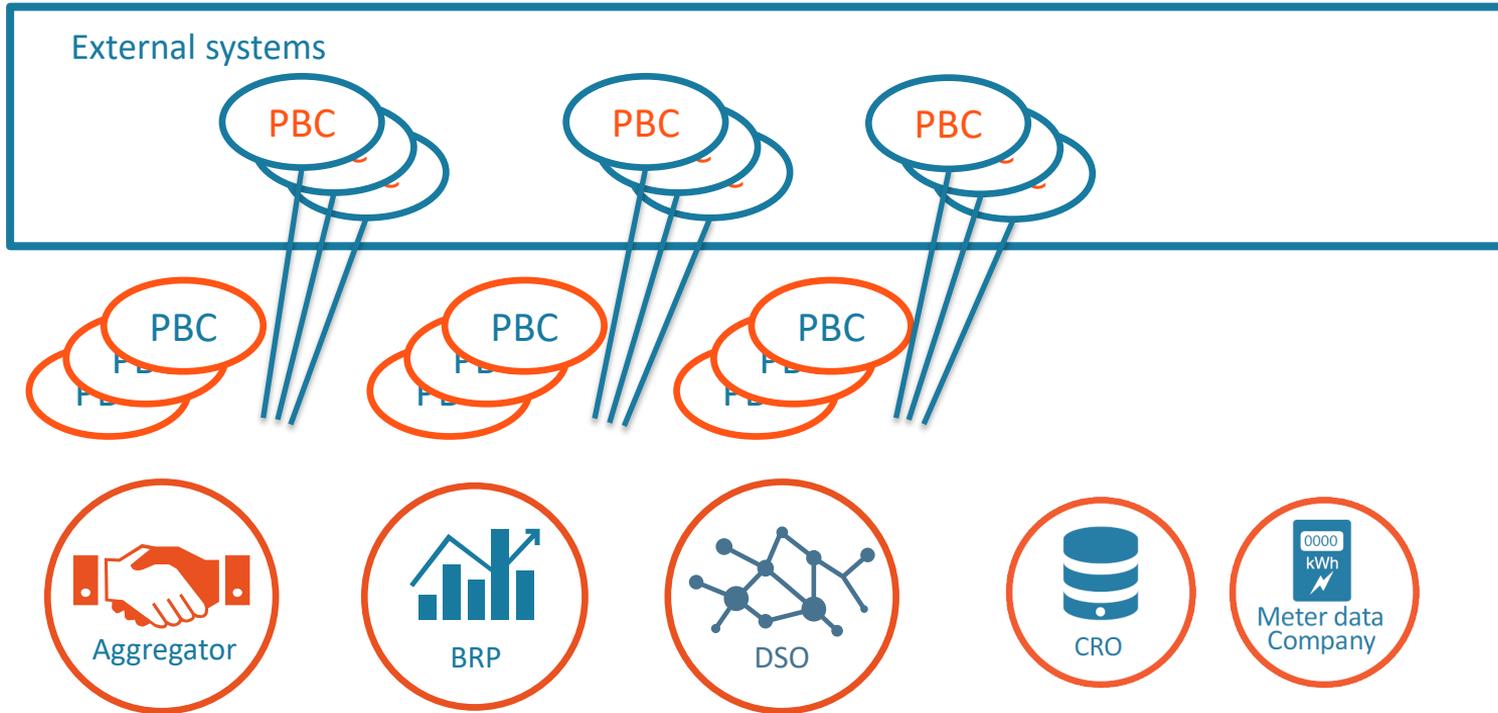


- Set-up to validate the framework
- Open source
- Layering facilitates connection to your business processes
- Privacy/security by design

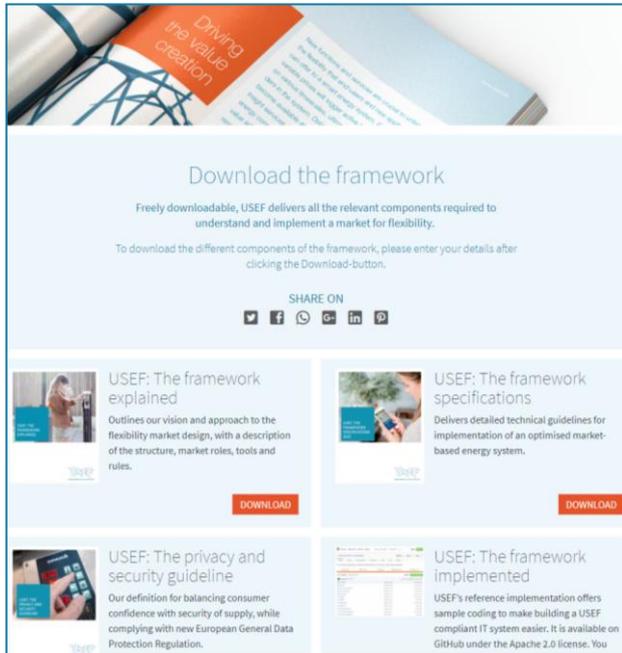
Deploy the Roles – multiple players per role possible



Implement Pluggable Business Components per role



Hosting a flex market – different options



Driving the value creation

Download the framework

Freely downloadable, USEF delivers all the relevant components required to understand and implement a market for flexibility.

To download the different components of the framework, please enter your details after clicking the Download-button.

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USEF: The framework explained

Outlines our vision and approach to the flexibility market design, with a description of the structure, market roles, tools and rules.

[DOWNLOAD](#)



USEF: The framework specifications

Delivers detailed technical guidelines for implementation of an optimised market-based energy system.

[DOWNLOAD](#)



USEF: The privacy and security guideline

Our definition for balancing consumer confidence with security of supply, while complying with new European General Data Protection Regulation.



USEF: The framework implemented

USEF's reference implementation offers sample coding to make building a USEF compliant IT system easier. It is available on GitHub under the Apache 2.0 license. You



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Making maximum use of flexibility in energy profiles?

CHALLENGE US

Universal Smart Energy Framework (USEF)

ICT is one of the founding partners of USEF (Universal Smart Energy Framework) which is a non-commercial partnership, founded in 2013 by Akkondar, ABB, CH2M Hill, IBM, ICT, Kvaerner and Steinhilber. USEF provides an open specification which will accelerate the

ICT+

A stylized graphic of two hands shaking, rendered in a dark blue color. The hands are positioned horizontally, with the fingers of the top hand pointing towards the right and the fingers of the bottom hand pointing towards the left. The graphic is partially obscured by a horizontal orange band that contains the main text.

**LET'S JOIN FORCES &
SHAPE AN INTEGRATED SMART ENERGY FUTURE.
TOGETHER.**



Thank you

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**A solid
foundation for
smart energy
futures**

