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Agenda

1. IoT & Edge Computing: what does it mean for the Energy sector?
2. Take aways from the EU conference on 22th of April
3. Ambition & needs of Europe, as expressed by the EU commission
4. Suggested approach: from vision to action



1. IoT & Edge Computing: what does it mean for the Energy sector?

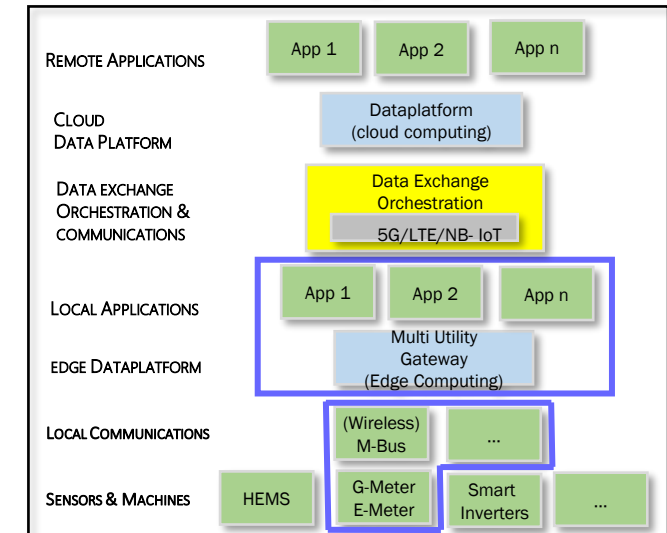
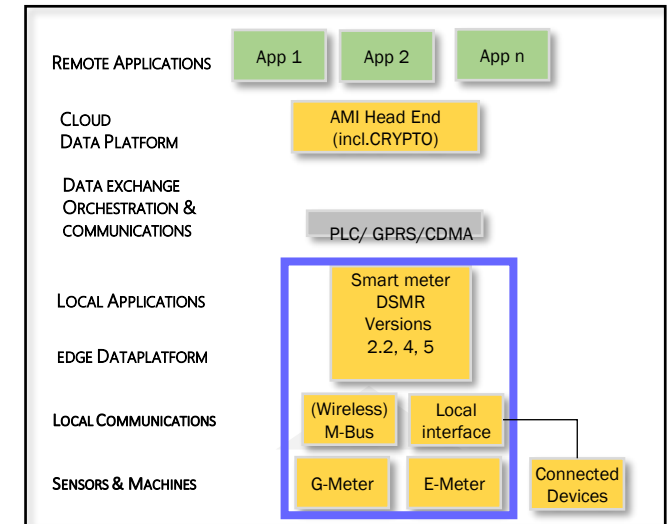
Trends in the Energy Sector

1. The Green Deal is the driving Mission
2. Decentralisation of the Energy system is driving intelligence, needed for the market & system operations, to the edge
3. Affordable implementation of the Green Deal requires an integrated approach over energy carriers, sectors & governance levels
4. The perfect storm is where the energy transition and digitalisation meet
5. Data at the edge requires trust:
The customer will have to be in control over his/her data representing his/her role & responsibility in the future energy system



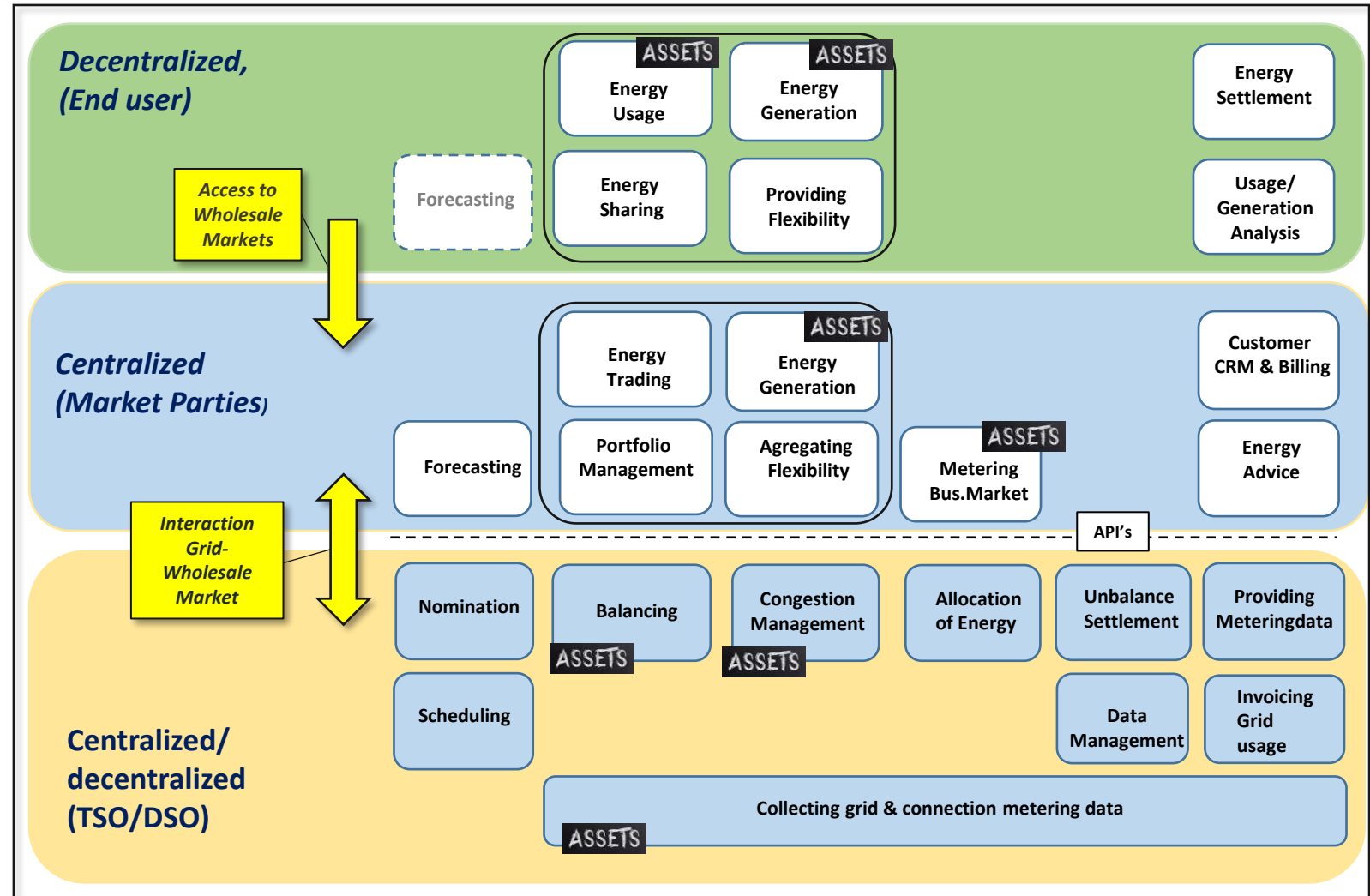
Meaning.....

- The future Energy System will be fully data driven
- To be designed from an overall system perspective, no silo's:
 - Market – Public domain (eg before & behind the meter)
 - Sector cooperation (eg Energy- Mobility- Building sectors)
 - Public sector (Europe- National- Municipalities)
- How to translate “unbundling” to the digital space:
 - How to govern the “digital twin” of the energy system ?
 - Who has access to which data & services, based on which agreements ? (9 building blocks “afsprakenstelsel”)
 - With systems operations to remain as a neutral service
- IoT & Edge Computing is a must for the Green Deal realization:
 - Required for demand/response, realtime data processing, multiple simultaneous actors on one connection, EV integration, new WAN protocols, etc.
 - Upgrades or next generations of smart meters in Europe should not be a smarter copy of existing smart meters, but be based on IoT and edge computing architectures



Intelligence at the edge, in the context of the whole energy system

- System Operations: interaction with millions of end-user owned assets
- End-user: access to wholesale markets: blurring boundaries
- Steps in defining “unbundling” in the digital space:
 1. Roles & responsibilities
 2. Interaction between roles
 3. Processes enabling these interactions
 4. Data & data exchange in these processes
 5. Requirements for edge & cloud computing platforms
- Interaction patterns:
 - Cloud - cloud
 - Edge - cloud
 - Edge - edge



Roles & Responsibilities



2. Take aways from the EU conference 22th April 2021

- High potential and increasing momentum for Europe on IoT & Edge Computing
- The need for openness between edge to cloud and cloud to cloud is generally agreed
- There are a significant number of (sector specific) alliances active in the field of IoT & Edge Computing
- Only via collaboration Europe will be successful:
“statement EU commission: collaborate on platforms and standards, compete on solutions on top of it”
- How to incorporate Trust, Privacy & Security in the overall ecosystem
- Develop data exchange orchestration per sector/domain and separate cross domain orchestration, within a horizontal European framework
- Certain sectors are active (automotive, ICT, telecoms, industrial, consumer electronics) other sectors needed for green deal realization (energy, government, building sector, agriculture) are still less visible





Agile
LEARNING



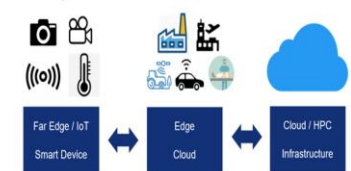
3. Ambition & needs of Europe, as expressed by EU Commission

Objectives

- **EU Green Deal objectives 2030-2050,** including:
 - End customers commitment & engagement
 - Affordability:
 - *Demand response mechanisms*
 - *System integration (electricity, gas, heat)*
 - *V2G integration*
- **Digital Business Ecosystem:**
 - Well functioning data markets
 - Welfare for all EU citizens
 - Data Privacy ensured
 - Cyber secure
- **European competitiveness in IOT & Edge computing**
 - Leveraging European industry's expertise

Requiring

- *Clear Cloud-IoT & edge objectives connected to the Green Deal mission*
- Cross sectoral collaboration
- Speed: agile way of working at all levels
- Openess of the digital ecosystem (standardisation create markets)
- Clear governance on data exchange
- Public-private cooperation, going beyond projects (eg. between DSOs & Telco's)



4. Suggested approach: from vision to action

Establishment of 2 working groups, supported by the EU Commision



1. Use case working group

- Different sectors participating, representing the demand
- Defining & describing the first use cases
- Use case including also non functional requirements for platforms on which these uses cases would ride
- General principles and requirements for data sharing (eg trust fabric, privacy, security etc.)
- Uses cases described in a (to be defined) template format
- Not only sector specific but also cross sectoral uses cases
- At least the energy, automotive, building and government sectors should be present (from a green deal perspective)
- The use cases are input for the platform group



Iterative process



2. Platform working group

- Participants coming from all relevant alliances and collaborating
- Sketching a functional reference architecture (agnostic) as basis for solutions architectures
- Providing input to the template for the use case group (what needs to be in ?)
- After receiving use cases, showing how these to implement by delivering a functional specification (technology agnostic) of the solution platform(s), including the standards used
- Feeding back questions and remarks to the use case group

Envisaged Results

- Well defined use cases that could be used by everyone in Europe
- A well-defined functional specification (technology agnostic) including an accompanying set of standards for the platforms to be used and supporting the elaborated and future use cases.

Possible questions for the panel discussion

- What is the best approach to achieve first results by 2025 for the energy sector (so that IoT & Edge Computing can contribute to the realization of the 2030 Green Deal Objectives ?)
- Is there willingness & commitment at stakeholders to contribute:
 - Sector specific experts to express demand/ needs in clear formulated use cases
 - Cooperation between alliances (“Alliance of Alliances”) in the definition of IoT, Edge and Cloud platforms, based on openness and standards ?
- What should be the role of the EU commission to ensure timely the envisaged results ?

