

Fundamental Thoughts on Enabling Customers Flexibility

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ENTSO-E

2030 Market Design to enhance distributed flexibility

12 November 2021



What is a banker doing here?



Stages of Innovation

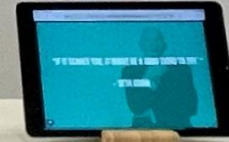
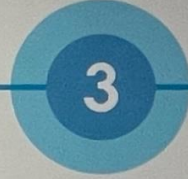
Industrialization

Experimentation

Ideation

Exploration

Inspiration



Discover
experimenting

Begin ideation

Start exploring

Get in

- Inspiration Wiki
- Pitch Cook
- Surf Camp

- Innovation Round Table
- Surf Camp
- Surf Studio Trivia Guide

A Fascinating World



Once a banker...







350.000.000 EUR

Exploration: Basic Learnings

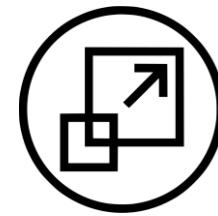


(1) Sustainable Value Creation

Distributed Energy System (DES) needs to be **integrated** →
Needs to be **transactive** (TES)

Transactions are driven by the principles of **value** creation

Sustainable value creation = $f(\text{system friendliness, affordability})$



(1) Sustainable Value Creation (cont.)

“All business and operational objectives and constraints of the system can be described in terms of their value or cost.”

“There is value associated with achieving an objective, and conversely, there is cost associated with addressing a constraint.”

(1) Sustainable Value Creation (cont.)

*“In a distributed transactive energy system **economic value signals** should address **multiple concurrent objectives**, including intermittent RES integration, peak smoothing/shifting, unplanned event response (resilience), and constrained resources.”*

(1) Sustainable Value Creation (cont.)

Dynamic price = Holistic value signal that reflects the conditions of the energy system

Dynamic price = **incentive mechanism.**

Fully automated



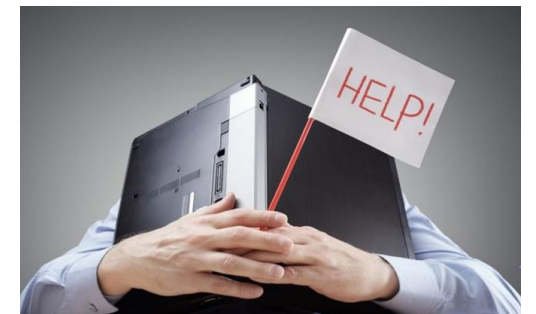
(2) Thoughts on value creation

Customer excitement?

Customer capability?

(Des)information → Confusion

Customers' intellectual/financial effort?



Sporty challenge!



Documents



- Publication: [Clean energy for all Europeans](#) (May 2019)
- Factsheets (January 2019) in 7 languages:
 - [Energy performance of buildings](#)
 - [Renewable energy](#)
 - [Energy efficiency](#)
 - [Governance](#)
 - [Electricity market design](#) (Electricity files, Risk Preparedness and ACER)
- [Energy Performance of Buildings Directive 2018/844](#)
- [The recast Renewable Energy Directive \(EU\) 2018/2001](#)
- [The revised Energy Efficiency Directive \(EU\) 2018/2002](#)
- [Governance of the Energy Union and Climate Action \(EU\) Regulation 2018/1999](#)
- [Regulation on risk-preparedness in the electricity sector \(EU\) 2019/941](#)
- [Regulation establishing a European Union Agency for the Cooperation of Energy Regulators \(EU\) 2019/942](#)
- [Regulation on the internal market for electricity \(EU\) 2019/943](#)
- [Directive on common rules for the internal market for electricity \(EU\) 2019/944](#)
- Clean energy for all Europeans – [Communication COM\(2016\) 860 final](#) and its [Annex 1](#) and [Annex 2 - translations](#)

(2) Thoughts on value creation (cont.)

The 'BUCA-devil'

Primary purpose of the energy transition?



(2) Thoughts on value creation (cont.)

How to *motivate* the customer?



(2) Thoughts on value creation (cont.)

Real cocreation needed:

- Multidisciplinarity = key
- System-wide benefits vs. maximization result of individual actors





IO.Energy in a nutshell

The IO.Energy Ecosystem is built to facilitate the development of new energy services by market parties to drive the power system towards consumer centricity.



EV Experience

- Extremely **low effort** for the customer
- Concrete:
 - ✓ Plug & Charge
 - ✓ Always connected when not driving
 - ✓ Demand response by dynamic price signaling
 - ✓ Cost-efficient for all parties → affordable
 - ✓ **Value based** → system friendly
 - ✓ Lean **back office** for all parties involved!
 - ✓ Open source
 - ✓ Co-creation First!



The decentralised exchange of energy on a 15-minutes basis:
'Exchange of Energy Blocks' ('EoEB')

Consumer-Centric Market Design (CCMD)

Towards a consumer-centric and sustainable electricity system

[CCMD \(eliagroup.eu\)](http://eliagroup.eu)

