Flexibility in homes and communities

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CarbonCo–op

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About Carbon Co-op

- Created by a group of householders in 2008 in Greater Manchester, UK.
- Aim was to achieve 2050 emissions reductions today through deep energy efficiency retrofit of houses.
- Still the aim!
- Now over 180 members and 10 staff working together to reduce their collective CO2/GHG emissions.
- A proto-domestic-aggregator/ESCO-op ??

Our work

Retrofit

Energy Systems

Education

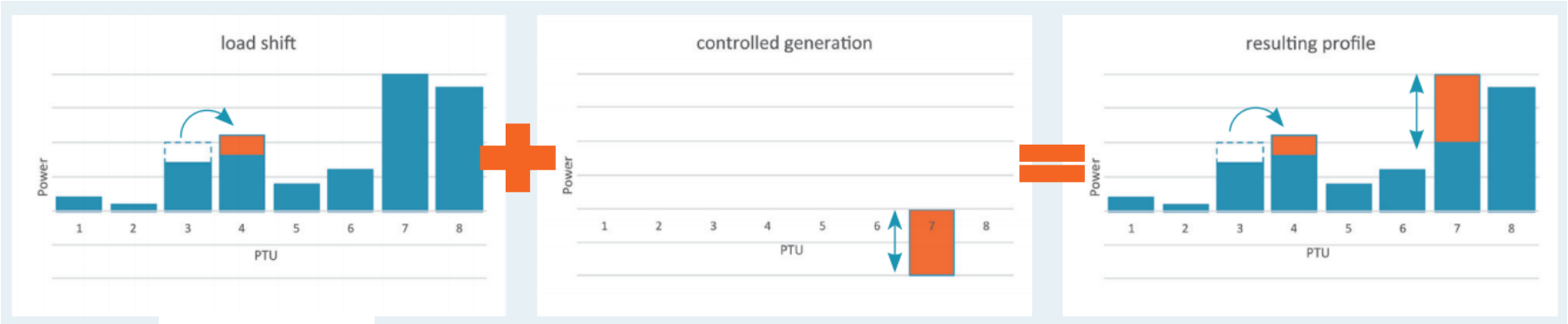
Policy (Manchester/NW/UK)

Renewable Generation

Consultancy

What is flexibility?

Flexibility is the commoditised ability to increase or decrease ‘demand’ dynamically in response to pre-defined criteria or external signals.



Flexibility plays a crucial role in the future grid

Increasing flexibility has the potential to significantly reduce costs in the future energy system (compared to not using it).

Different actors in the energy system have a need for flexibility – DSOs, ESO, suppliers, local energy communities.

The general idea is that if you don't flex you need to do something else (store, generate) and this can be more expensive.

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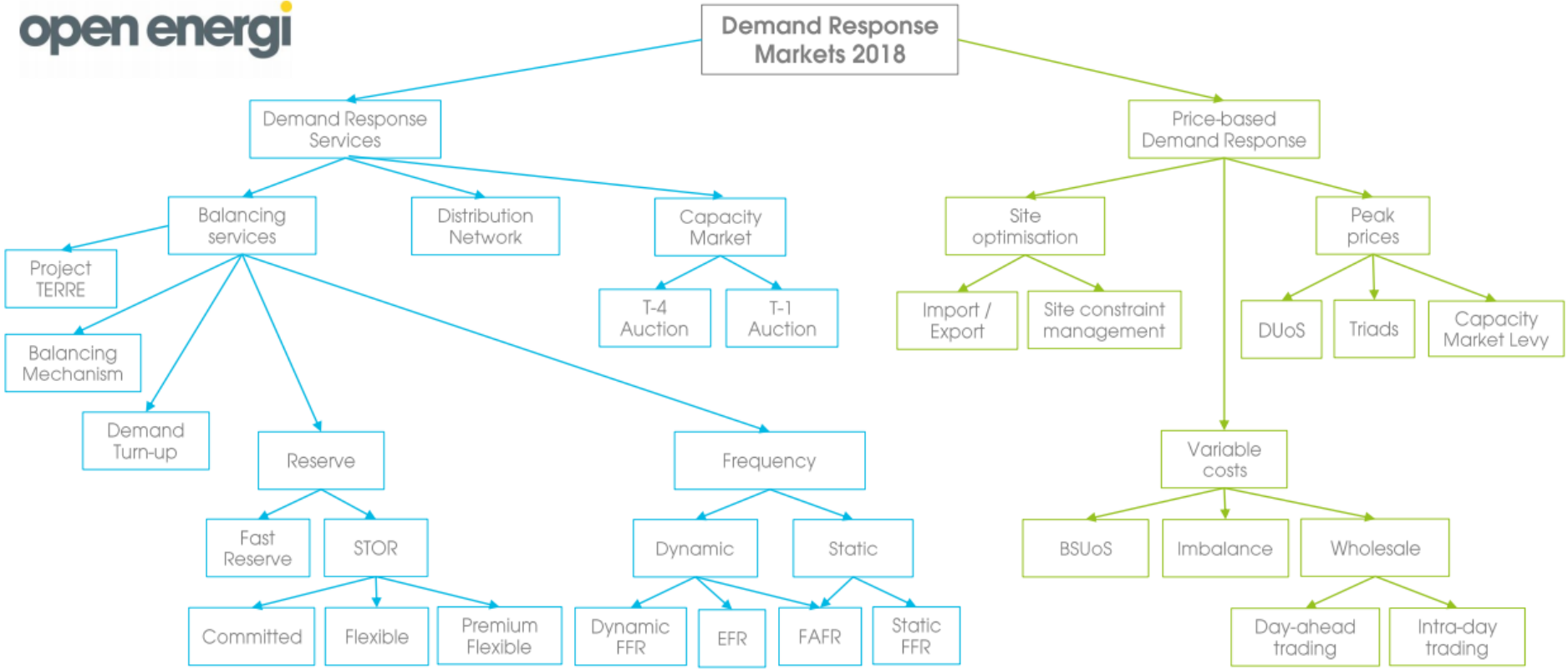
Demand Response Markets 2018



Acronyms

- BSUoS: Balancing Service Use of System
- DUoS: Distribution Use of System
- EFR: Enhanced Frequency Response
- FAFR: Faster Acting Frequency Response
- FFR: Firm Frequency Response
- STOR: Short Term Operating Reserve
- TERRE: Trans-European Replacement Reserve Exchange

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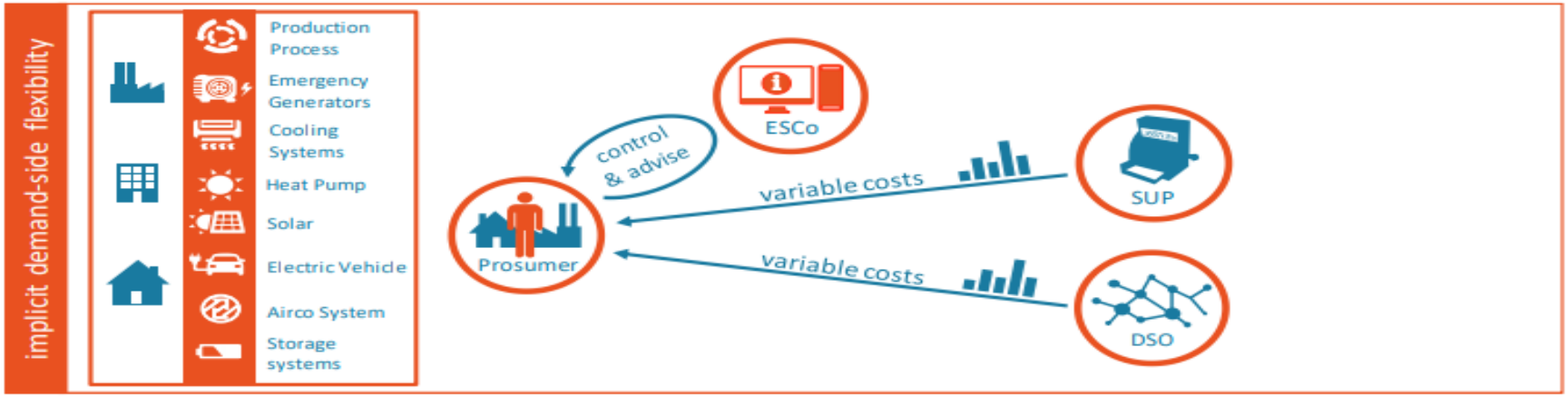
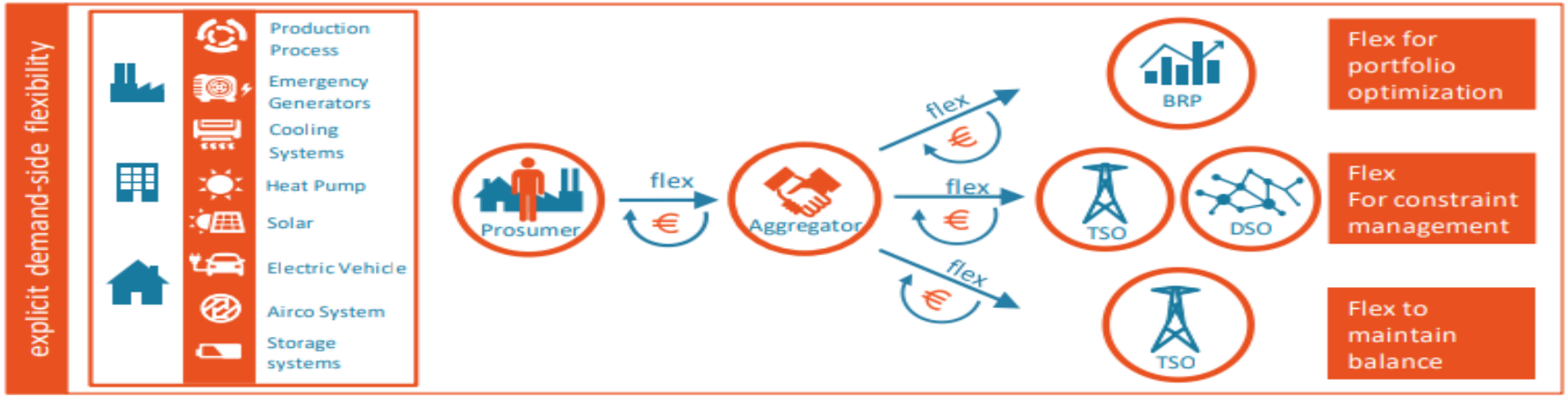
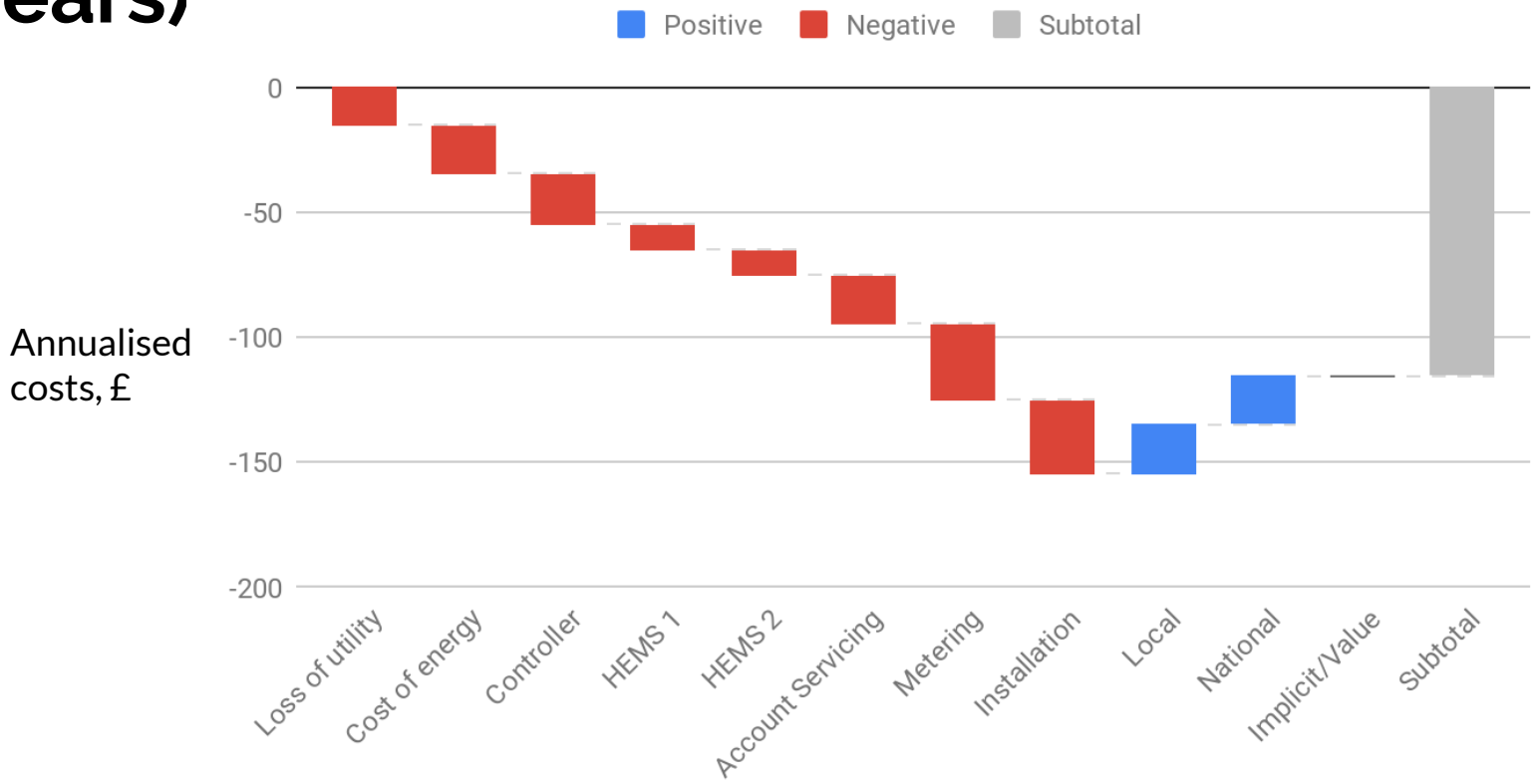
Value of flexibility not fully realised



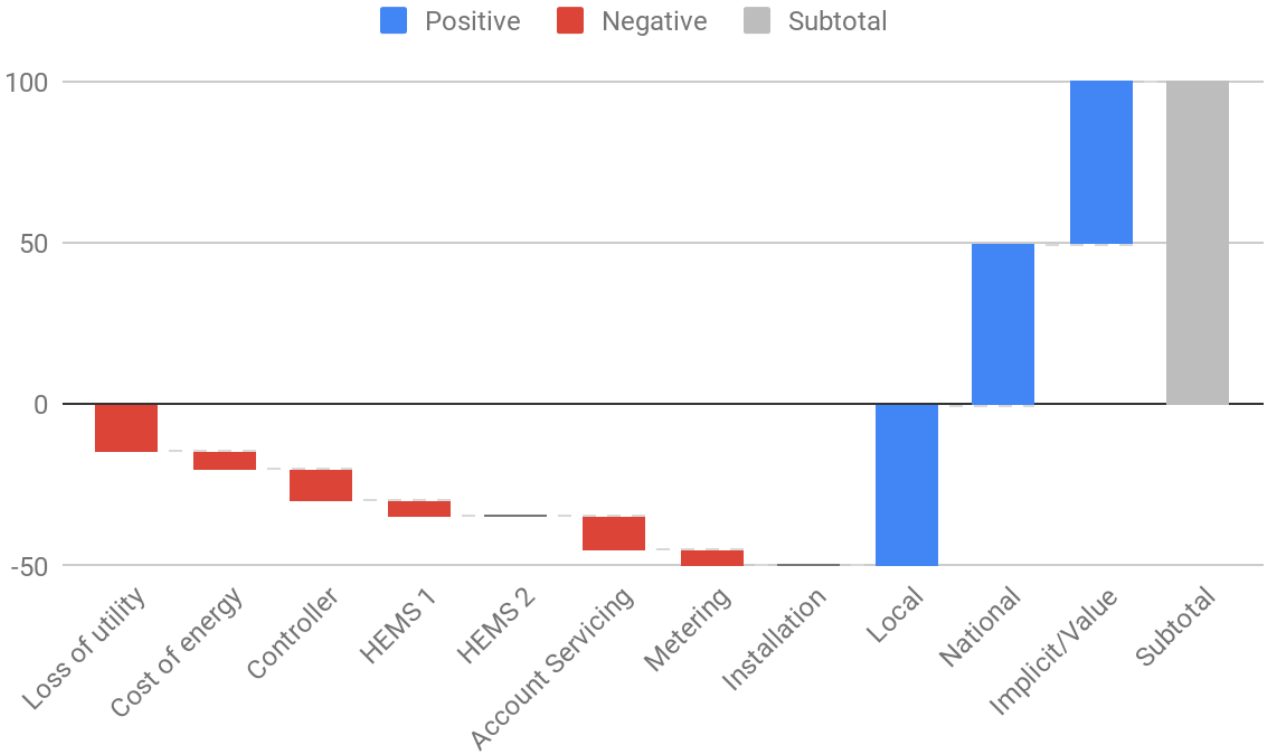


Current costs vs. benefits (10kW flex over 5 years)



Future costs vs. benefits (10kW flex over 5 years)

Annualised costs, £



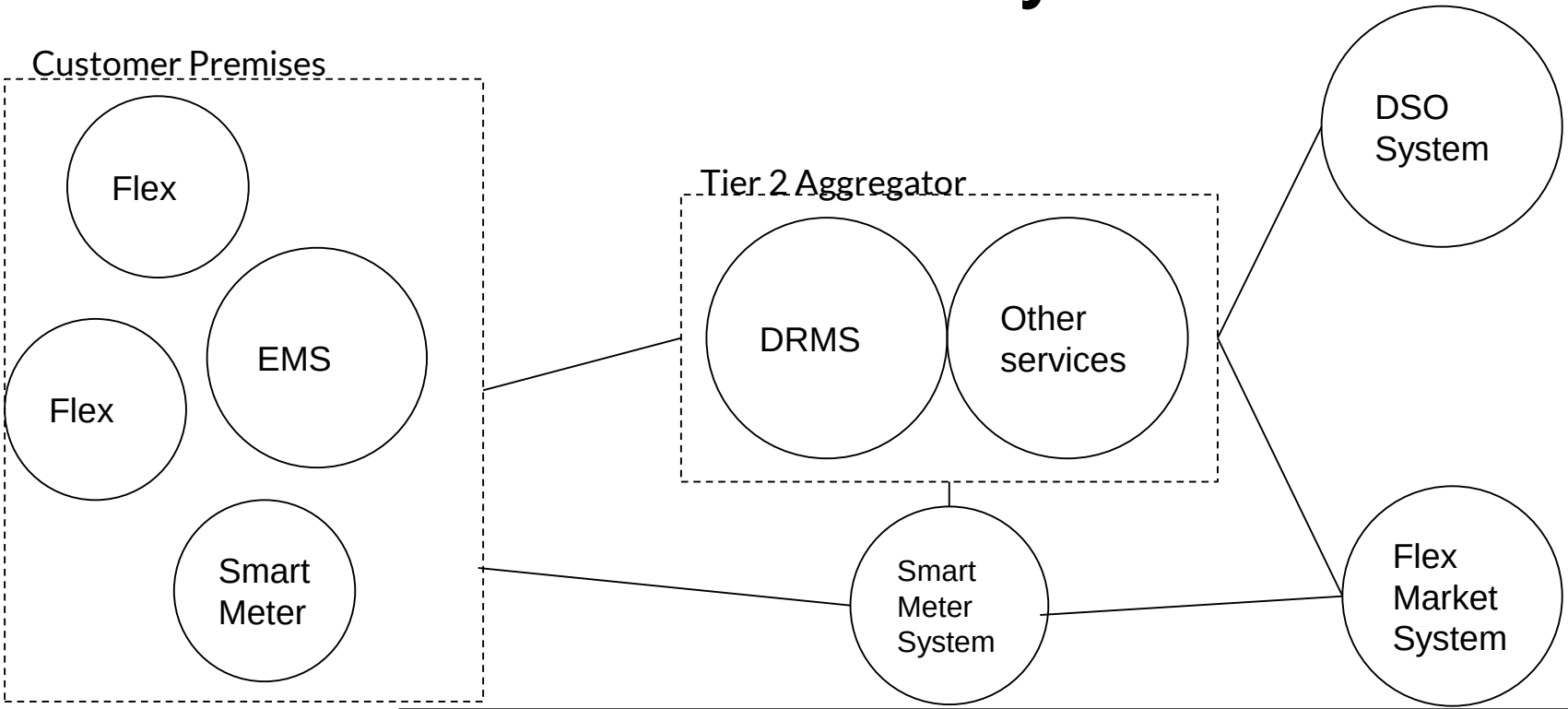
Obstacles to viability of domestic/community aggregation

- Fair, non-discriminatory, transparent access to markets.
- Standardisation of flexibility products.
- Lower costs for metering etc. Need smart meters working properly.
- Regulatory framework for (domestic) aggregators.
- Smart product standards.
- Visibility and situational awareness in distribution network. A smart grid!
- What is customer offer? Are consumers ready? Will they want to participate?

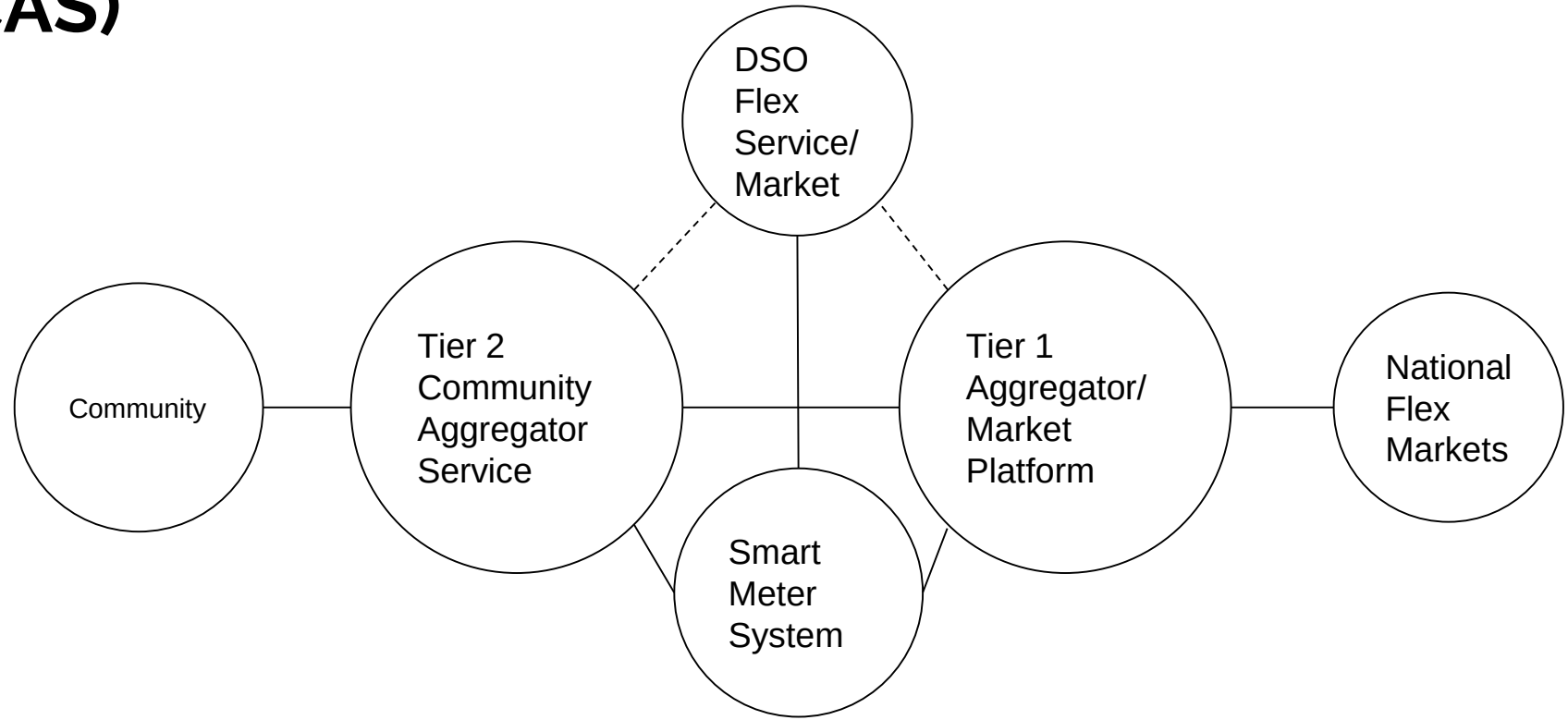
What is OpenDSR?

- A BEIS funded innovation project.
- A technology demonstrator.
    - OpenADR based Demand Response system.
    - Integration with UK smart metering system.
- A policy intervention.
    - Promoting open standards, interoperability, and open source in demand side response.
- Developing technical expertise and knowledge within the CE sector instead of outsourcing it or buying it in.
- Developing new services and viable business models.

A technical DSR system



A possible community aggregator scheme (ECAS)



Indicative schedule of payments under OpenDSR (TBC)

Class	Annual payment
Smart Electric Vehicle Charger (Level 2)	£50
Heat pump	£30
Immersion water heater	£20
Battery (Category 1)	£50
Battery (Category 2)	£75
Storage heater (per heater)	£10
Installation/call out (per visit)	-£50
Annual co-operative membership	-£35

Ways to get involved?

If other community/local energy groups want to try to contribute to development and/or make use of our system please get in touch.

The project is open source and the technical outputs will be available in some form very soon.

Thanks for listening

Ben Aylott

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