

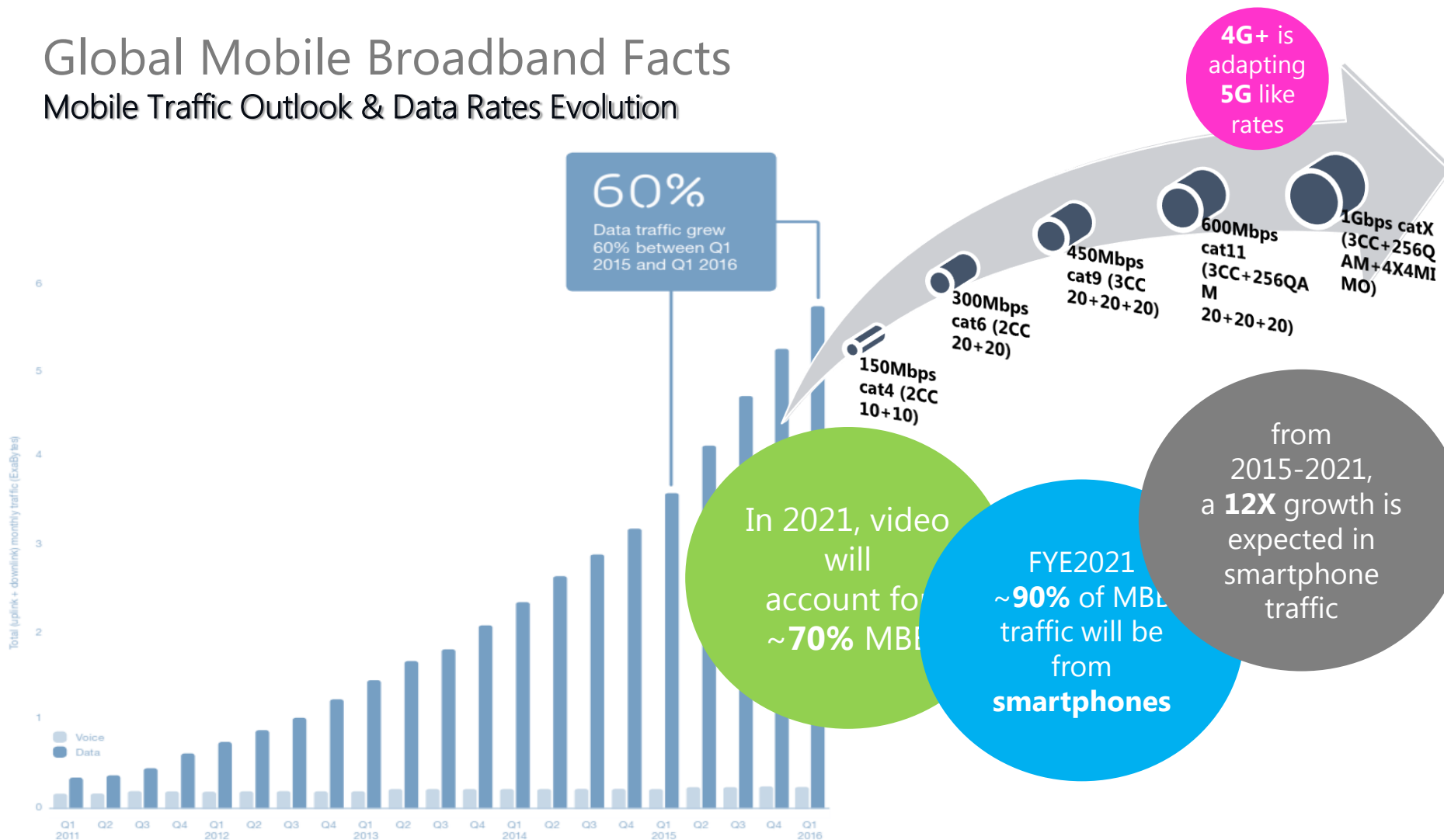
# **Slicing architecture "Slicenet project"**

## **Advanced services in the 5G era "5G-Media project"**

George Agapiou, Measurements & Wireless Research Labs OTE  
Ioannis Chochliouros, Head of research Programs Section, Fixed

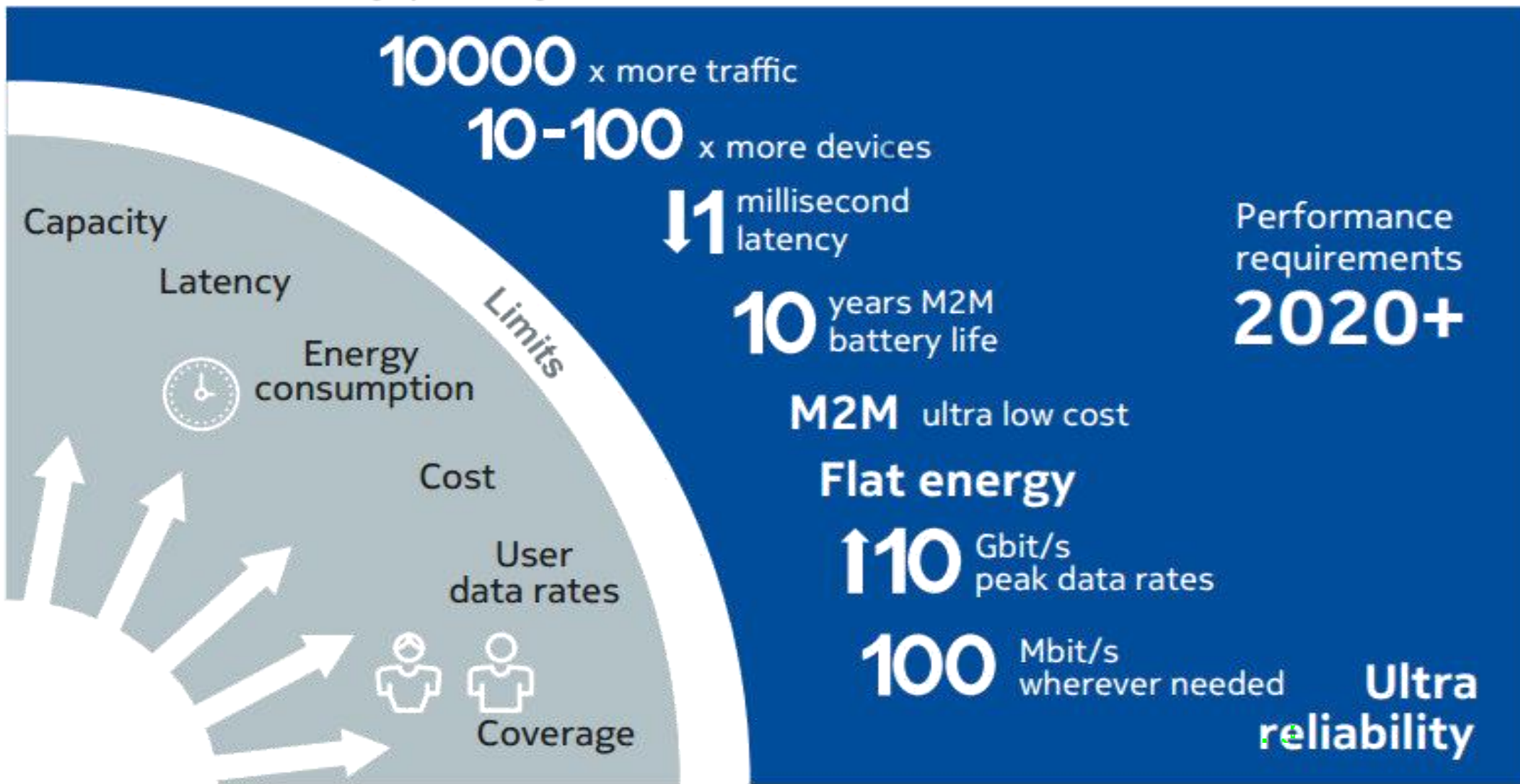
# Global Mobile Broadband Facts

## Mobile Traffic Outlook & Data Rates Evolution



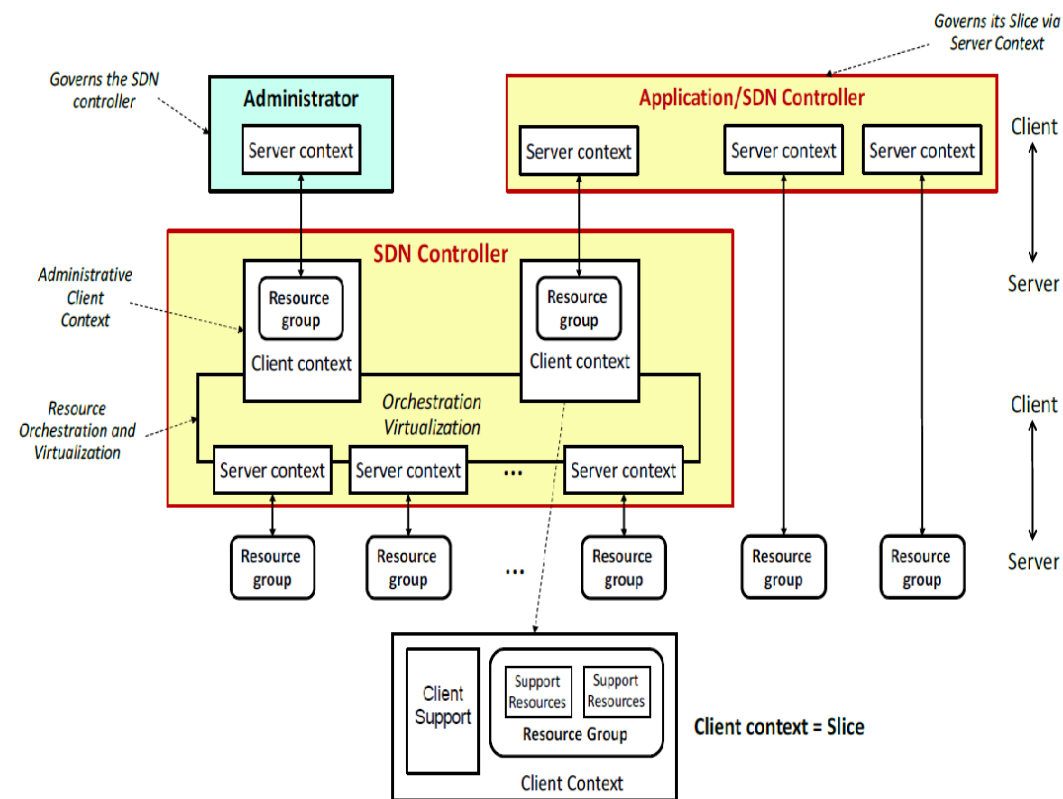
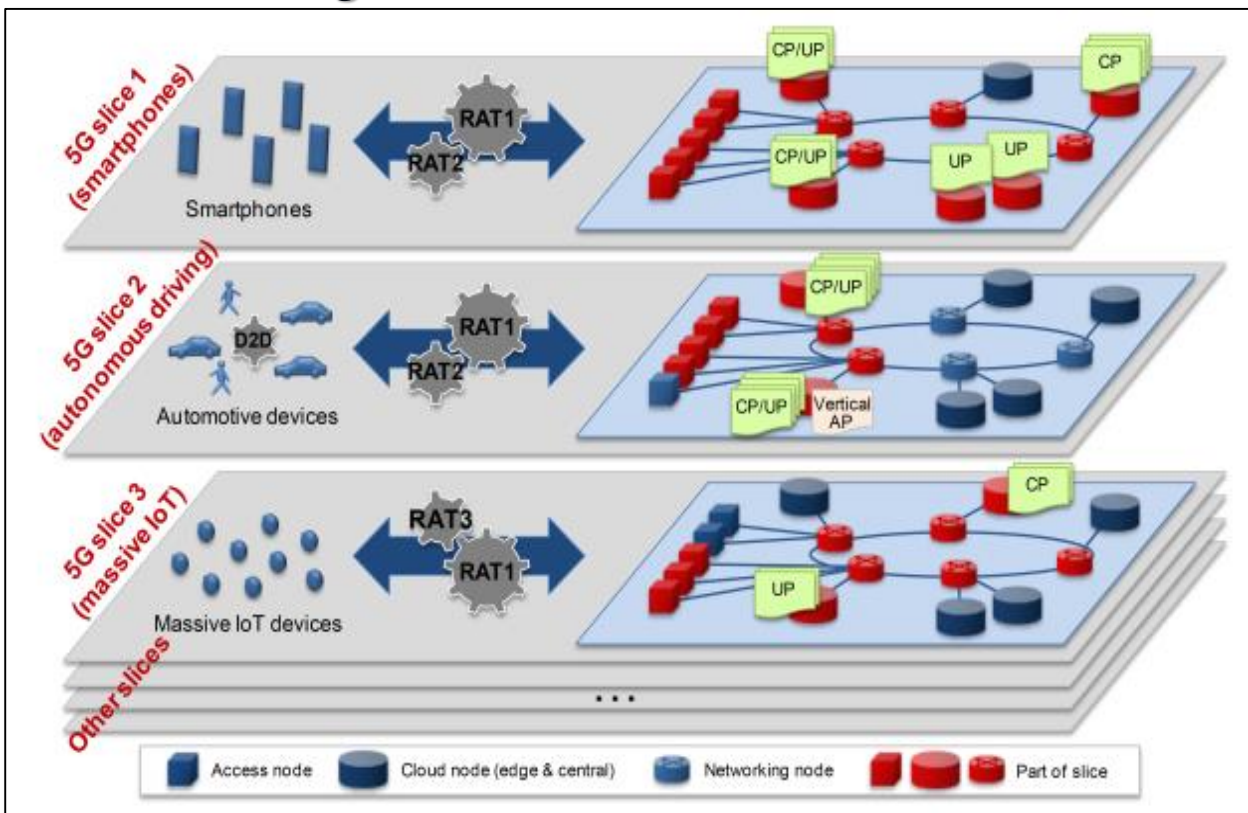
# 5G Basic Requirements

evolving by revolving



# 5G Architecture

## Virtualizing: from n/w functions to n/w services

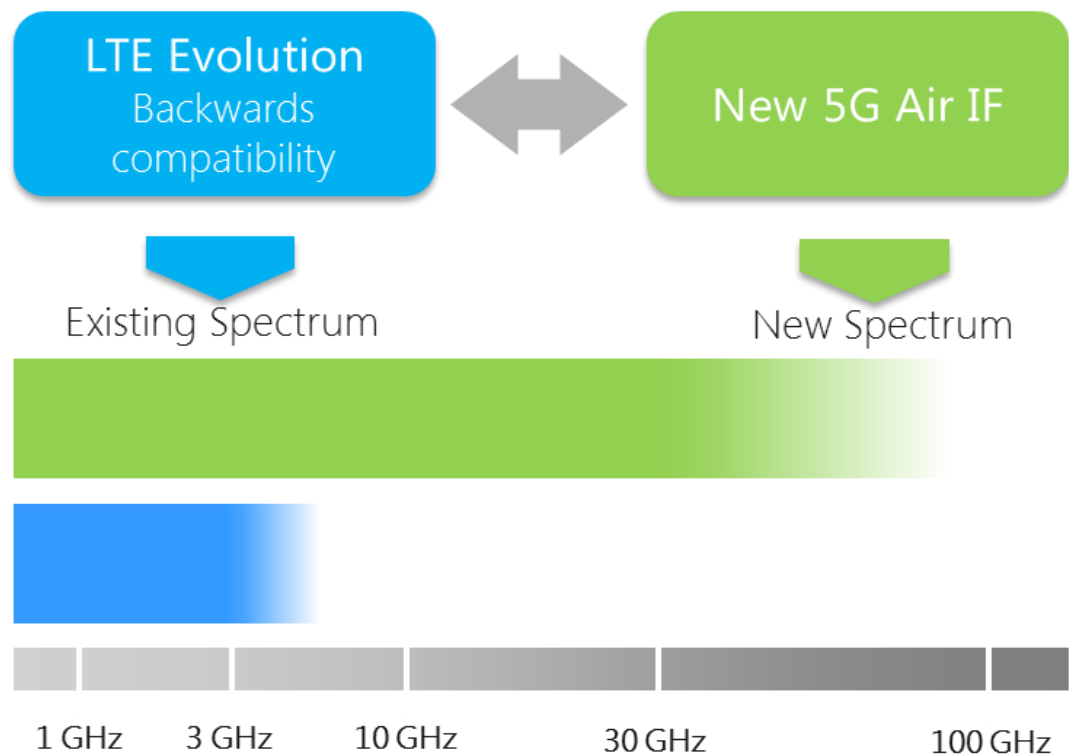


- 5G will support network slices
- In each slice all network elements will run according to service specifics

- 5G system orchestrates as native SDN/ NFV structure
- APIs are provided on the relevant reference points to support use cases & business models

# 5G Air Interface

Massive channels, massive MIMO



- Evolution of existing technology adding new RAN technology
- LTE+ and New Air Interface combined allows rapid switching based on radio conditions
- New Air Interface initially applied at new spectrum (up to millimeter waves) with super channels, massive MIMO & beam forming
- Gradual migration of New Air Interface into existing spectrum

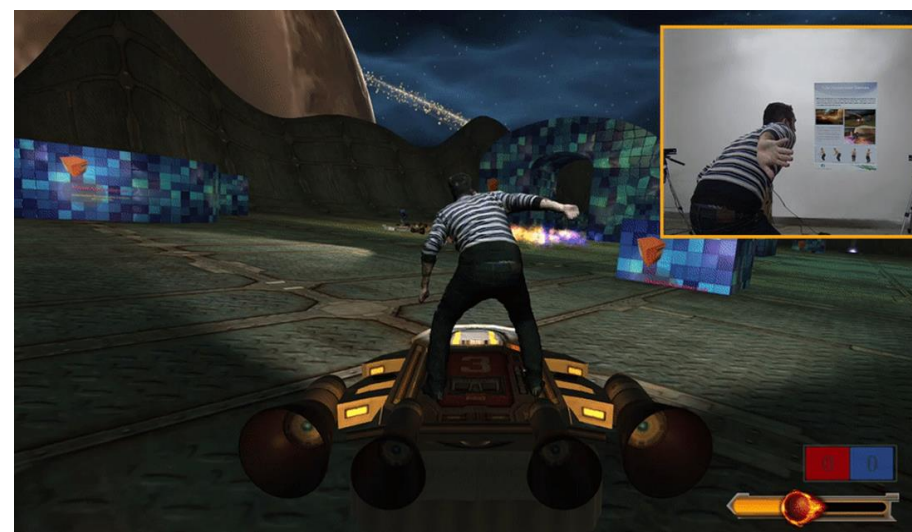
- The **focus of 5G research** so far has been largely **on the required advances in network technologies**: spectrum, radio access, SDN, NFV and cloud infrastructure, flexible management and control architectures and development and operations systems
- ? to investigate on how to implement **5G networks and how they can be exploited by advanced media applications** to realise the benefits of low latency, high bandwidth and flexible dynamic configuration.



# Media apps in the 5G arena (5G-Media 1/3)

## Immersive applications and Virtual Reality

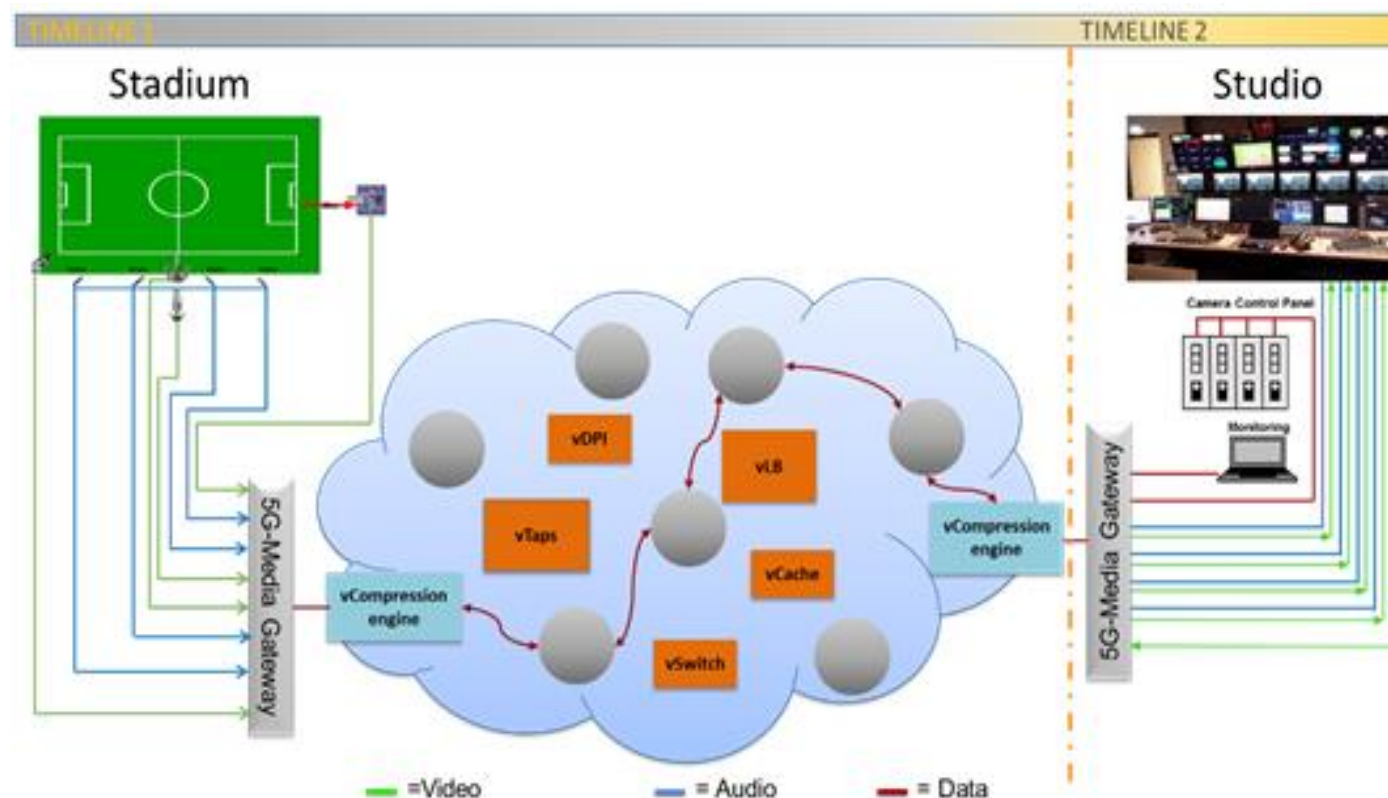
- **Quality of Service (QoS) and Quality of Experience (QoE) are top priorities** in immersive media whereas availability and interaction between users are considered critical challenges that need to be met as they ensure a smooth user experience.



# Media apps in the 5G arena (5G-Media 2/3)

Mobile contribution, remote and smart production using user-generated content

- **vEncoding and vCompression engines** have the potential to replace dedicated encoder hardware and the Cognitive Network Optimization together with the QoS-monitoring can help **to overcome** the current **internet best-effort principle** and ensure the required performance needs.



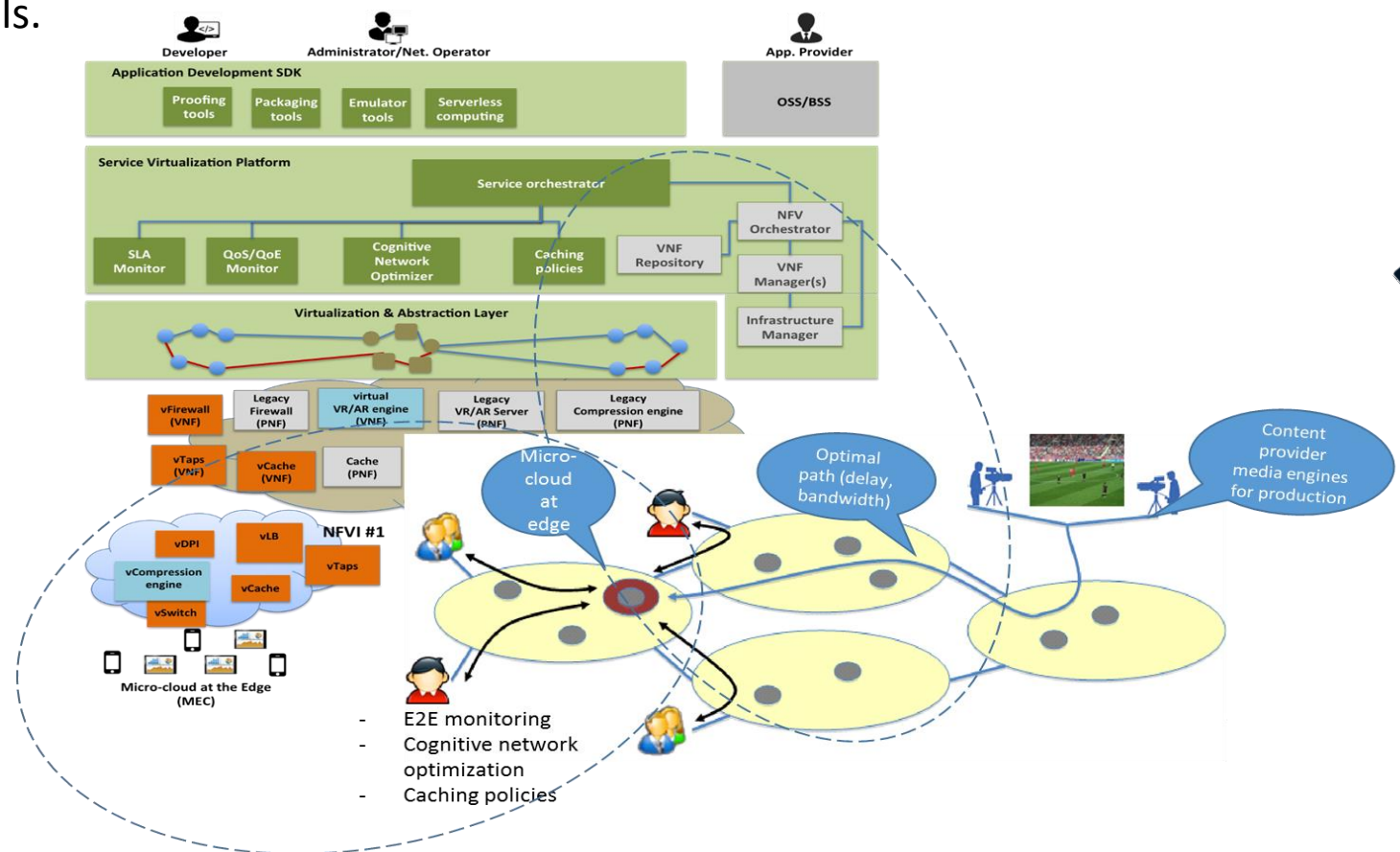
5G MEDIA challenge



# Media apps in the 5G arena (5G-Media 3/3)

## Mobile Dynamic and flexible UHD content distribution over Open CDN

- prioritizing a new **NFV flexible network architecture**, which can accommodate **flexible resources and dynamicity in the allocation** of computing resources and cloud-distributed functionalities. **RTVE sport events** are planned to be used as trials.



5G MEDIA challenge

# Use cases / Slicenet

## Smart Grid Self-Healing



## eHealth Smart/ Connected Ambulance



## Smart City



## Smart Grid

- Ultra-reliable communications
- Very low latency

## eHealth

- Ultra-reliable communications across domains
- Very low latency
- Very high bandwidth

## Smart City

- High reliability
- Multi-domain

