Smart5Grid

Demonstration of 5G solutions for SMART energy GRIDs of the future
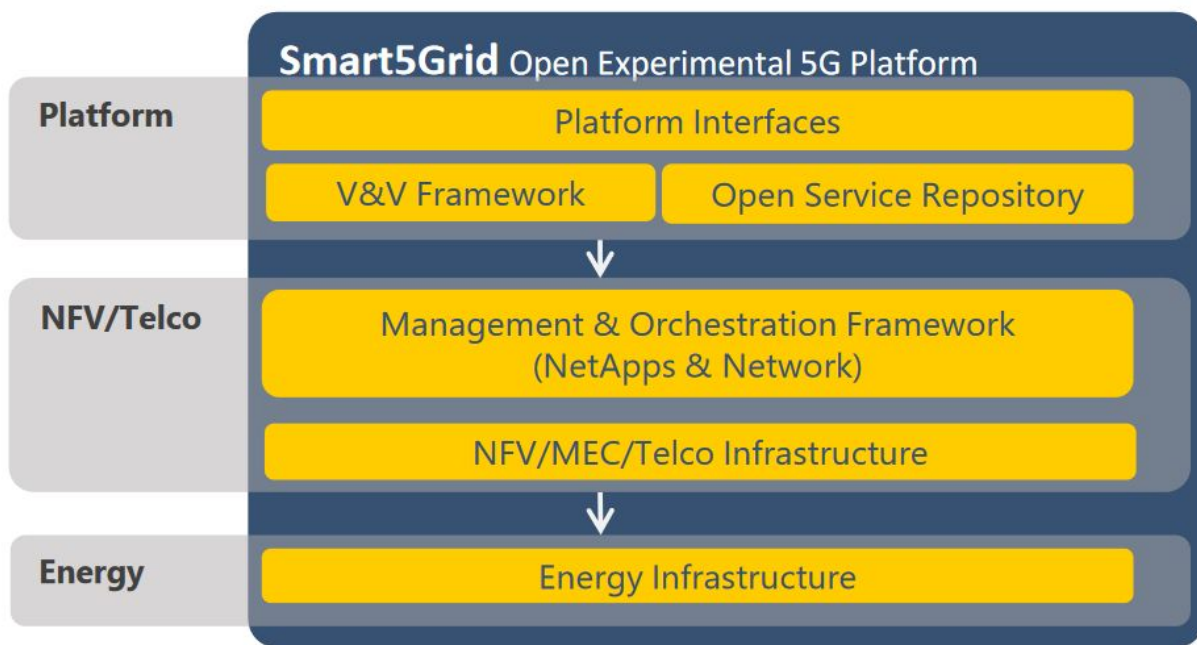
https://smart5grid.eu/

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Demonstration of **5G** solutions for **SMART** energy **GRID**s of the future

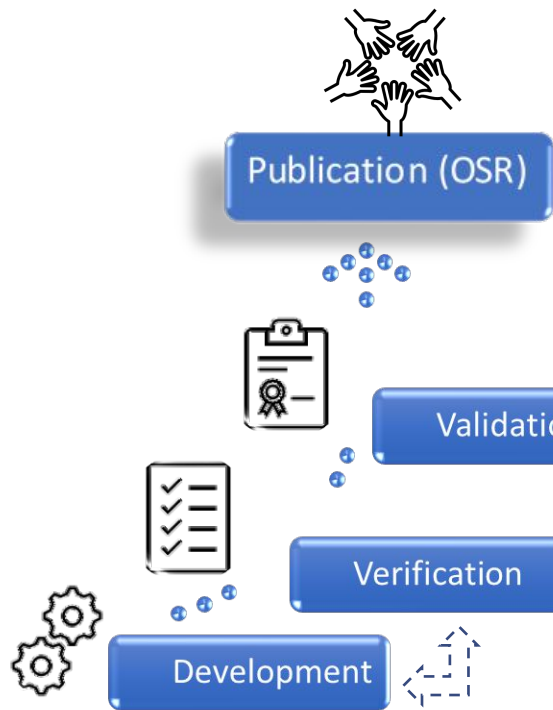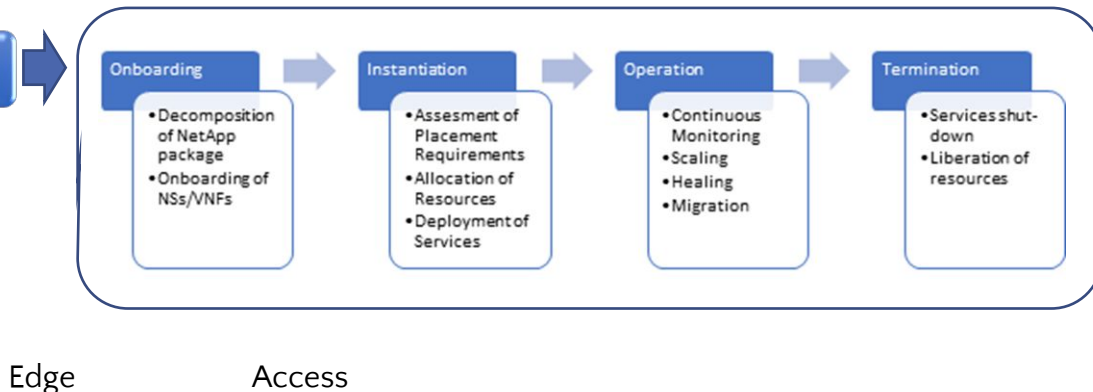# Smart5Grid NetApps

The **Smart5Grid platform** will embrace DevOps practices and leverage the latest NFV, MEC and Slicing technologies to allow developers to validate 5G enabled **NetApps** specifically designed for energy focused scenarios. The validated NetApps will then be made available on **an Open Service Repository** for discovery, inspection and consumption by 3rd parties.

Smart5Grid NetApps

1. **Development:** according to Smart5Grid NetApp convention
2. **Verification:** Syntax, Integrity and Topology
3. **Validation:**
   1. unitary tests on a staging environment,
   2. deployment and instantiation on the smart5Grid Telecom infrastructure.
   3. If validation fails, the NetApp will go back to the development phase.
4. **Publication:** published in the Smart5Grid OSR if the owner wish so.

Publication (OSR)

Validation

Verification

Development

Onboarding
- Decomposition of NetApp package
- Onboarding of NSs/VNFs

Instantiation
- Assesment of Placement Requirements
- Allocation of Resources
- Deployment of Services

Operation
- Continuous Monitoring
- Scaling
- Healing
- Migration

Termination
- Services shut-down
- Liberation of resources

Edge   Access

Communication needs for smart grids applications

Smart5Grid

- Increased **automation** and digitalization in decision making process;

- Tighter **coupling between generation and consumption** of electricity due to large number of smaller power generating units distributed across wide areas of the grid;

- Lack of grid **observability**, especially below the power substations;

- **Fusing** large–scale of data gathered from different type of sensors and advanced measurement units.

Smart5Grid Pilots

Smart5Grid

Italian Pilot (Olbia)
Automatic power
distribution grid fault detection

Exploit edge computing capabilities of 5G to ensure URLL and guaranteed QoS for the communication layer of the grid automation system, including cybersecurity.

Use of 5G private network communication and edge processing power for AI-based fast image and UWB sensors data analysis to ensure safety of maintenance workers in HV substations

Spanish Pilot (Barcelona)
Remote inspection of automatically
delimited working areas at distribution level

Bulgarian Pilot (Slaven)
Millisecond level precision distributed
generation monitoring

Exploit machine type communication and edge computing capabilities of 5G to facilitate integration of IoT based sensors and measurement units for enhanced monitoring and control of distributed RES.

Demonstrate cooperation of two Telecommunication Providers to offer a cross-border 5G network, fulfilling the reliability and latency constraints of a virtual phasor data concentrator (vPDC).

Greek - Bulgarian Pilot
Real-time wide area monitoring

Consortium Composition

24 partners, 2 Linked Third-parties, 13 SMEs

Thank you!

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