

Microgrid Symposiums



Enabling Microgrids by Rhizomes of the EU Nobel Grid project

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Microgrids:

A technology paradigm for the future of power systems

If well designed, works well both grid-connected and (temporary) off-grid

If paired with storage means, it enables high RES penetration, up to 100%

It allows resilience or even immunity from main grid outages / blackouts

Well driven, on long term, it gives energy sustainability of local communities

EU project **NOBEL GRID**:



A 3.5 years project, finalized in June 2018

21 partners, consortium led by ETRA / Spain

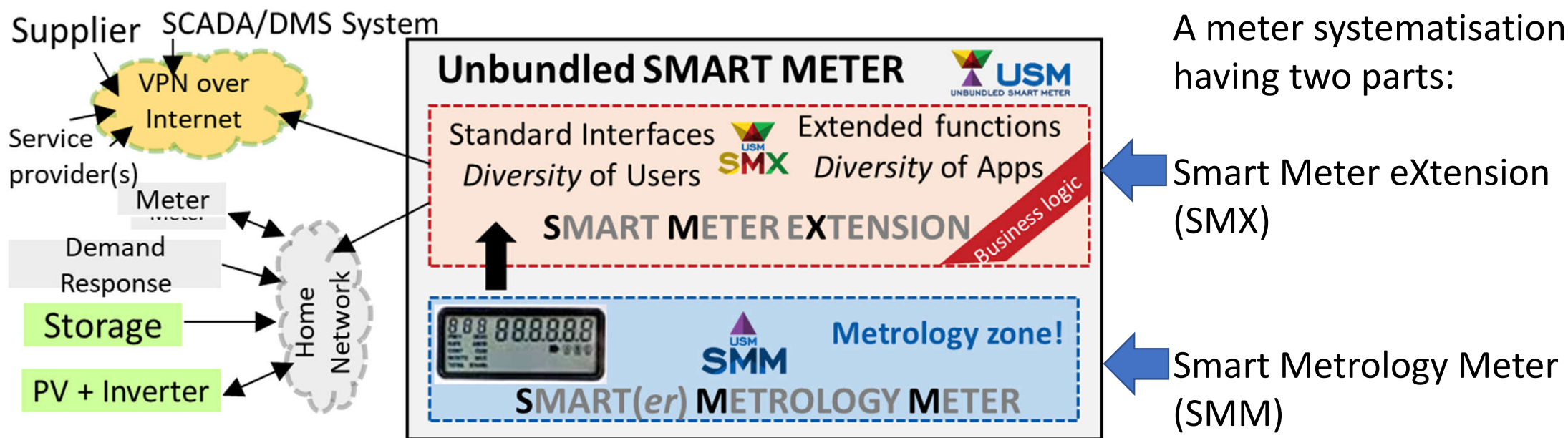
5 + 1 demonstrators (UK, Spain, Italy, Belgium, Greece + Romania/UPB)

Important outcome: the Unbundled Smart Meter (USM) with its new full design, the SLAM

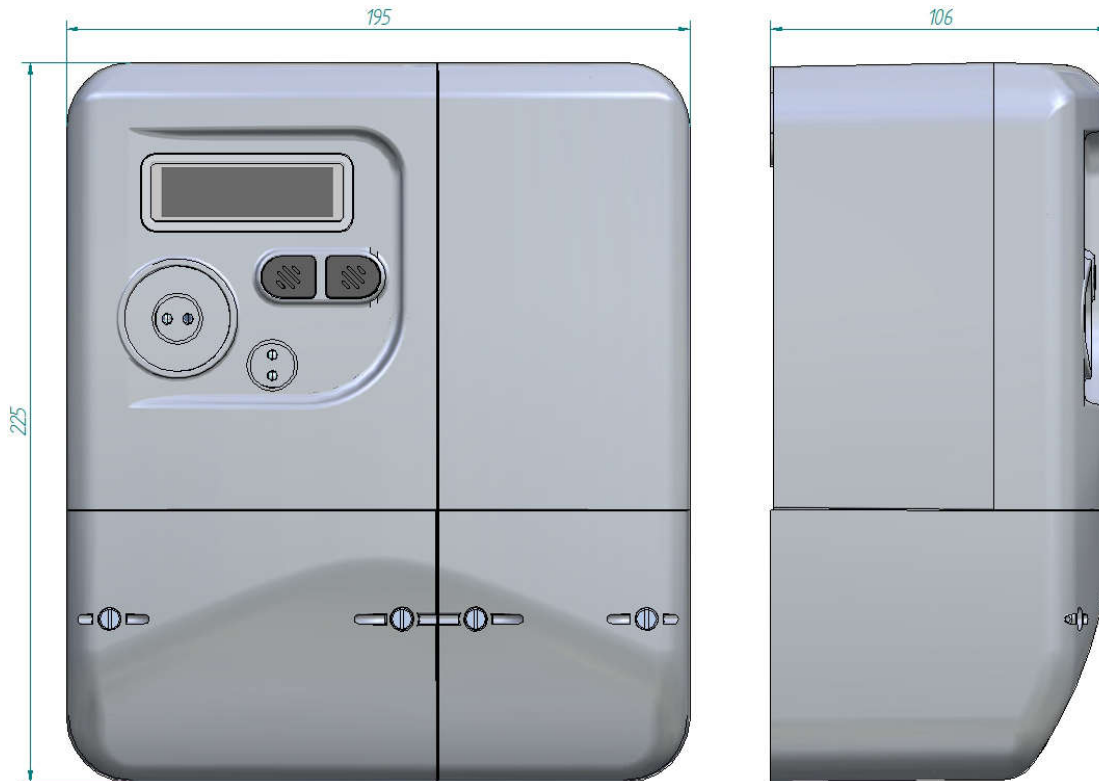
USM: enabler for many new applications



SLAM meter is based on the
Unbundled Smart Meter (USM) architecture,
And is an answer to the multi-actor/multi-protocol challenge



SLAM – *a smart meter to enable a multi-actor ecosystem towards a clean energy*



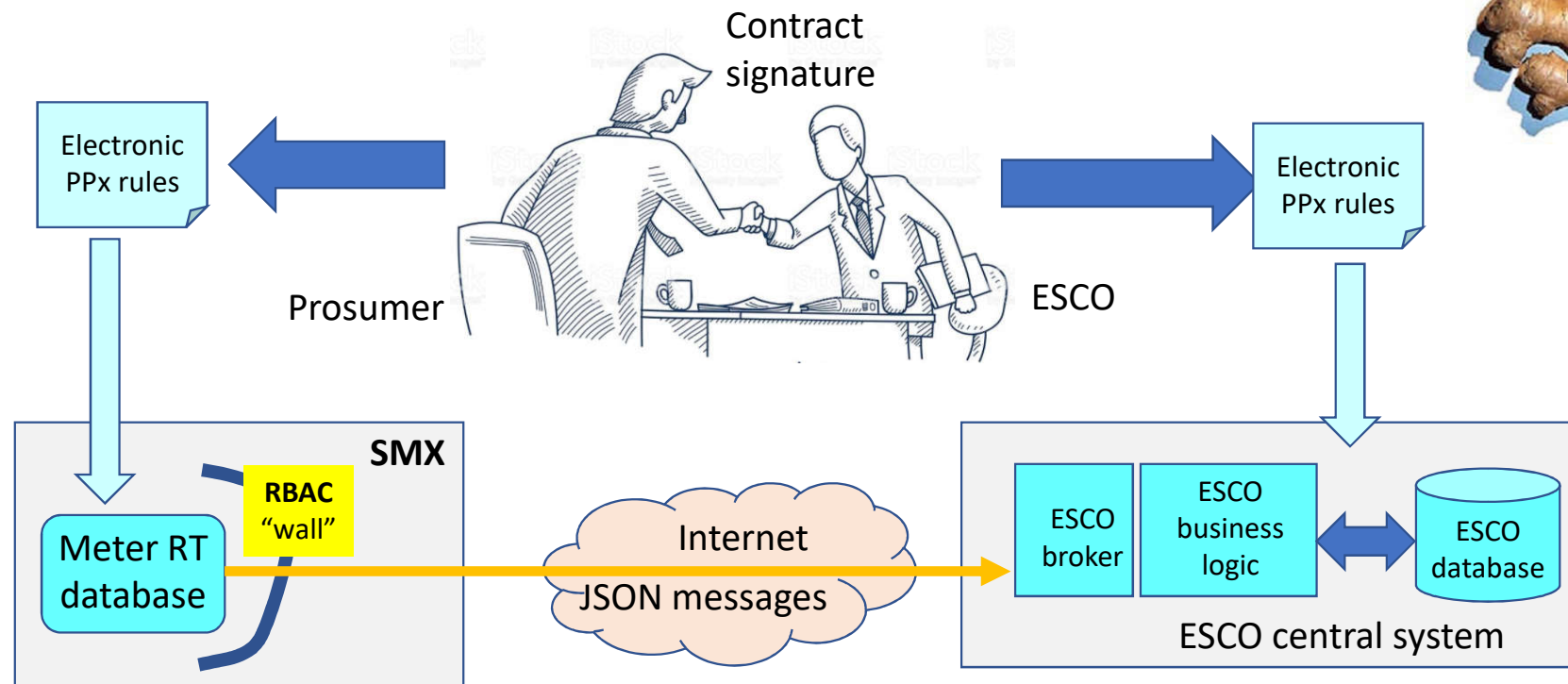
Building rhizomes for new applications



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Enabling local energy contracts in **microgrids**

SLAM - Opening for ESCOs: unleashing myriad of services, allowing flexibility and user empowerment



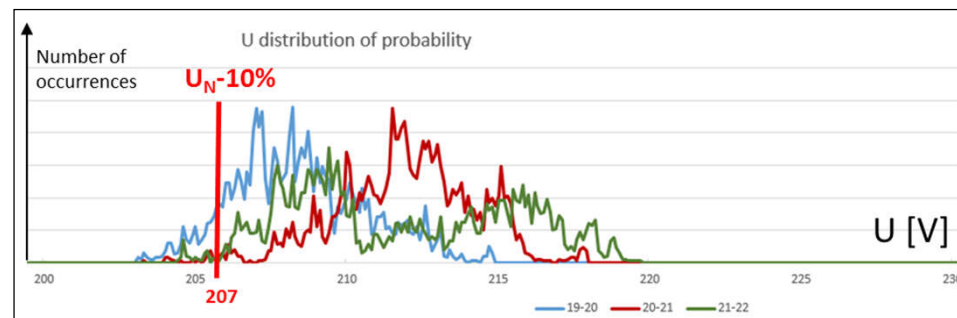
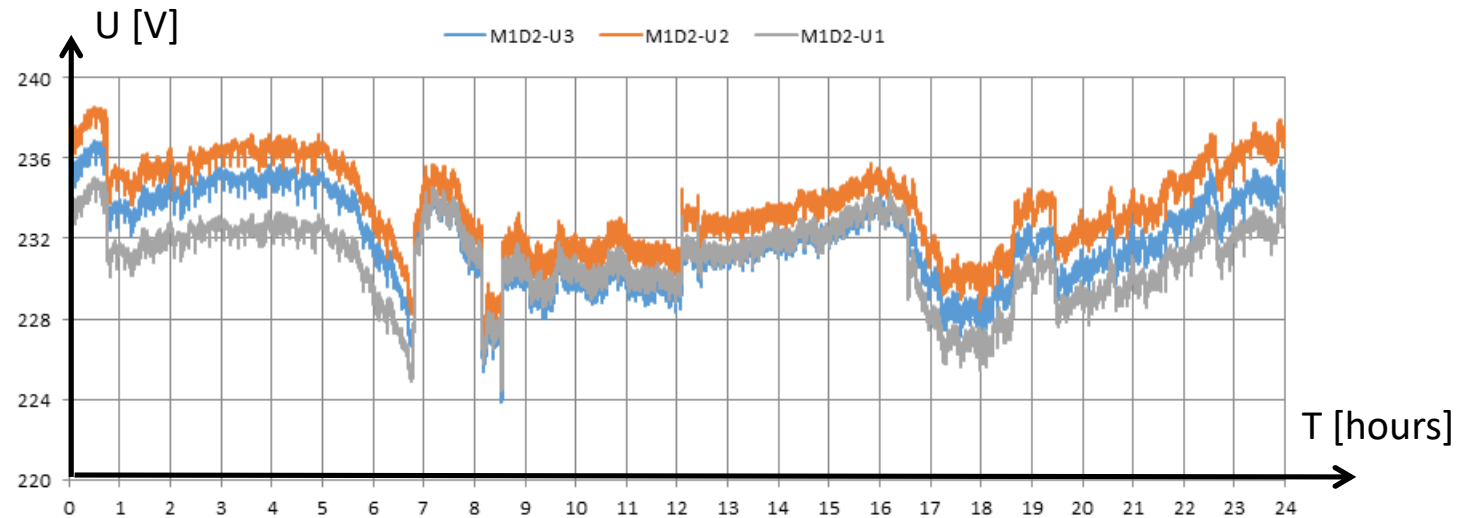
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User awareness of power quality in **microgrids**: Voltage level over one day

Symmetrical
empowerment of
both Actors:

- End-user
- DSO



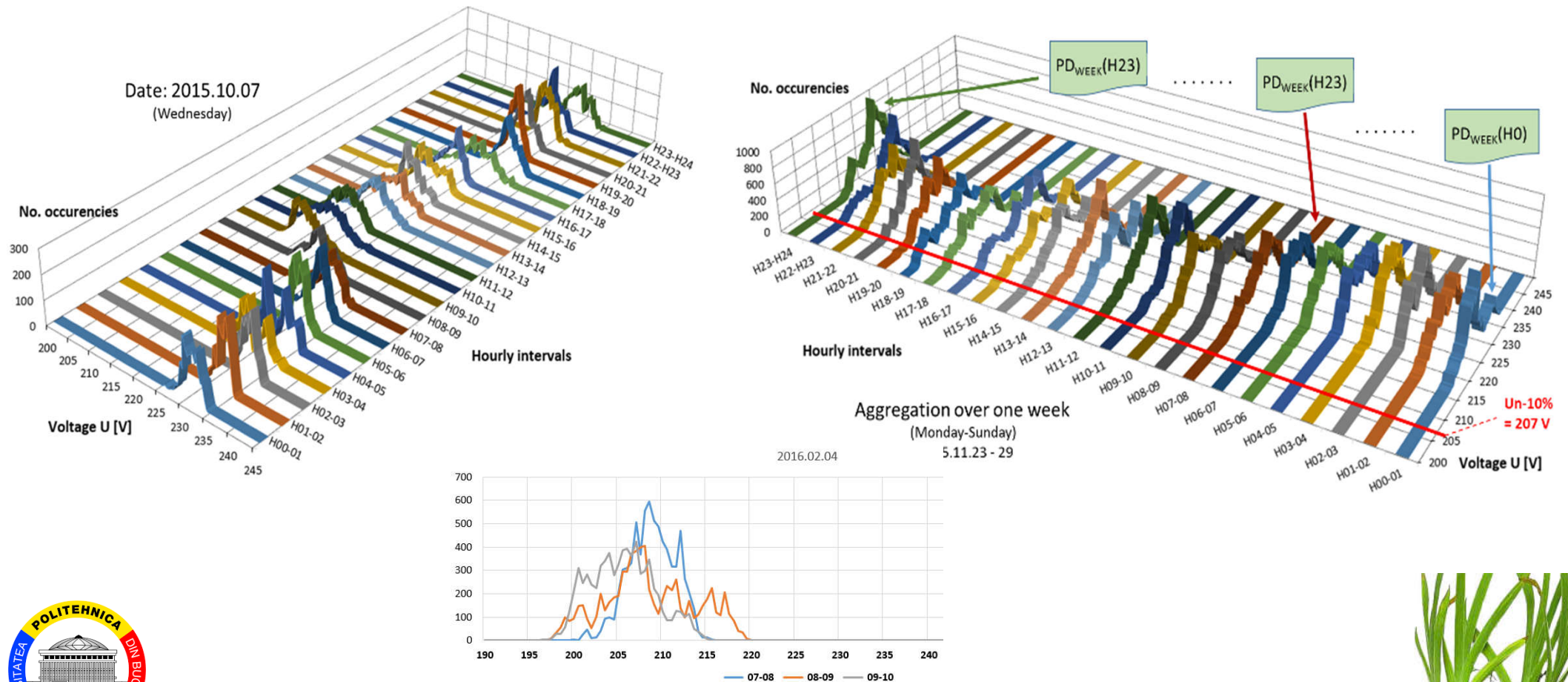
Probability
distribution

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User awareness of power quality in **microgrids**: Voltage level over many days

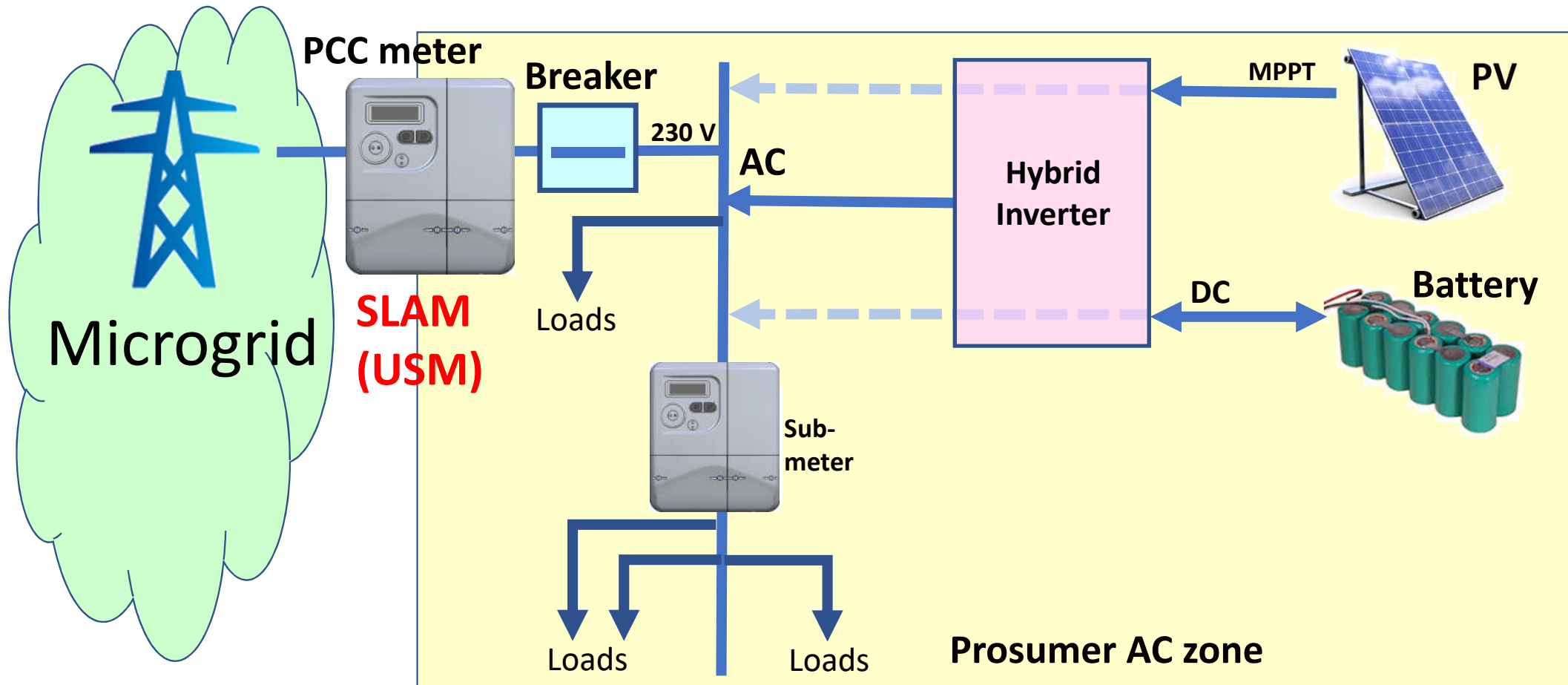
Using Probability distribution



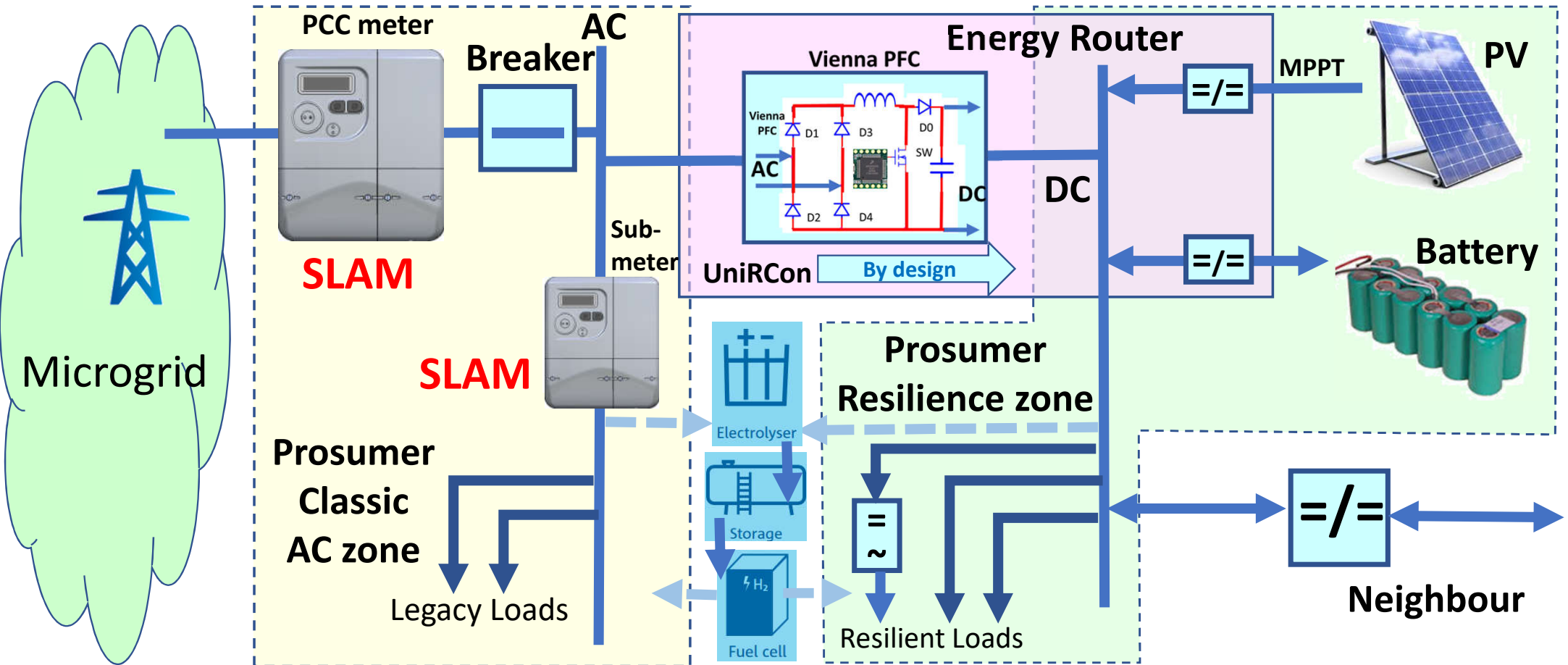
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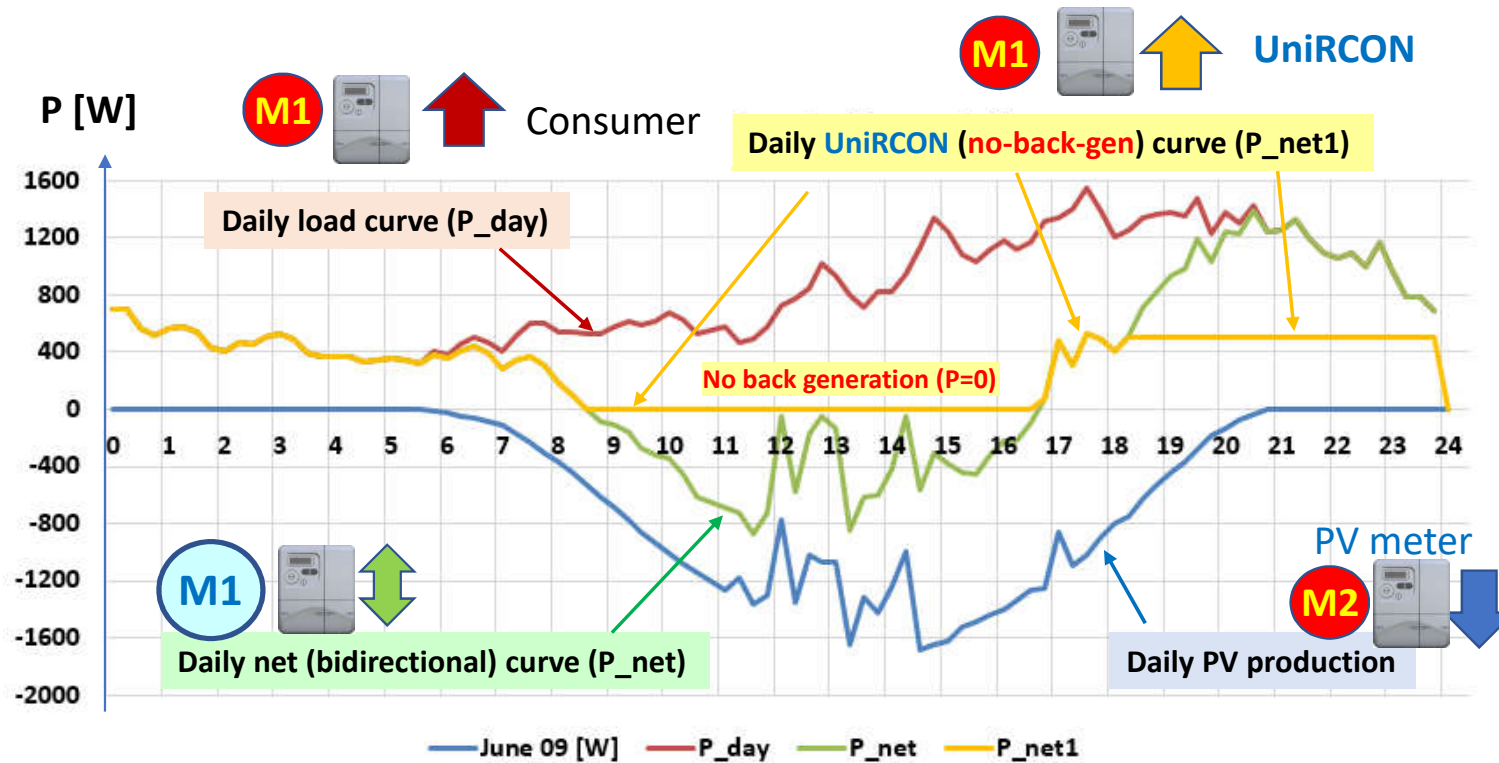
Enabling prosumer connection in a **microgrid**



Enabling Advanced Prosumer connection in a **microgrid**



Unidirectional consumption for a prosumer (no back generation): UniRCon

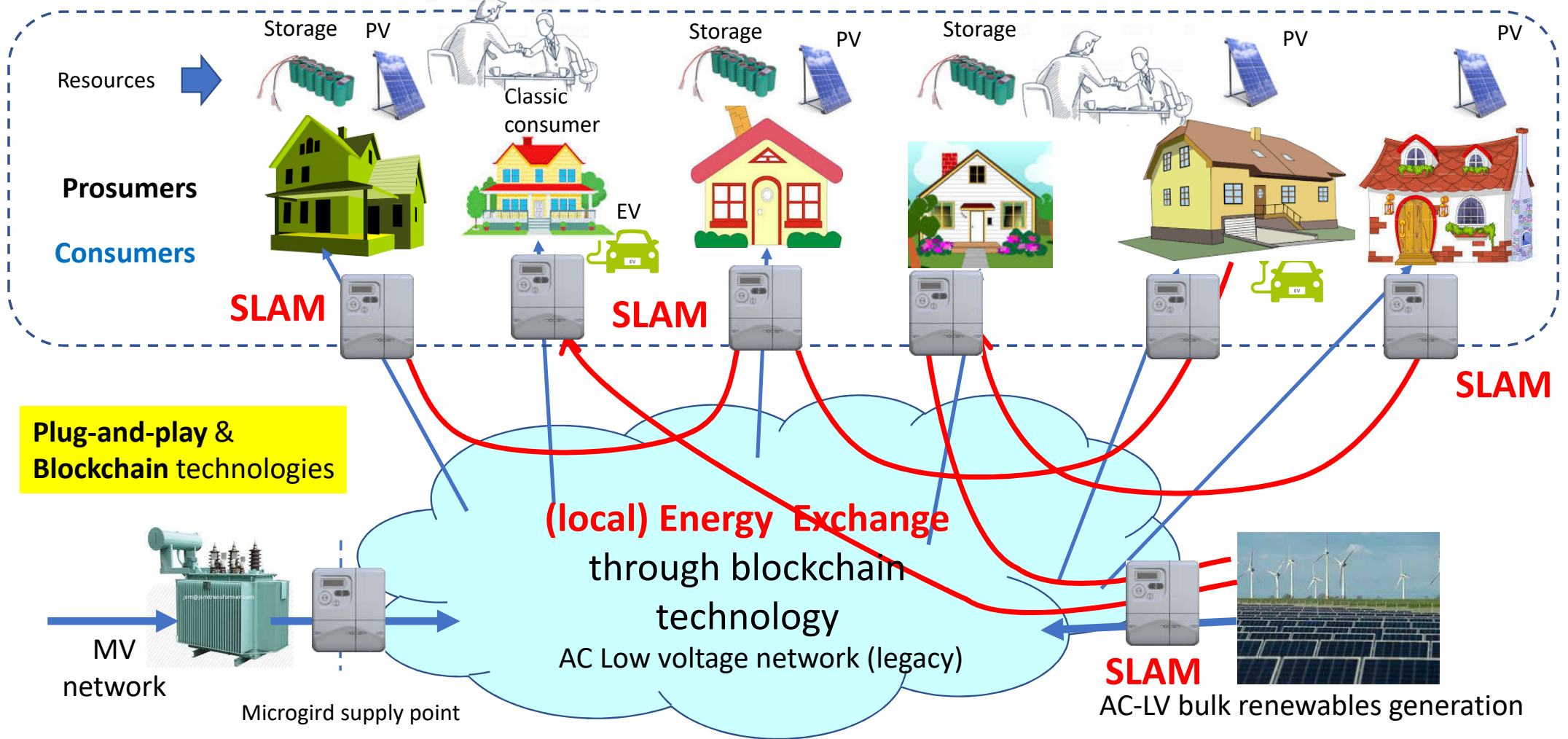


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Enabling Energy community connection in a **microgrid**

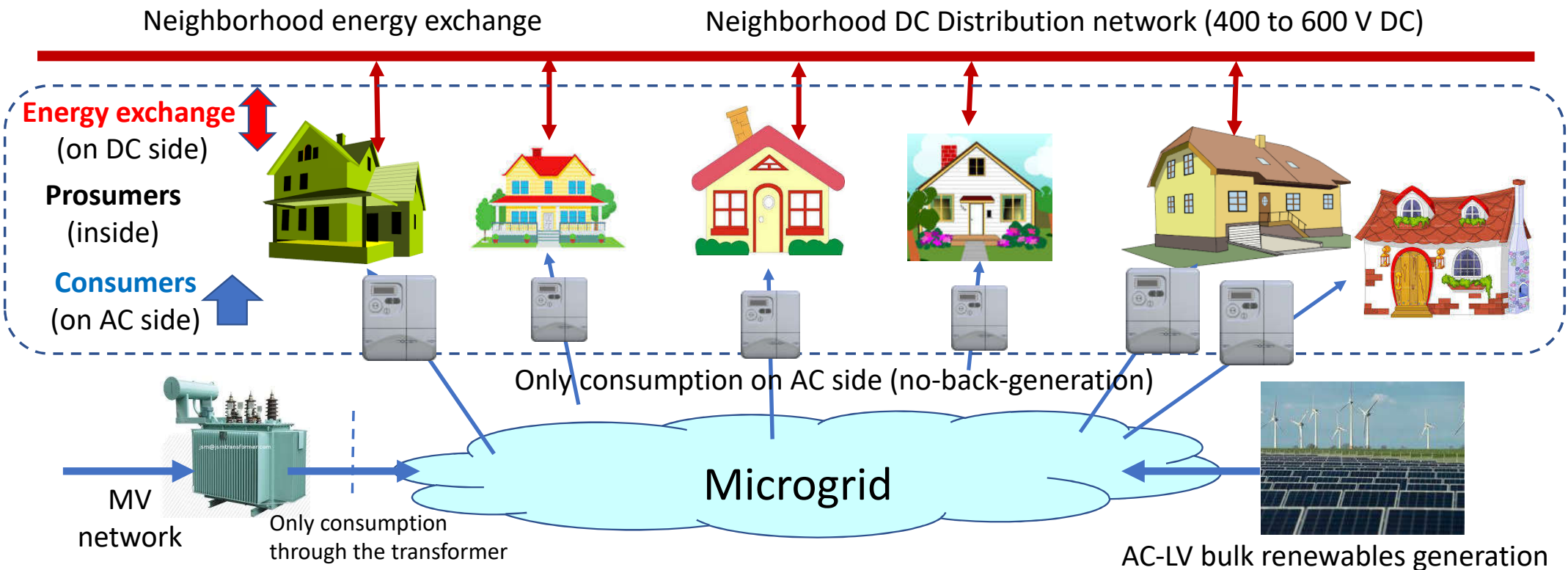
Energy exchange over the **AC-based energy community**



Enabling Energy community connection in a **microgrid**

Unidirectional consumption over the AC energy community

DC-based energy community exchange



Rhizomes of Nobel Grid over many other EU projects

WiseGRID



RES, storage, EVs and enhanced smart grids

SUCCESS

High cyber-security with PUF technology



NOBEL GRID

The project which pushed the concept



Storage4Grid



Using USM for valuing prosumers with storage/EVs

ITCity



(ERA Net LAC 2016), 2017-2020

Smart City awareness

FISMEP



(ERA Net Smart Grids Plus), 2017-2020

Data integration in FIWARE platform

NRG5

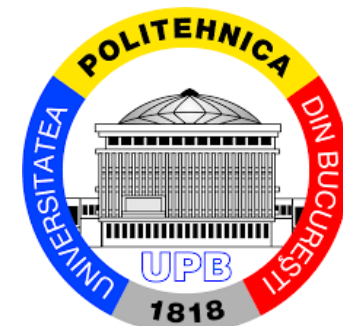
Blockchain technology in SMX / SLAM



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Thank you for your attention

Questions ?

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