Enabling Smart Energy as a Service via 5G Mobile Network advances

STRATEGIC CHALLENGE AND AMBITION

NRG-5 will contribute significantly to the 5G PPP/5G Initiative research and development activities by advancing the state-of-the-art in virtualization-based communication networks technologies, making them suitable to support Smart Energy as a Service at large Scale.

STRATEGIC OBJECTIVES

NRG-5's ultimate goal is to enable the deployment, operation and management of existing and new 5G communications and energy infrastructures (in the context of the Smart Energy-as-a-Service), providing security, resilience and high availability mechanisms, via:

- ***Contribution to the 5G-PPP infrastructure***, highlighting the limitations of current network infrastructures and the need for a decentralized, trusted, scalable and lock-in free plug 'n' play mechanism.
- A ***software stack*** for 5G prototypes and traceable VNFs to demonstrate *mMTC*, *uMTC* and *xMBB* communications, end-to-end *security* and *MCM* to enable secure, scalable and energy efficient communications.
- A ***micro-cloud extended Mobile Edge Computing*** open source software stack, facilitating deployment of MTC-related and utility-centric VNFs.
- An ***extended 5G ETSI-MANO*** *framework* integrating analytics to address utility-centric VNFs optimal sizing, chaining and lifecycle management.
- ***State of the art 5G*** laboratories and real-life trial demonstrators.
- ***Recommendations***, on 5G scalability, resilience and high availability to address requirements along with business model to handle Critical Infrastructures service level agreements.

VALIDATION

NRG-5 results will be validated at 4 state of the art 5G laboratories and 2 real life trial demonstrators (both electricity and gas) offering multi-RAT connectivity over electricity distribution, transportation infrastructure. Smart energy proof-of-concept applications will validate the 5G results via smart energy use cases that:

- ***Realize decentralized, trusted lock-in free*** "Plug & Play vision".
- ***Enable aerial Predictive Maintenance***, for utility infrastructures.
- ***Enable resilience and high availability,*** via Dispatchable Demand Response.

EXPECTED IMPACT

NRG-5 will balance innovation and development activities, simultaneously exposing concrete communication and standardization plans in close collaboration with 5G PPP Initiative. NRG-5 will deliver:

- ***5G proof-of-concept infrastructure demonstrators***, to be used by Telcos, Utilities and service providers.
- Driving ***Business innovation*** and creating ***jobs*** and a ***culture of training*** in 5G communication and energy networks.
- Accelerating the ***growth of European SMEs and stakeholders*** and creating a ***roadmap*** for 5G communication/energy network.

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