



EUCloudEdgeIoT.eu

Digital Platforms for the Cloud-Edge-IoT, Innovation through Open Source & Software

Edge DER analytics

Enabling DER Participation into TSO-DSO Flexibility
Markets

Laurent SCHMITT, Digital4Grids President



Funded by
the European Union

- ☁ Digital4Grids (D4G) is developing new generation multi sided platform for technical aggregation of Distributed Energy Resources (EV Charging, Heat Pump, Solar and Storage)
- ☁ D4G has established partnership for edge devices with Dcbel for edge residential Energy Management and Clem for edge EV Charging Management
- ☁ Digital4Grids is heavily implied in Onenet demonstration testing new TSO-DSO flexibility market APIs and Eddie prototyping dataspace for residential Energy Management



2. IoT and Edge Computing use cases

Control Room Architecture for Future Grids

Larger volume of data
Inertia reduction

→ →

Overcome traditional SCADA systems

Ingredients:





DER Domain Target

Energy
Heat Devices and
White Appliances



Electromobility
V1G and V2G Charging



Buildings
Solar self consumption
with storage



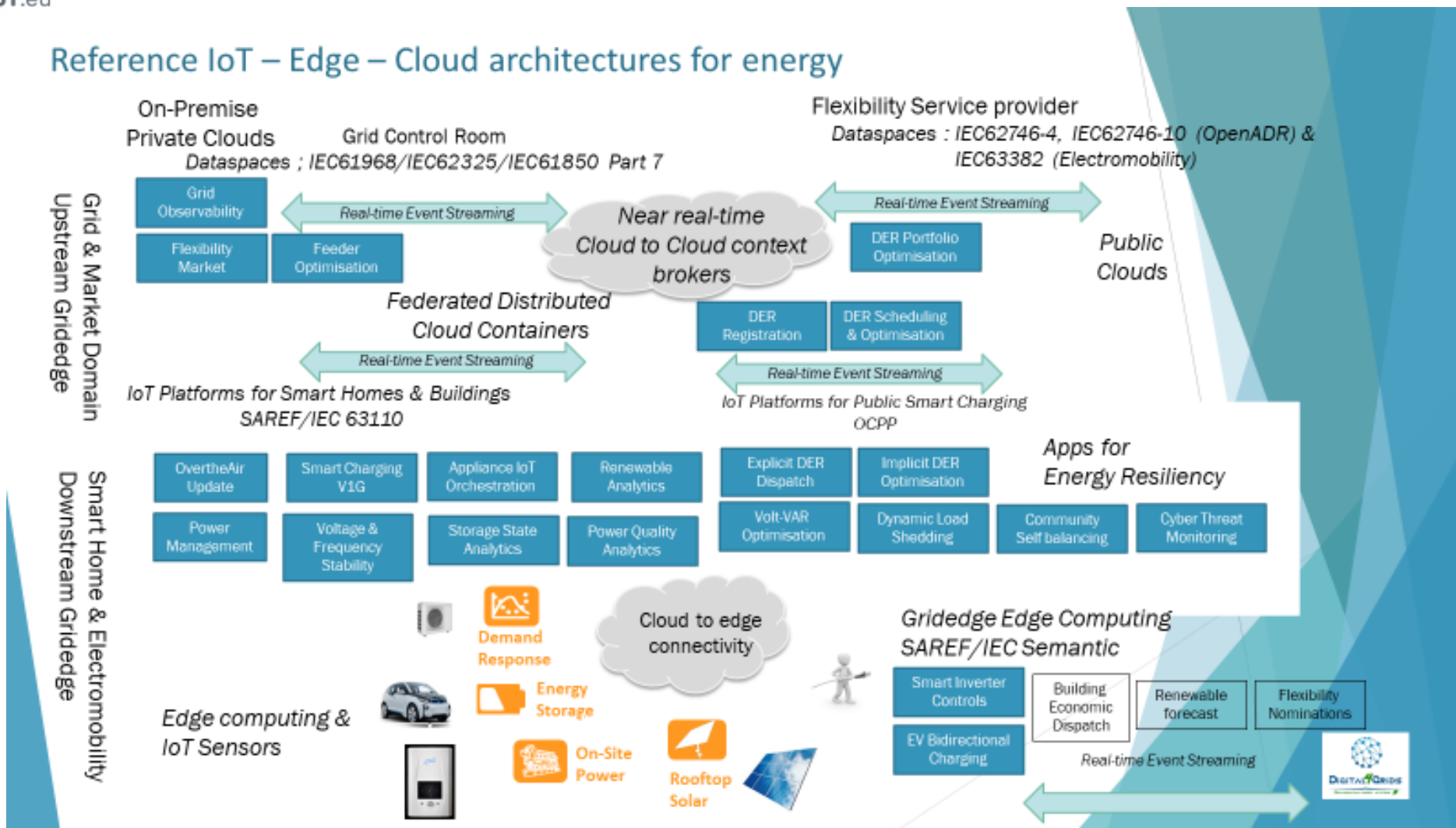
Objective to test new edge architectures through Home Energy & Public Charging domains

- ☁ Interest in Piloting emerging Smart IoT platform and decentralised intelligence
- ☁ Target to prototype distributed computing at DER edge to improve Grid resiliency (V2H/V2B), maximise Renewable local self consumption and enable real-time flexibility interactions
- ☁ Demonstrate Cross Domain standardisation and DER orchestration (energy, electromobility and building) and upscaling of edge infrastructure hardware leveraging Dcbel and Clem hardware
- ☁ Interest to integrate a larger scale consortium adding complementary usecases



Target IoT-Edge-Cloud architectures for energy

Reference IoT – Edge – Cloud architectures for energy





Capitalise on first MVP developments

EUCloudEdgeIoT.eu

Grid Control Rooms



DER Registration & Observability

TSO-DSO
Coordination



Flexibility Market Platforms



DER Group Bidding and Activations

Flexibility Service Provider
DER AutoTrader Interface

REST APIs with CIM Based messages IEC62325 & 61970

Streaming APIs to
SO Platforms
observability

REST APIs to for
registration, bidding
& activation

DER
Aggregation

DER Baseline &
Flexibility Calculation

Owner
Consent

DER
Data repository

Back end Autotrading app
to Grid Operators

Event Streaming Layer & Orchestration

Cloud containerized environment

DER Event & Time Serie
Data Spaces

REST APIs to IoT
Platforms for DR

REST APIs to IoT
Platforms for EV

MQTT APIs to IoT
Platforms
for Distributed PV

Data & Service
Platform

Front end My Flex&CarbonData
to Prosumers



Demand
Response

V2X



Data Space
Interactions



Distributed
Storage



Rooftop
Solar



**New edge computing &
IoT integration
for energy and flexibility management**

Impact and next steps

☁️ Key benefits

- ☁️ Accelerate renewable and EV Charging deployment in existing Grids through flexibility markets and flexible connections
 - ☁️ Optimise Grid reinforcement needs, minimize delay
 - ☁️ Enable prosumer participation in flexibility markets
 - ☁️ Take advantage of new edge hardware platforms (TRL3-4) and new prototype dataspace projects (data standardization)
 - ☁️ Leverage on-going regulatory developments to scale fast (Flexibility Code, Energy Sharing through Communities, Data Act)
 - ☁️ Investigate Cloud hybrid architectures to minimise cloud cost and carbon footprint
- ☁️ Next steps : Identify relevant partner consortium to join and contribute to associated proposal



EUCloudEdgeIoT.eu

