Commercial exploitation approaches of SELFNET

Giacomo Bernini

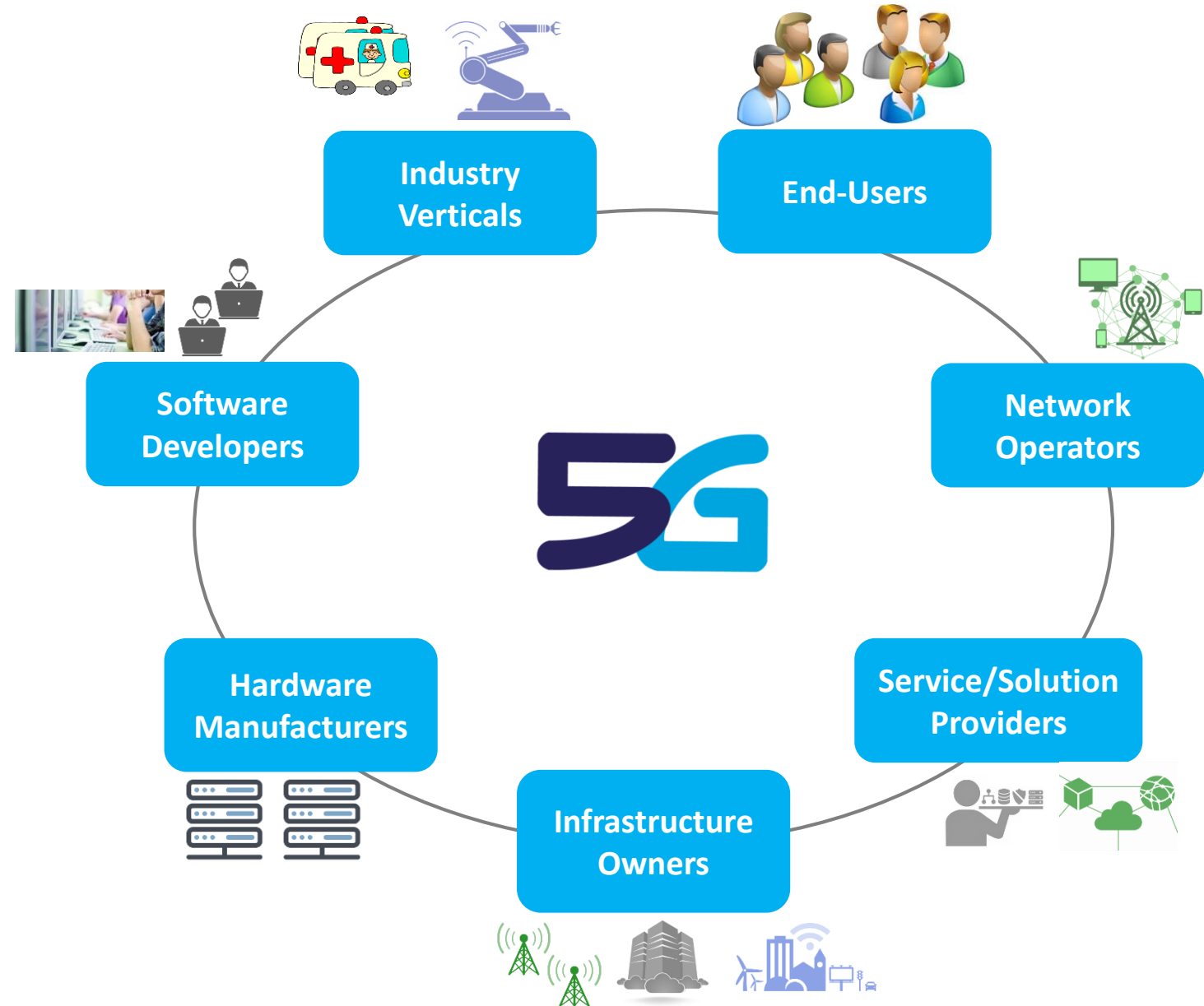*R&D Technical Coordinator*
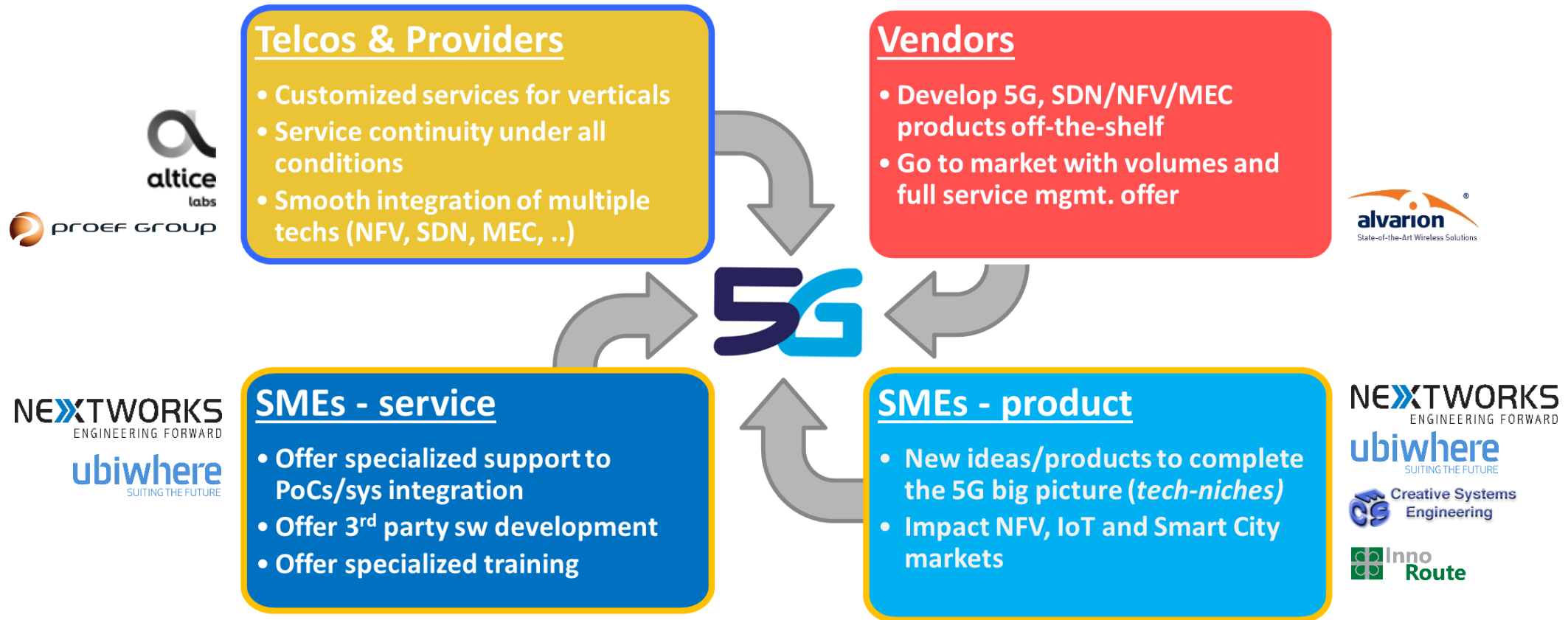*Nextworks, Italy*

www.nextworks.it

A radical transformation of Telcos' environment

- **Digitalization of vertical markets**
  - Automotive, transportation, manufacturing, banking, city management, energy, utilities, real estate, retail….

- **Innovative and heterogeneous technologies**
  - Growth in number of terminal devices and traffic
  - Challenging performance KPIs
  - Multiple network layouts

- **Enriched and automated service model**
  - Auto-provisioned service through central end-to-end orchestration
  - Network analytics to enable autonomic and cognitive management
  - Catalogue driven network and service management
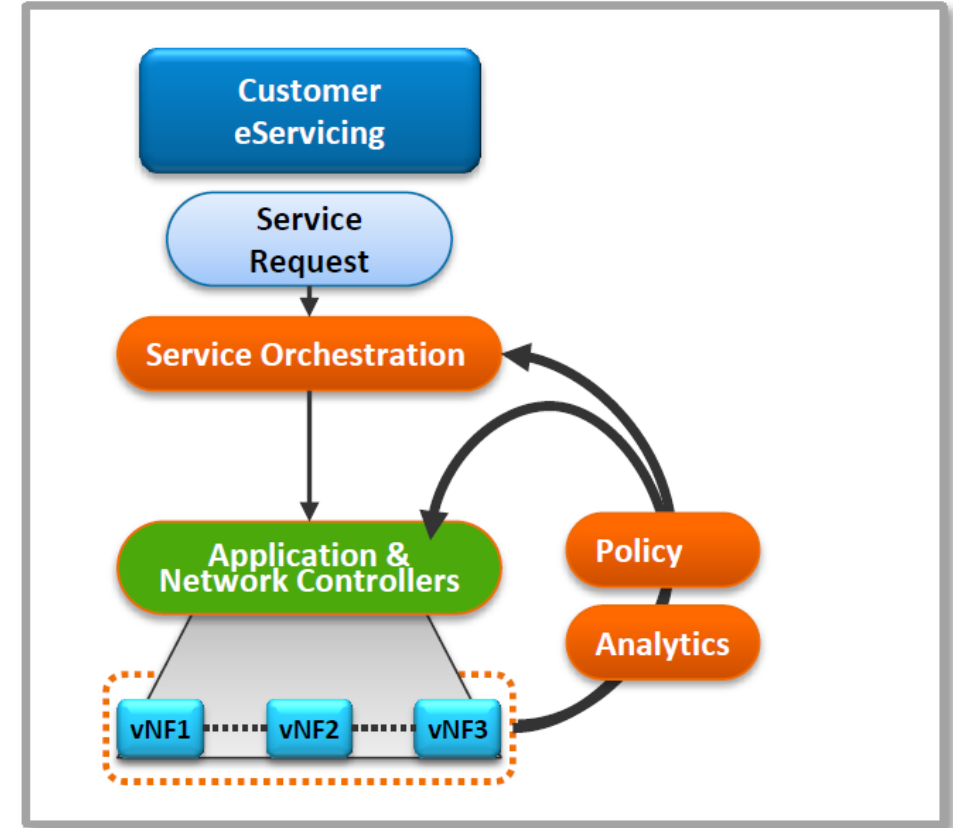
- From the traditional Telco business of
  - *Hardware Manufacturers/Vendors*
  - *Network Operators*
  - *Content/Service Providers*

- To a wider market around virtualized infrastructures with
  - **Infrastructure owners** (e.g. municipalities), offering space in street cabinets, lampposts or buildings along with power supply and connectivity
  - **Software Developers** (e.g. SMEs), providing VNFs, VApps, orchestration & control tools
  - **Multi-Content/Multi-Service/Multi-Solution Providers,** who intend to operate in more than one vertical industry and to develop services and contents for end-users

- **Self Optimisation** opportunities

  - ▪ **"Immersive UWS"** launched April 2017

    - Virtual reality and 5G technologies to transform how students are taught and how staff conduct their research

    - Leveraging on SELFNET's 5G video technologies

    - UWS team leading the technology deployment

  - ▪ **5G Glasgow**

    - Glasgow to become 5G Smart City (June 2018)

      - Secured £24M in the UK's Future City program

      - Partners: *National Health System (NHS), Police Scotland, National Air Traffic System (NATS), BBC*

  - ▪ **SAVE** with **user-assisted QoS** enabled by **TrustNode**

    - Source Address VErification with dynamic network flows adaptation to SLA target (energy-QoE trade-off)

    - Field trial of 6Tree IoT networks starting in Q3/2018

- **Self Protection** opportunities

  - Application of **Machine Learning** techniques in further 5G-enabled scenarios:

    - Protection of Public Safety Networks in emergency situations

    - Securing Medical Cyber-Physical Systems (MCPS) for future healthcare

    - Collaboration with Spanish National Cybersecurity Institute

      - Detection of Domain Generation Algorithm (DGA) based botnets

  - Integration of **SELFNET VNFs** as **security functions** for **Nextworks' evolved media distribution platform** (Symphony)

    - From pure residential to cloud-based and highly distributed system for Smart Cities

  - **Protection** strategies and methodology in **small scale networking infrastructures**

    - Residential gateways (CSE's gateway product)

    - Wireless sensors like the CSE's WiFi sensing beacon/dongle prototype

      - Protection of home and small office WiFi Infrastructures

- **SELFNET's orchestration tools** already under integration into **Altice Labs OSS products**

  - **Catalogue Solution** evolution

    - Transversal knowledge-base framework, including NFV/SDN actuators and/or sensors, serving the actuation and sensing platforms during run-time procedures

  - **Fulfilment/Actuation Solution** evolution

    - Autonomic driven service-level orchestration

    - Integration with heterogeneous network environments and technologies (NFV, SDN and MEC)

  - **Assurance/Sensing Solution** evolution

    - Automatic configuration of monitoring capabilities (interaction with centralized Service Catalogue)

    - Automatic configuration of AI-based KPIs

    - Complex event processing (CEP) techniques in real-time

- New **Smart City ready solutions** developed leveraging on SELFNET's foreground
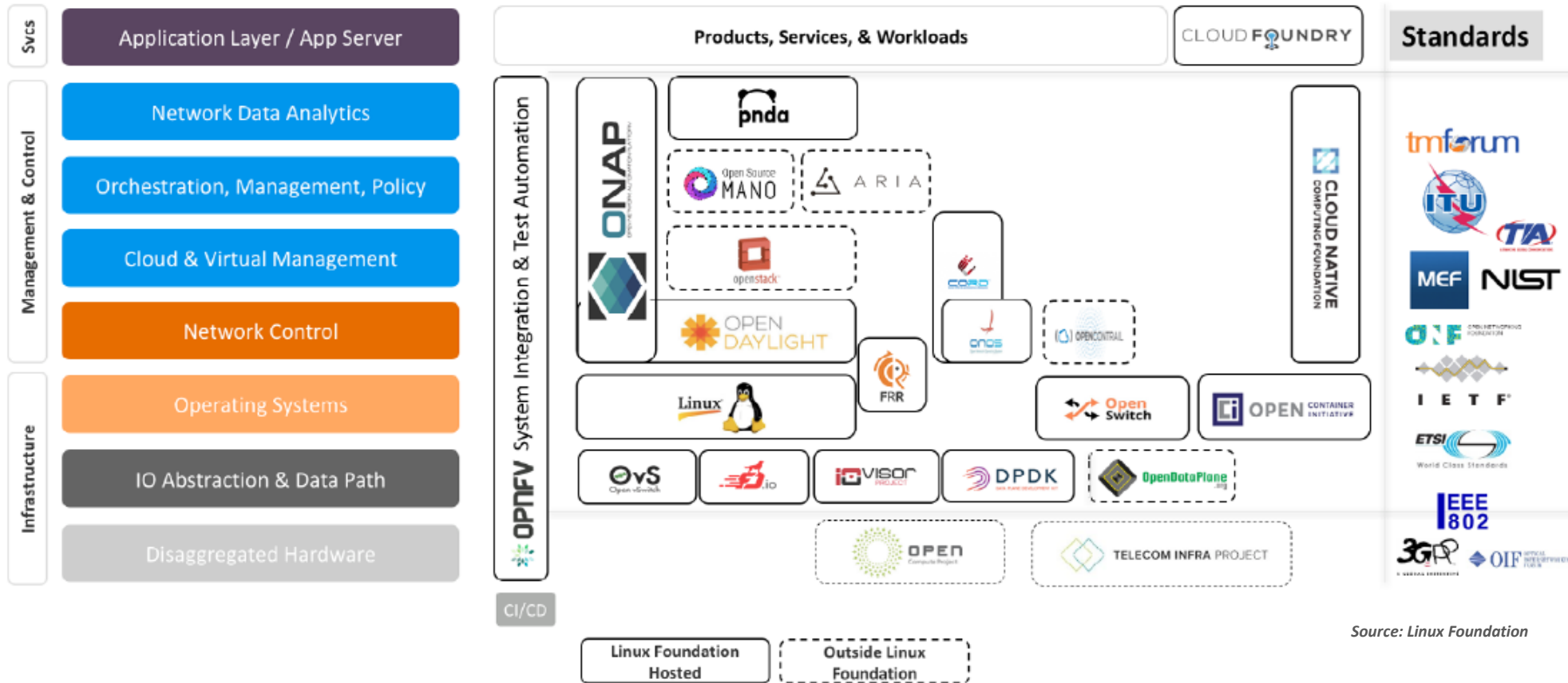
  - http://www.smartlamppost.com/

  - http://unicle.io/

- A new **Network Operating [eco-]System** made of various Open Source frameworks and Open APIs for service orchestration and control

Source: Linux Foundation

**SMEs can master these technologies
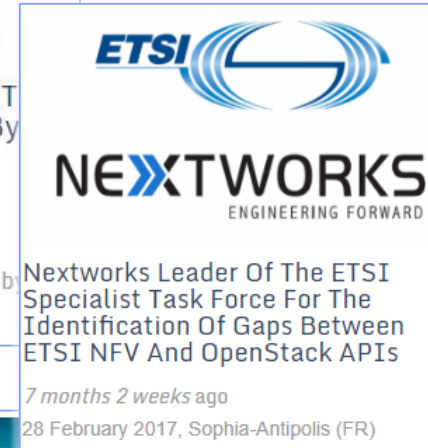to help build innovative services and new products**

- Providing services to **ETSI NFV** and **ETSI MEC**

  - Leader of *Specialist Task Force 530 Identification of Gaps between ETSI NFV requirements and Open Stack APIs*

  - Part of the Experts Team in the *Specialist Task Force 551 MEC Testing Framework*

  - Support the preparation of the 2nd and 3rd ETSI NFV Plugtests

- Participation in the **Italian** project for **5G experimentation**

  - 5G trials in Prato and L'Aquila, coordinated by OpEnFiber and WindTre

  - Nextworks' focus on SDN/NFV MANO technologies

- **3rd-party product development services** in the NFV market

  - Development of a specialized VNF Manager for Virtualized Session Border Controllers operating on OpenStack-based virtual infrastructures

5G Experimentation In Prato (IT
Nextworks In The Project Led By
OpEn Fiber And Wind Tre

59 min 28 sec ago
Nextworks participates to the 5G
experimentation in the city of Prato, led by
OpEn Fiber and Wind Tre.

Nextworks Leader Of The ETSI
Specialist Task Force For The
Identification Of Gaps Between
ETSI NFV And OpenStack APIs

7 months 2 weeks ago
28 February 2017, Sophia-Antipolis (FR)

Nextworks Selected By ETSI CTI To
Support The 2nd NFV Plugtest

1 week 6 days ago
Nextworks R&D team continues to support
ETSI NFV development by providing techinical
support to the organization and extecution of
the 2nd NFV PLUGTESTS planned for Q1 2018.

- **Evolution** of SELFNET App Catalogue towards more **generalized 5G App & Service catalogue**

  - **Hook to DevOps**: from SDK private catalogue to service provider/network operator public catalogue

  - **Hook to MANO federation**: from stand-alone catalogues to a federated catalogue principle for composition of services from multiple service providers

  - **Alignment** with latest **ETSI NFV and MEC specs** for info models and REST APIs

  - **Integration** with company's ETSI NFV MANO tools (soon to be released Open Source)

- **Expert-level training courses on SDN/NFV** architectures and tools

  - Practical experience developed in SELFNET as **key baseline for the enhancement and update** of the courses

  - http://www.nextworks.it/en/research/knowledge-services

- Evolution of the **products portfolio** towards cloudified solutions for **media distribution in Smart City environments**

  - http://www.nextworks.it/en/products/brands/symphony

NFV

SDN

Cloud

Big Data

5G

Internet of Things

ETSI

Providing services for:

Leader **STF NFV OpenStack/VIM APIs**

Experts in **STF MEC Testing Framework**

Tech Team **2nd/3rd NFV Plugtest**

Participant in **NFV, MEC, ZSM, NGP ISGs, OSM OSG**

5G PPP

Member of the **Board of 5G Infrastructure Association**

NETworld 2020

Vice-chair of the **Steering Board**

8 **H2020 5GPPP projects**
(ph. 1, ph. 2, ph. 3)

Member of **AIOTI**

Thank You

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ENGINEERING FORWARD

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