



5G makes changes on purchase decisions and processes

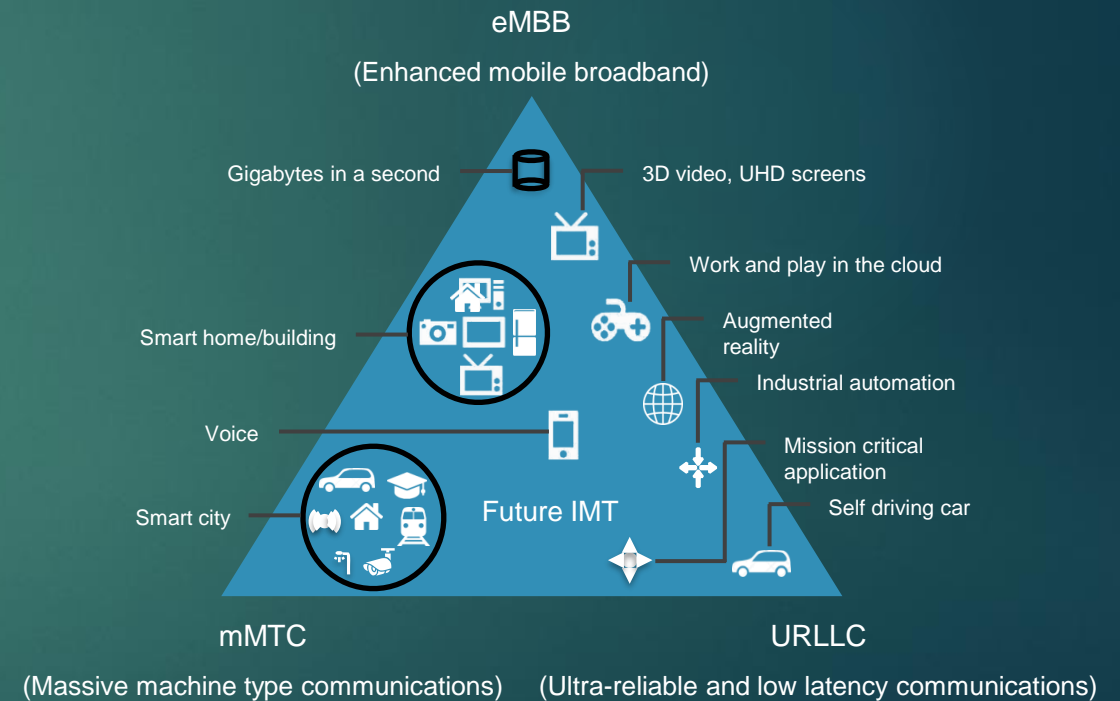
ADVANTAGE BUSINESS CONSULTANCY

5G changes on technology and processes

- ▶ **Key 5G decisions**
- ▶ **Key 5G drivers**
- ▶ **Key 5G strategies**
- ▶ **Key 5G Price models**

5G decisions

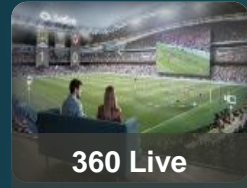
- ▶ **Technology leader – be the first!**
- ▶ **When incumbent launch 5G, other must launch for protecting subscribers**
- ▶ **Government push (Middle East)**
- ▶ **End of Life for network components – legacy technology is no longer supported/no available components**



5G Drivers

- ▶ **Virtualization bring Automation , OPEX saving**
- ▶ **Slicing brings multitenancy of services**
- ▶ **B2B help to monetize on 5G investments**
- ▶ **Speed and connectivity – technology**
- ▶ **Automation – operation**
- ▶ **Flexibility - services**

5G E2E strategies



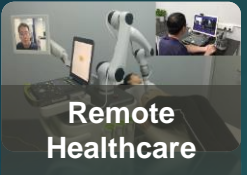
360 Live



AR Engineering



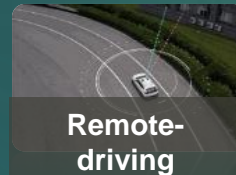
Drone Video



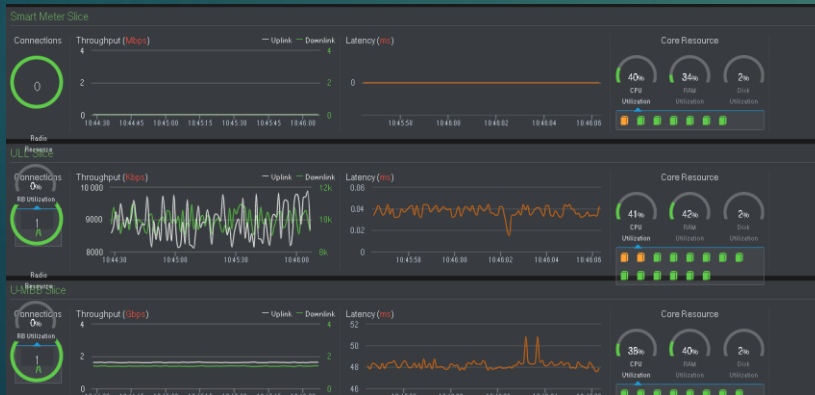
Remote Healthcare



Industry Machine Vision



Remote-driving



Monitoring:

- TH
- UL
- DL
- latency

#1

5G Services to launch

Innovation, culture, habits, product readiness
5G is business case driven (eMBB, FWA, AR/VR, drone etc)

#2

5G Monetization strategy

5G data services: eMBB, uRLLC, mMTC
B2C, B2H, B2B segmentation
Traffic, latency, connection, speed

#3

5G investment and priority on Network

Access & Core, Transport, Microwave, Network manager
Operational, services

#4

5G Data center transformation

2 or 3 layer DC,
Plug & Play MEC

#5

Autonomous network

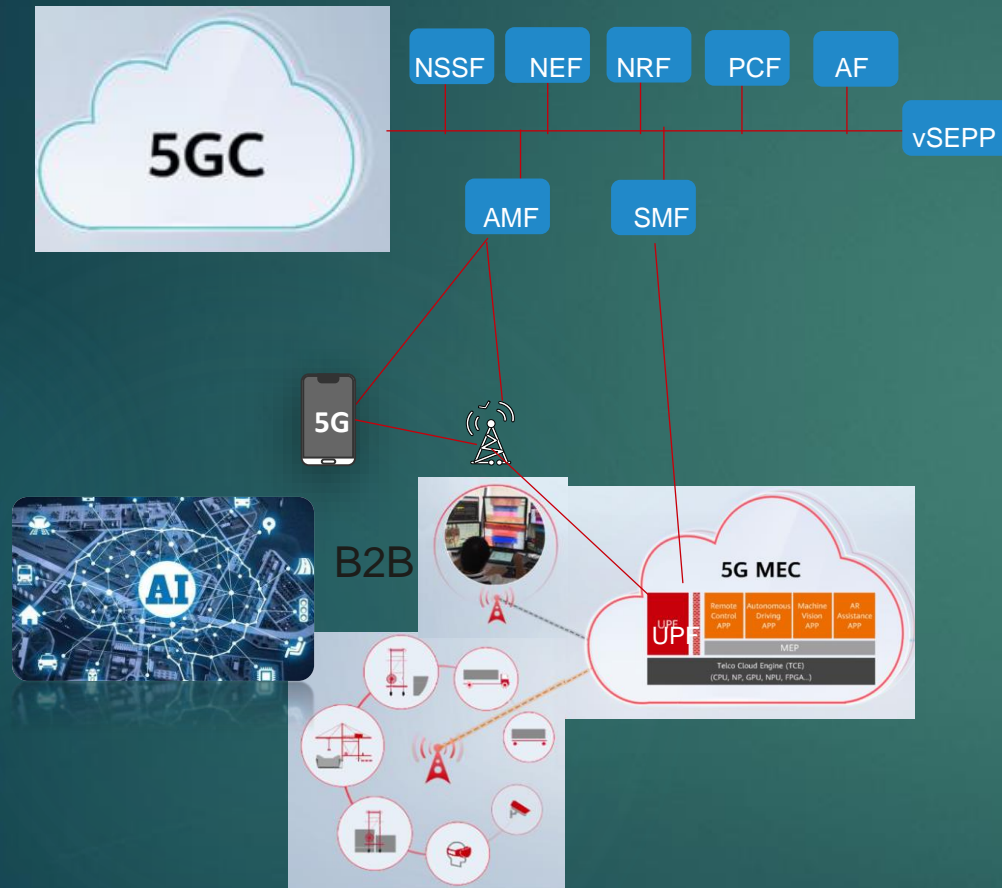
Common process across-domain
Micro-services, In service software upgrade
AI and Autonomus network

#6

Services on demand

Network slicing,
SLA and QoS, multi-tenant isolation

5G Core Network strategies



#1

NFV virtualization

Build Cloud environment: COTS, CloudOS, on-boarding VNFs from Core network. VNFs also in multi-vendor G-VNFM

#2

5G NSA strategy for data, VoLTE for voice

Build virtualization with all EPC and IMS Network elements
vMME, vPCRF, vHSS, vPGW, and multi-vendor integration
vIMS, vePD, vSBC and VoLTE integration

#3

CUPS Control plane User Plane separation

S-P-GW in Central DC
S-P-GW in Regional DC

#4

5G SA strategy

Micro-service, micro-service Container based architecture (MCA)
Cloud Native as stateless design – guarantee performances

#5

5G MEC

Edge DC
Traffic optimization

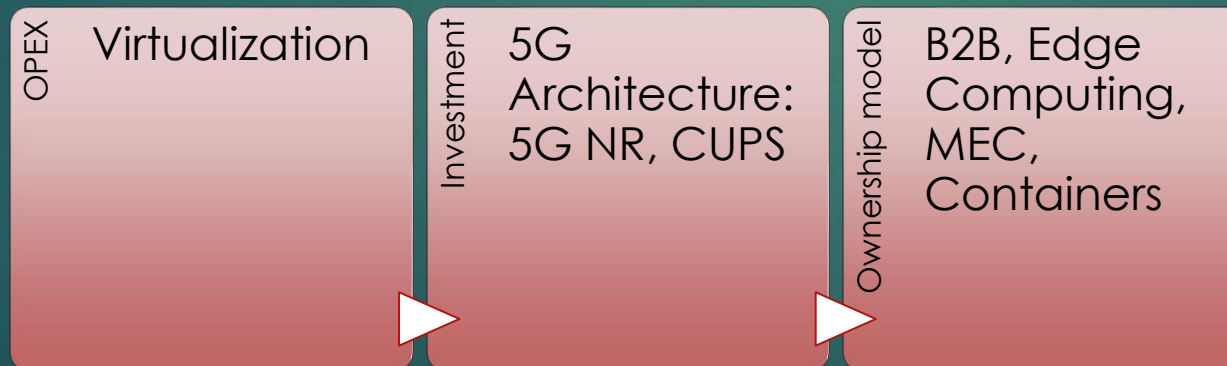
#6

5G Network Slice

SLA and QoS, multi-tenant isolation
Orchestrator

5G Price Model

- ▶ High level of confidentiality
- ▶ Monetize latency, connection, speed, traffic
 - ▶ Virtualization network – PAgG, rev sharing
 - ▶ Edge – Ownership of network

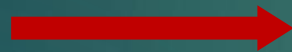


5G B2B Model

Carrier Networks

“ Cloud OUT”

Extend connections to industries/SME



Ultra-high reliability Ultra-low latency Uplink data compression Indoor positioning
Super uplink 5G LAN Industrial data cleansing Campus surveillance
LBO TSN Media processing and cache

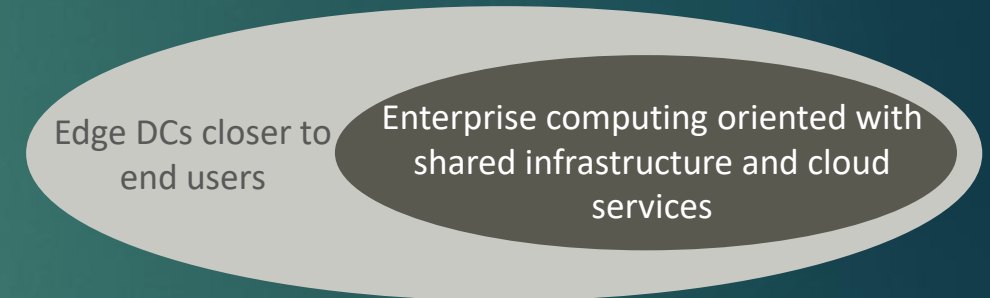
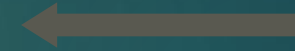
- **New Business Model for Telco for building E2E ecosystem**

ABC Solutions Consultancy

Public Clouds

“ Edge IN”

Pull the edge closer to industry customers



AWS Wavelength

AWS EC2

AWS S3

AWS RDS

Tencent OC

Google Cloud Platform

IBM

Telco partnership for connectivity

IBM: Vdf, Airtel

AWS: Vdf, KDDI, SKT

GCP: Vdf, Wind 3

Azure: Vdf, SKT, Etisalat, NTT, TLF, Proximus

B2B Challenges

► **Ownership model/ Responsibility model:**

- Enlarge from connectivity provider + Edge server for a wider ownership.

► **Business model:**

- Build an enabler platform with OPEN DC and OPEN APIs (standardized).
- Build operators' core control points with 5GC.
- Evaluate short or long term revenue generation.
- The cooperation model across enterprises, and third parties is to be established.

► **Industry ecosystem:**

- Build an ecosystem addressing many vertical industries SMEs and partners.
- Build an ecosystem with influence of Government agency and partners.

► **Network requirements:** - depending on the services

- High uplink bandwidth, low latency, reliability, security, self-management, and guarantee fast service

► **O&M:** O&M platform for new services

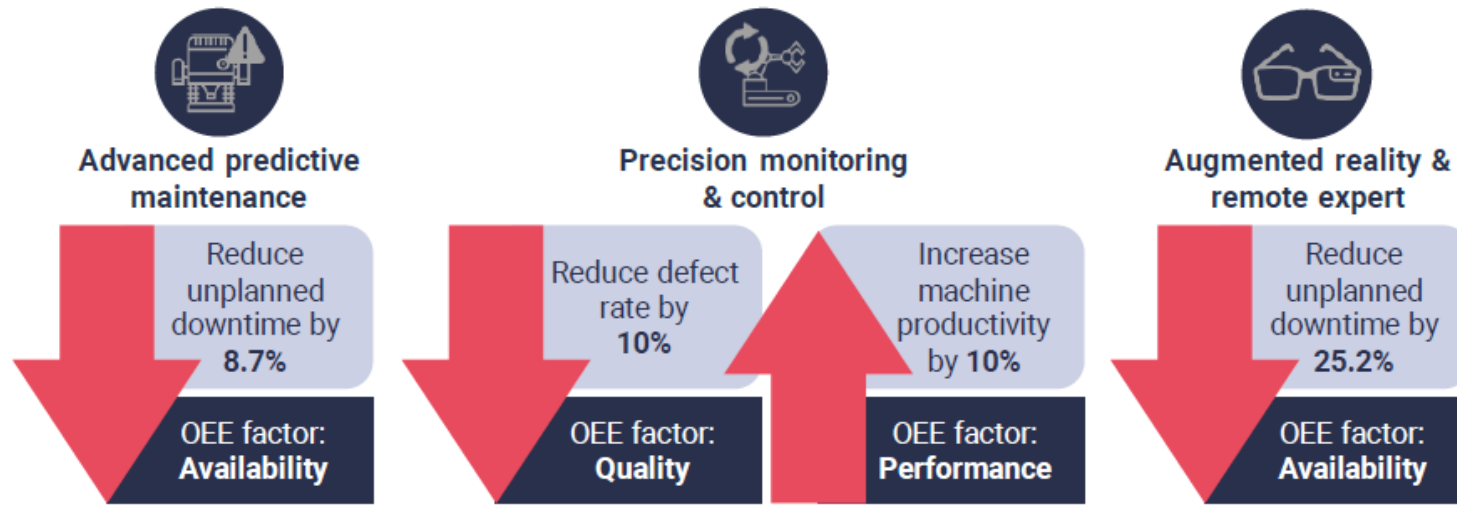
► **MEC server location** : depends on latency, session continuity, mobility trade-off

► **Industry pace:**

- The eMBB standard is mature, and
- the URLLC/mMTC standard (R16/R17) is also mature.

5G manufacturing

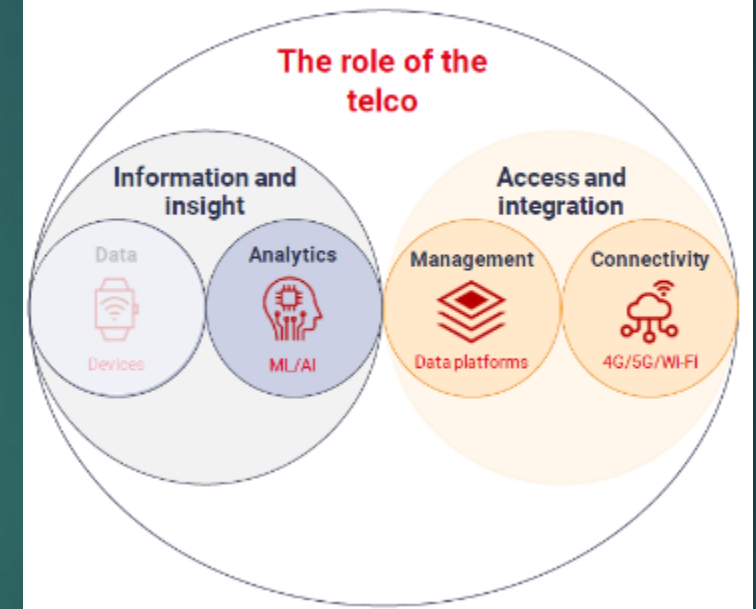
Impact of 5G use cases on OEE



Source: STL Partners' analysis based on results from survey with manufacturers, August 2019

OEE: Operational equipment effectiveness

Telcos playing beyond connectivity



Source: STL Partners