Smart5Grid NetApp

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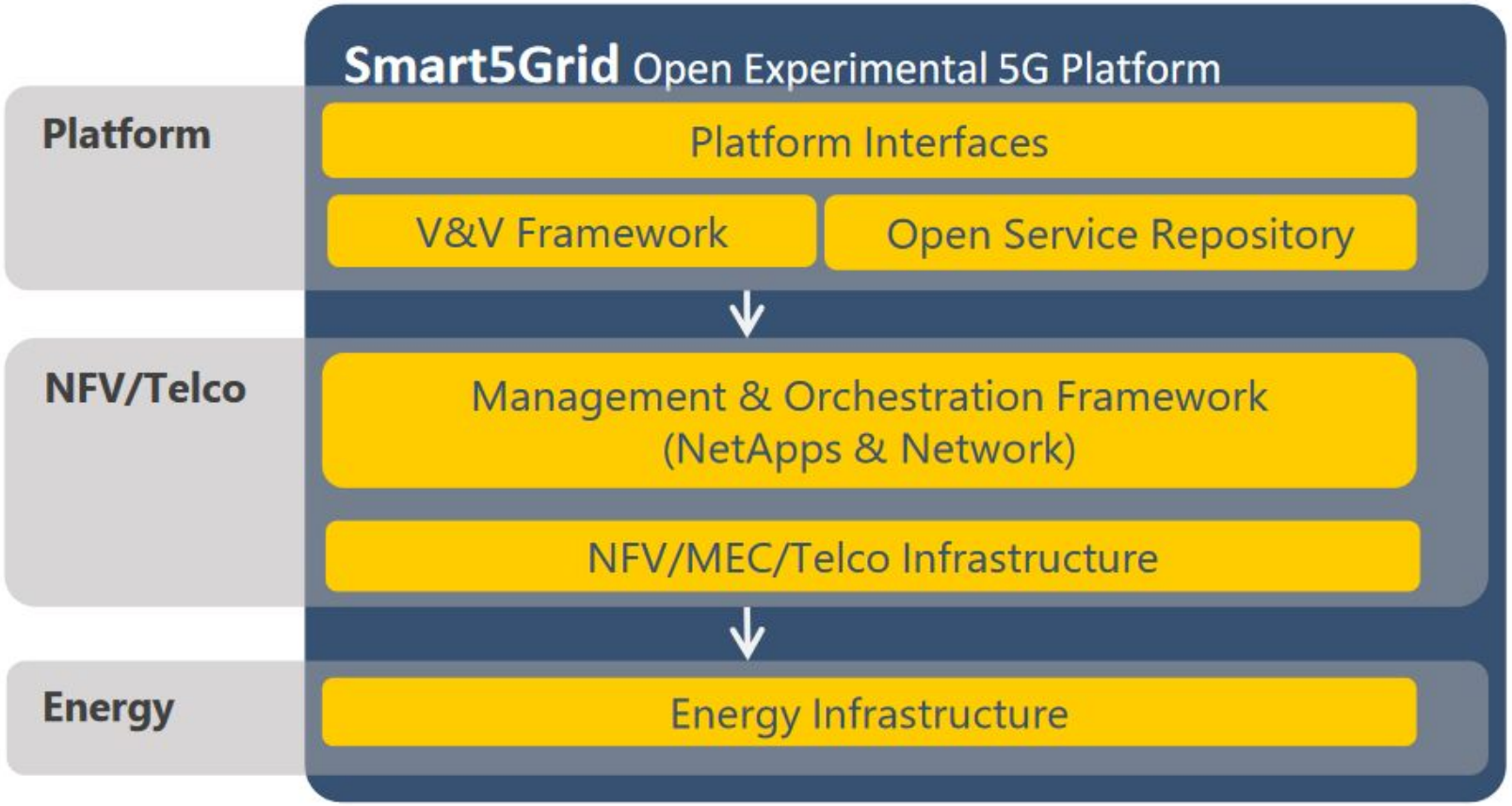
Smart5Grid

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

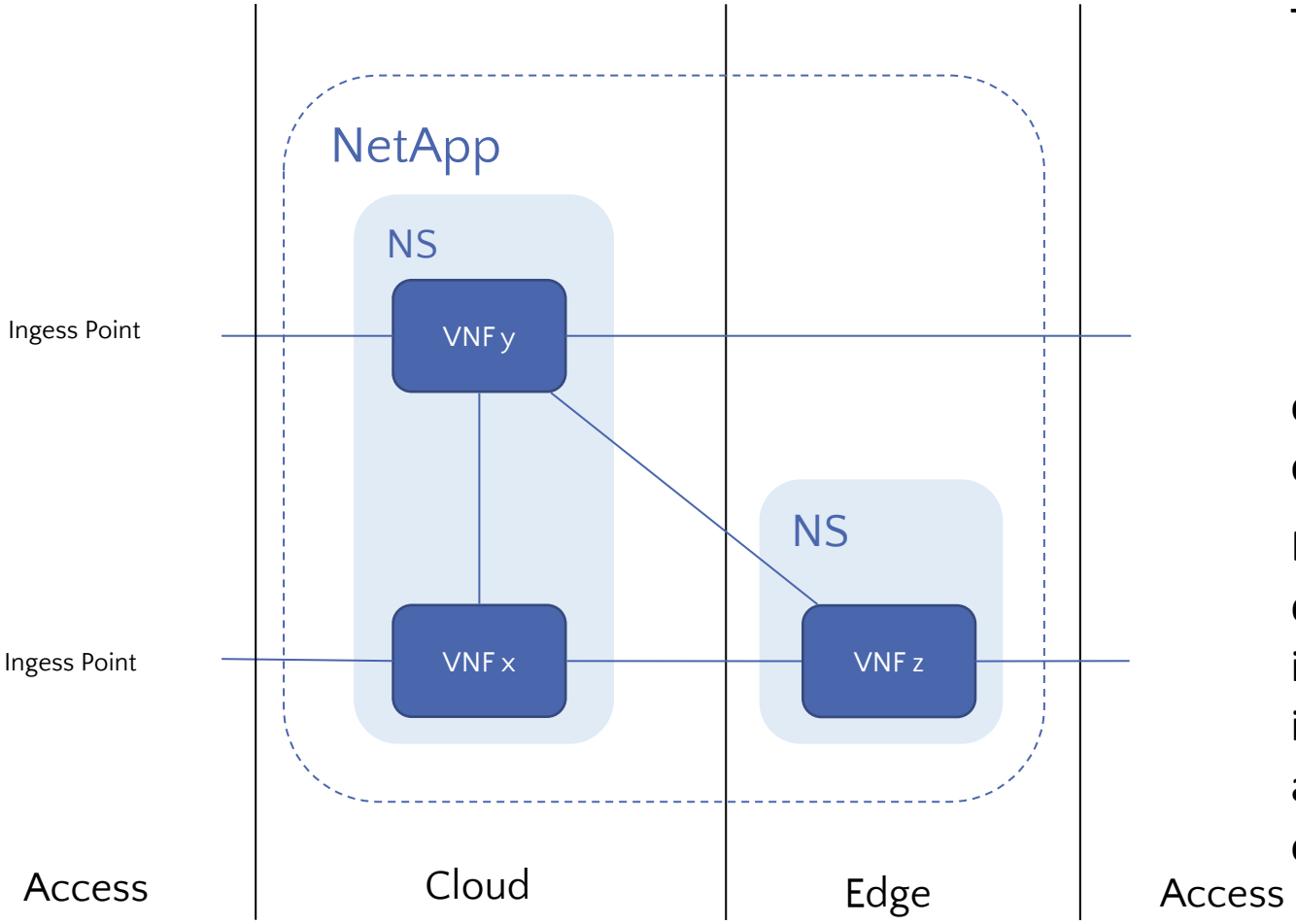
Smart5Grid NetApps



Smart Grid Transition

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



The Smart5Grid NetApp concept intends to:

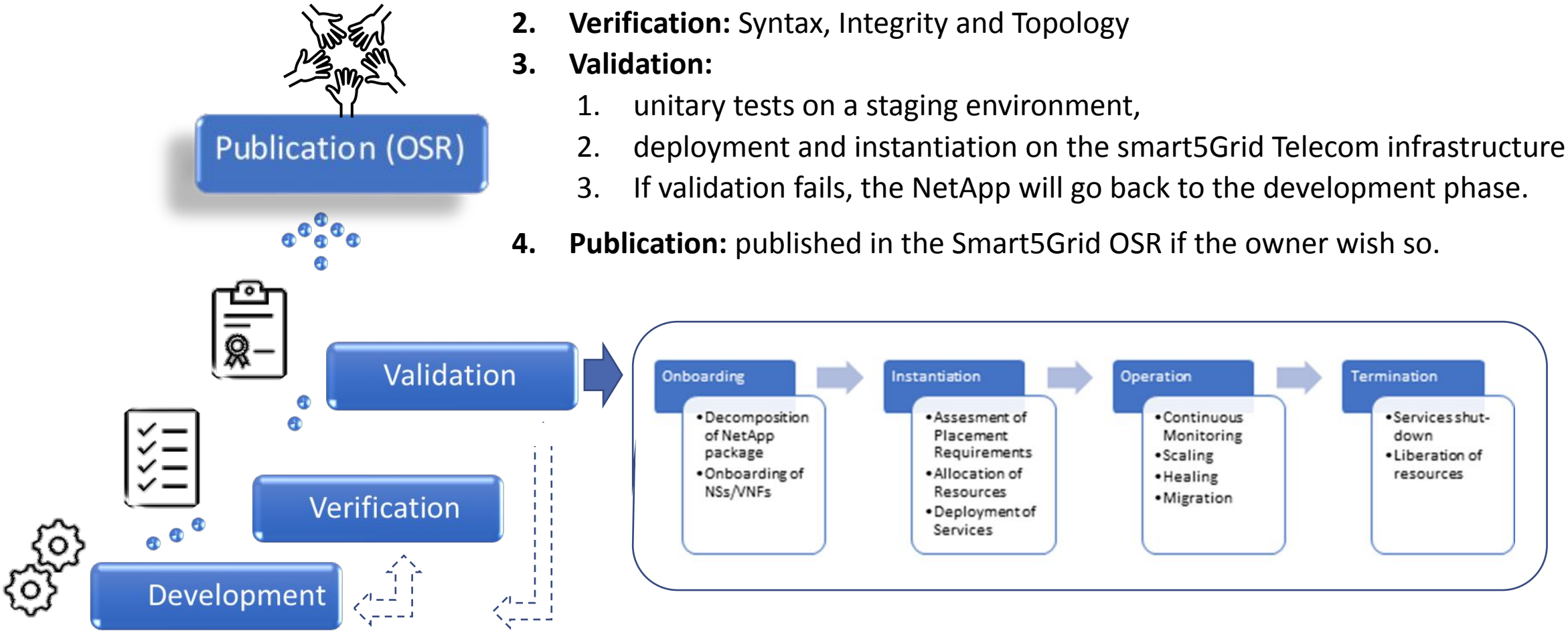
- provide a solution for developers to define vertical applications
- While abstracting the complexities of the network.
- Reducing the level of networking expertise required

cloud-native application made up of VNFs based on containers technology.

By splitting the functionality of the NetApp into decoupled VNFs, the reutilization of software functions is encouraged, but also, whenever possible from an implementation point of view, the opportunity to take advantage of the cloud/edge infrastructure depending on the application needs.

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.



Communication needs for smart grids applications

- 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

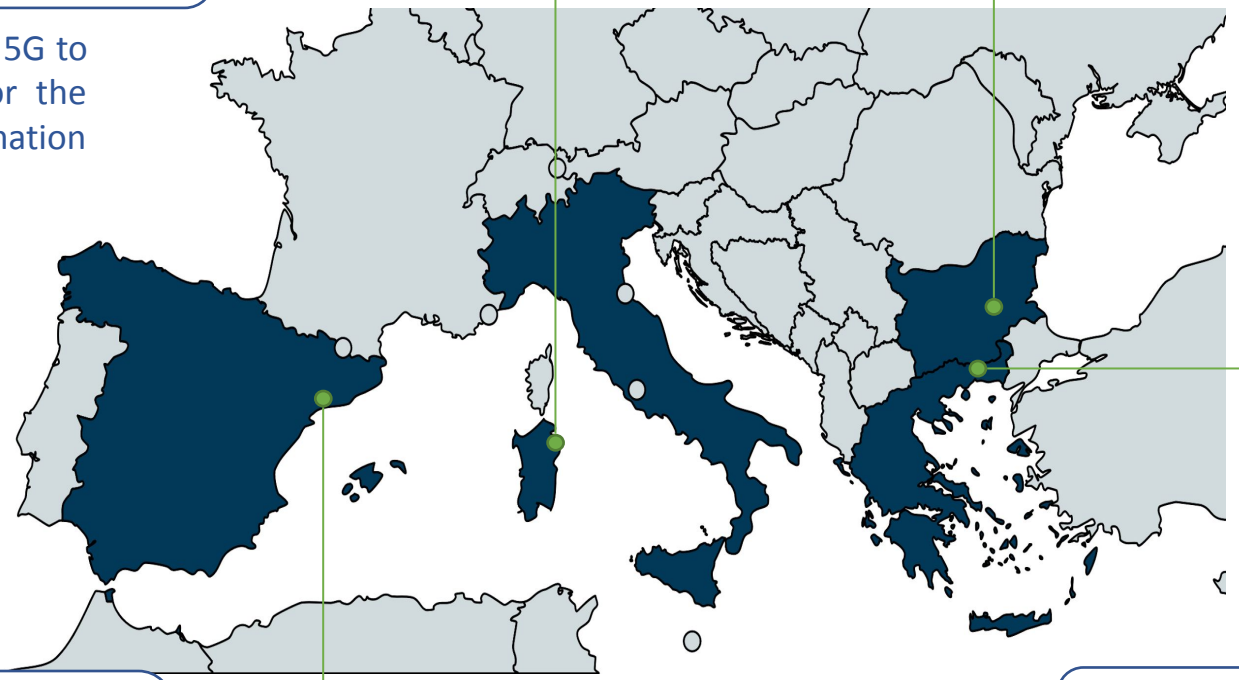
Smart 5Grid Pilots

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.

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.



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

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

Smart5Grid

Coordinator

enel

TELCOs

WINDTRE

OTE GROUP OF COMPANIES

NETISSAT

Tech Companies

ENGINEERING

Atos

Universities/Research institutions

i2cat

HELLENIC REPUBLIC
National and Kapodistrian University of Athens
EST. 1837

University of Cyprus
KOIOS
Research and Innovation Center of Excellence

DSOs

e-distribuzione
e-distribución

TSOs

ECO ЕАД

ադμηε

SMEs

EIGHTBELLS
Independent Research & Consultancy

INFOLYSIS

SC

NBYCOMP
NearbyComputing

axon logic

ubiwhere
SUITING THE FUTURE

ATHONET

SETECHCO

SIDROCO

ENTRA ENERGY

UBITECH
digitizing energy

nosia
- SEÑALIZACIÓN INDUSTRIAL
- EQUIPAMIENTO PARA LA INDUSTRIA

STAM
MASTERING EXCELLENCE

(Linked third-parties of Enel GI&N)

Thank you!

Smart5Grid