

**Christina Lessi, OTE**



## B5G network architecture for demanding applications in transport and logistics sector

InfoCom World 2024  
12/11/2024



# 6G-Path



*6G-PATH project has received funding from the Smart Networks and Services Joint Undertaking (SNS JU) under the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101139172.*

- ❑ Automated Guided Vehicles (AGVs) can improve both the production process and employee safety for UC stakeholders such as a warehouse. AGVs will streamline operations by reducing delivery times and eliminate the need for employees to manually transport heavy goods, thus minimizing the risk of injuries.
- ❑ This will be achieved by exploring and testing the integration of large-scale extreme IoT-Edge-Cloud scenarios, based on a 5G SA testbed.

KPI name	Description	Objective
Availability	High availability required, so that the human AGV operator should be able to reach, and control AGV if necessary	99,999%
Reliability	Same as above for availability	99,999%.
Latency	Low	<5ms
Throughput	High	>1Gbps

Beyond 5G networks are **not** introduced to **redesign** the production line, but to enable operating models with networking characteristics that **enable added value services**

## Targeted network characteristics

### Better network performance

- High reliable and high available network
- High throughput
- Low latency

### B5G networks combined with cloud computing

- high degree of autonomy
- fast information processing between the robot and its environment

### Slicing

# Testbed architecture



## Packet Core

- SA Rel.16

## RAN

- New Radio
- Rel.17 functions

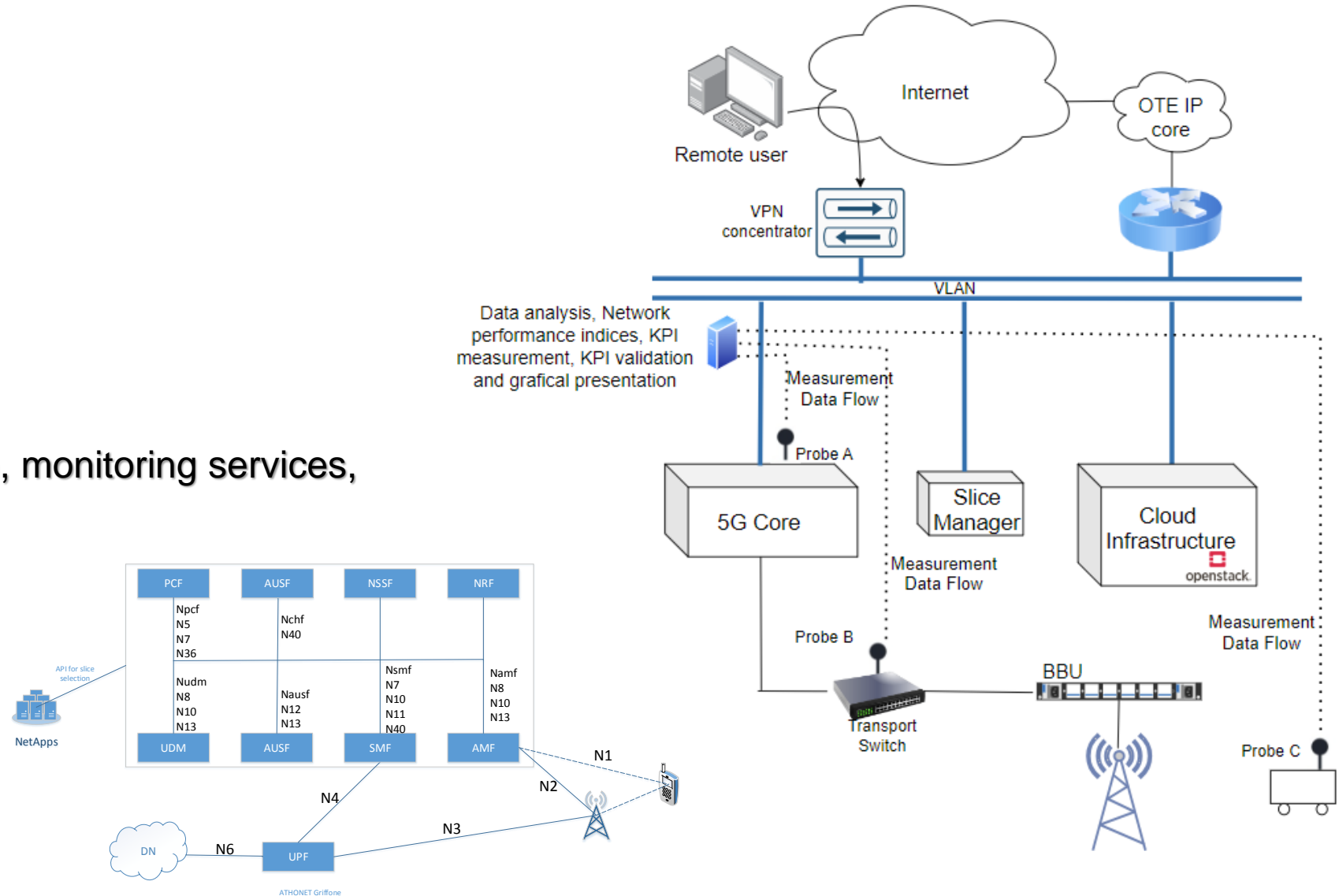
## Cloud Infrastructure

- OpenStack
- Application orchestration, monitoring services, ELCM

## Slice Manager

- Translator
- Security

## Robot, 5G gateway



## ❑ RAN

- ❑ NR technology
- ❑ Integrated with SA Rel.16 5GC,
- ❑ Radio Dot, IRU and BBU (Ericsson)
- ❑ Rel.17 functions

## ❑ Packet Core

- ❑ SA Rel.16

## ❑ Edge Computing

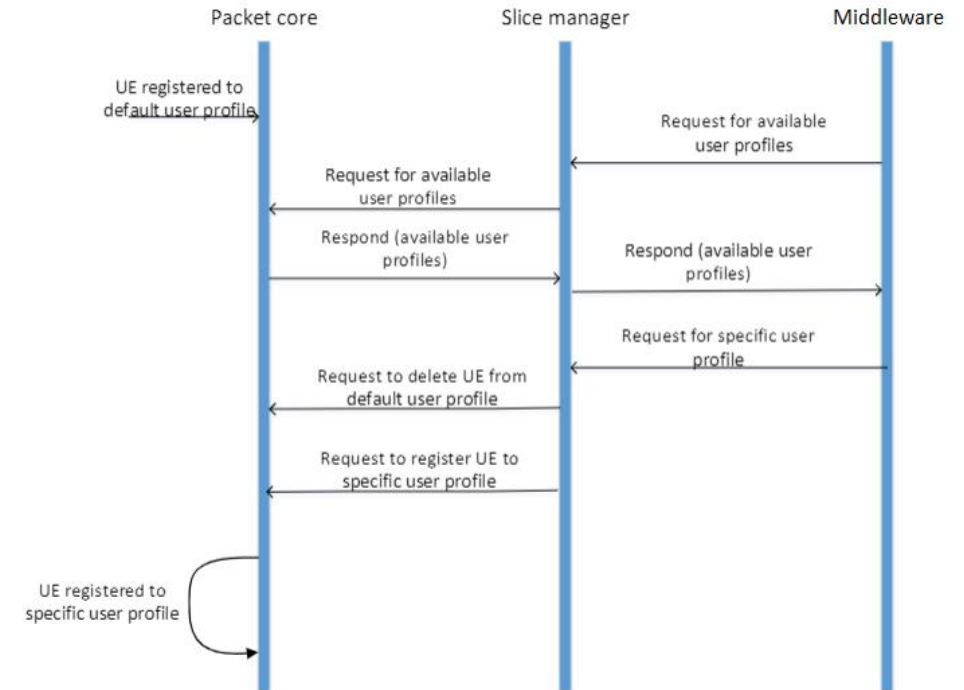
- ❑ Edge computing is supported by providing the available resources on OTE's cloud infrastructure
- ❑ Application processing on the edge

## ❑ Robot

- ❑ Equipped with cameras, temperature/humidity sensors, be able to detect colors and distance from obstacles, be aware of its speed.
- ❑ 5G Gateway
- ❑ As an end user device. Network performance testing will use this router as well.



- ❑ Slicing mechanism components: Orchestrator, Slice manager and Packet Core
- ❑ Orchestrator sends a message to the slice manager to get information about the available user profiles
- ❑ Slice manager forwards the request to the packet core and the packet core responds with the list of user profiles
- ❑ Orchestrator chooses the proper user profile
- ❑ Slice manager sends a request to delete the user equipment from the default slice and re-register it in a new one



- ❑ Next generation networks promises to increase coverage, mobility and throughput, supporting advanced applications
- ❑ Automation introduced to improve available services
  - ❑ Slicing
    - ❑ automated slice change mechanism
    - ❑ poor network performance by analyzing the collected network performance data
    - ❑ decision-making algorithms identify the poor performance and request the slice change

# Thank you for you attention!



OTE



Christina Lessi



[clessi@otereseach.gr](mailto:clessi@otereseach.gr)



[www.cosmote.gr](http://www.cosmote.gr)



# 6G-Path