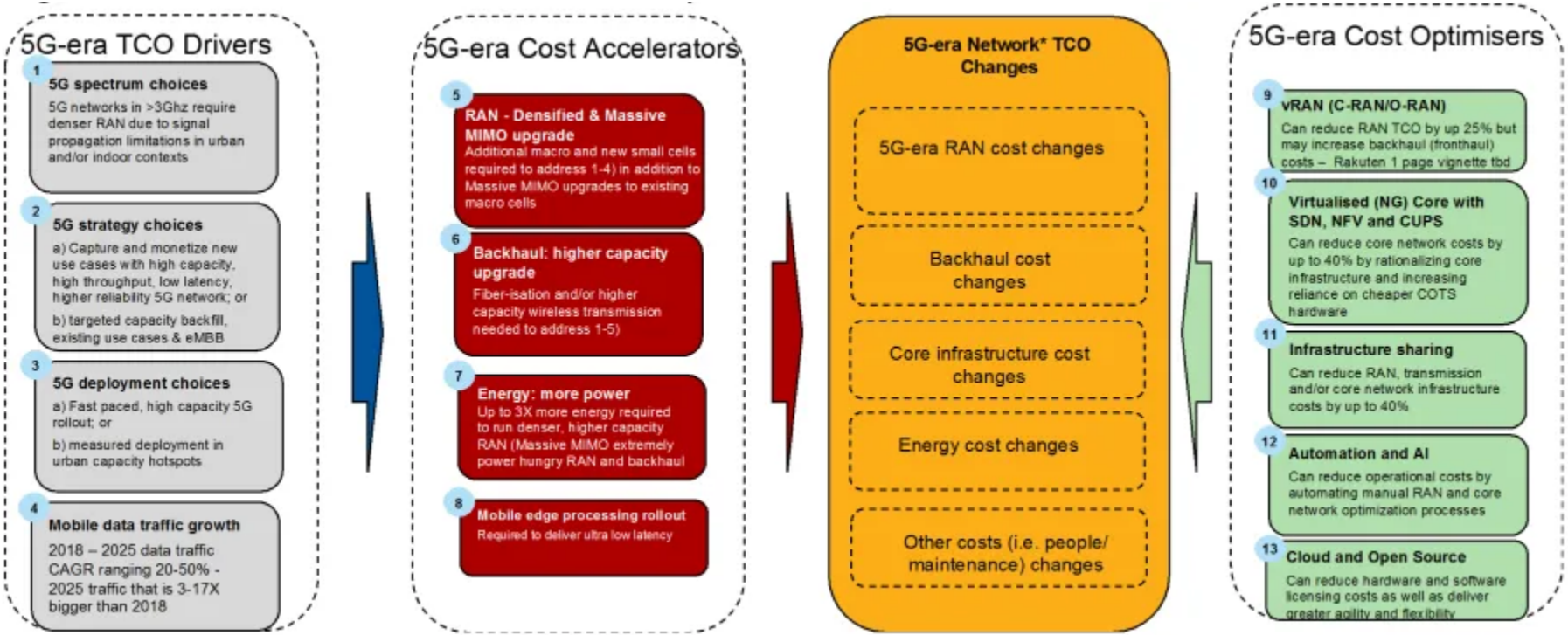
AFFORDABLE 5G

HIGH-TECH AND AFFORDABLE 5G NETWORK ROLL-OUT TO EVERY CORNER

5G-era network cost optimization

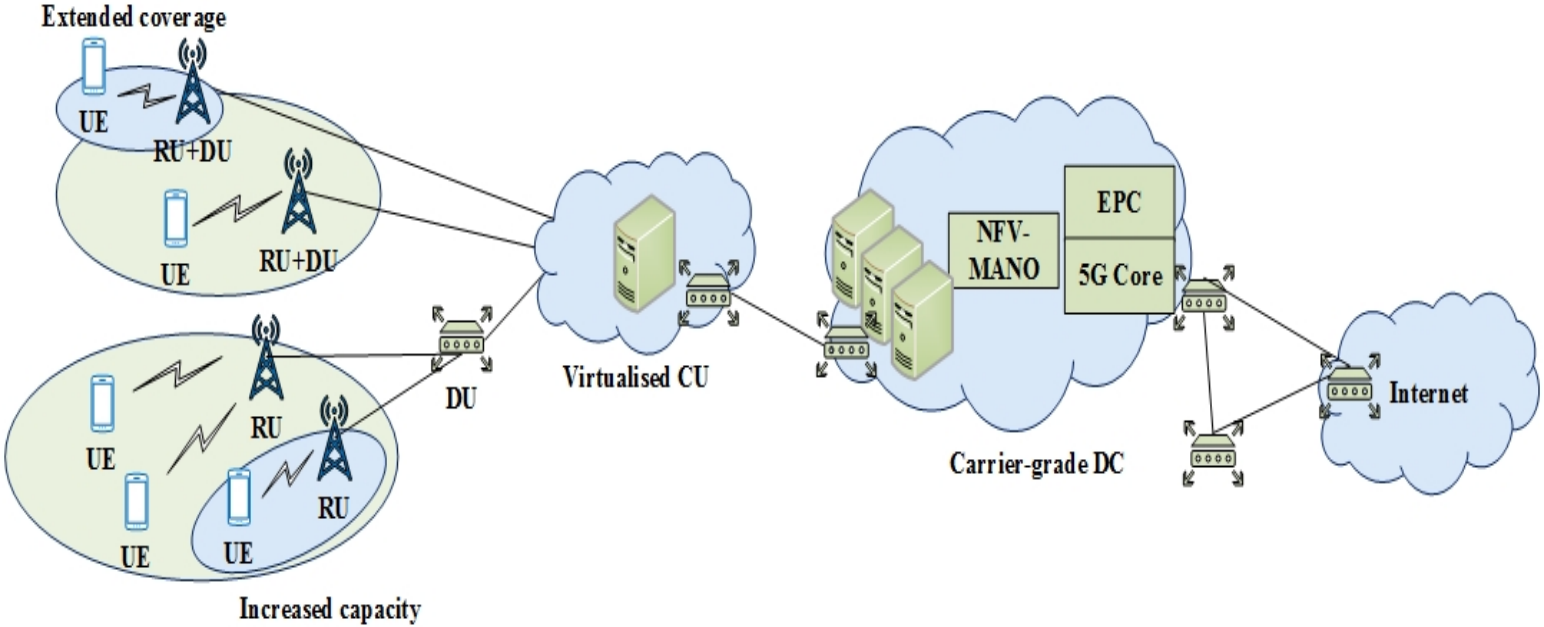


5G-era cost accelerators and optimizers (Source: GSMA)

Affordable 5G in a nutshell

- Affordable 5G will deliver a complete and affordable 5G offering for private and enterprise networks, evaluated and validated in vertical use cases
- Support of Mobile Virtual Network Operators (MVNOs) to enter 5G new market and provide ubiquitous and high QoS 5G communication
- Affordable 5G will be fully exploitable and open by adopting RAN functions on open interfaces and standard hardware platforms to bring a variety of affordable solutions to the market

Architectural building blocks



E2E and affordable solution covering the needs of **private and enterprise networks** through technical innovation spanning all parts of the network

Affordable approach

- Cell densification
- Remote Unit (RU)/Distributed Unit (DU)/Central Unit (CU) split
- Hardware acceleration (FPGAs, GPUs)
- Edge computing and core network virtualization, seamlessly combined with the adoption of open solutions: O-RAN, MEC (Mobile Edge Computing) and open source MANO (Management and Orchestration), for cloud-native, micro-service deployments
- The solution will be evaluated and validated in three vertical pilots

Objectives

Objective 1 – Optimize 5G Hardware Elements

Objective 2 – 5G Dimensioning for dense deployments

Objective 3 – Address network sharing strategies as cost-savings

Objective 4 – Consolidate the usage of Open Platforms

Objective 5 – Validation & Evaluation

Objective 6 – Business Sustainability & Competitive Advantage

Optimize 5G hardware elements

- Affordable5G aims at the optimisation of the hardware of the devices forming its cost-efficient and high-performance network
- Field-Programmable Gate Array (FPGA)-based hardware acceleration is an ideal solution for the network's edge to ensure optimal performance and cost efficiency in the execution of specialised functions
- The objective is to adopt enhanced low-power Graphics Processing Units (GPUs) and hardware accelerators at edge Data Centres (DCs), where there are limitations, such as room space and heat dissipation

5G Dimensioning for dense deployments

- Affordable5G will integrate and enrich the available solutions (Core & RAN) of its SMEs with open-source solutions
- Investigate Time Sensitive Networking (TSN) as a strategy to enable connectivity with deterministic latency over 5G for private networks, addressing real market needs, such as 5G in Industry 4.0
- Develop cost-effective wireless backhauling technologies that support 5G small cell requirements, while providing an integrated management and control plane for both wireless backhaul devices and small cells

Address network sharing strategies as cost savings

- Develop sharing strategies comprising diverse users, service providers and network operators for reduced ownership costs
- Study neutral host strategy and its implications
- Enhance existing network sharing solutions in two directions:
  - The Affordable5G management plane will enable the dynamic deployment of per-tenant customized slices with minimal operational costs
  - Develop isolation mechanisms at the various levels of the 5G network, including the radio access, which are key to define enforceable Service Level Agreements (SLAs) towards prospective tenants

Project Objectives (4/6):

Consolidate the usage of open platforms

- Adopt open interfaces & platforms, enhanced for radio (O-RAN), edge (Akraino, OpenNess, edgeX foundry), cloud-native network management (OSM, ONAP) and optics core (ONOS, ODTN)
- Affordable5G aims not only to strengthen the use of open-source solutions in these distinct network areas, but to jointly use them into an overall open-source 5G network architecture

Project Objectives (5/6):

Validation and evaluation

- The project's outcomes will be evaluated in heterogeneous environments, comprising diverse RAN units, network resources, edge hardware and user requirements, as well as virtualized networks elements to demonstrate their wide applicability in 5G commercial and hybrid infrastructures
- The added-value and effectiveness of the project's outcomes will be demonstrated in three 5G pilots promoting cost efficient roll-outs of private networks

Project Objectives (6/6):

Business sustainability and competitive advantage

- During the project's lifetime new business models, (e.g. cooperative business models) and the formation of new ecosystems for managing services and actors will be developed
- Affordable5G will create competitive advantages to SMEs, facilitating them in their commercialization paths and strategies
- Results will be disseminated through contributions to 5G standardization bodies and open-source communities

Expected Impact

- Support to the emergence of a European offer for new 5G core technologies
- Support to the emergence of new actors in the related markets
- Creation of high-tech start-ups or of new business opportunities for established SME’s
- Strong SME participation is targeted

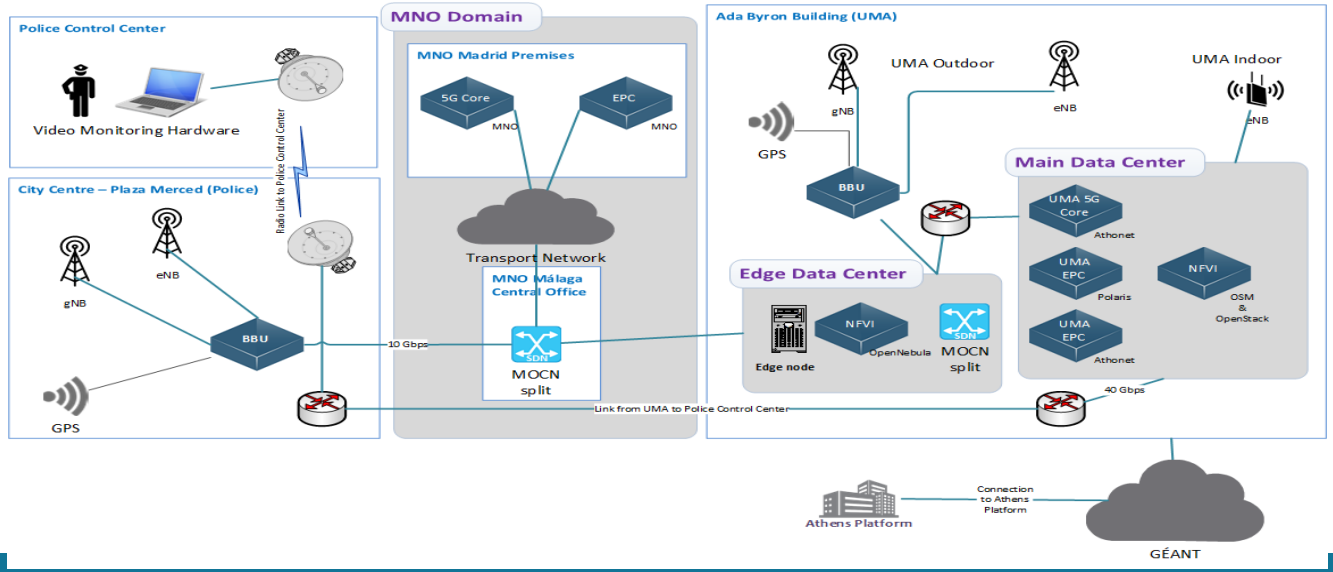
Project pilots

- 1. Emergency communication critical services system (MC-PTT, MC-Video, MC-Data)
- 2. Smartcity Edge and Lamp post IoT deployment
- 3. Industrial/manufacturing private network

Available 5G Testbeds (1/2)

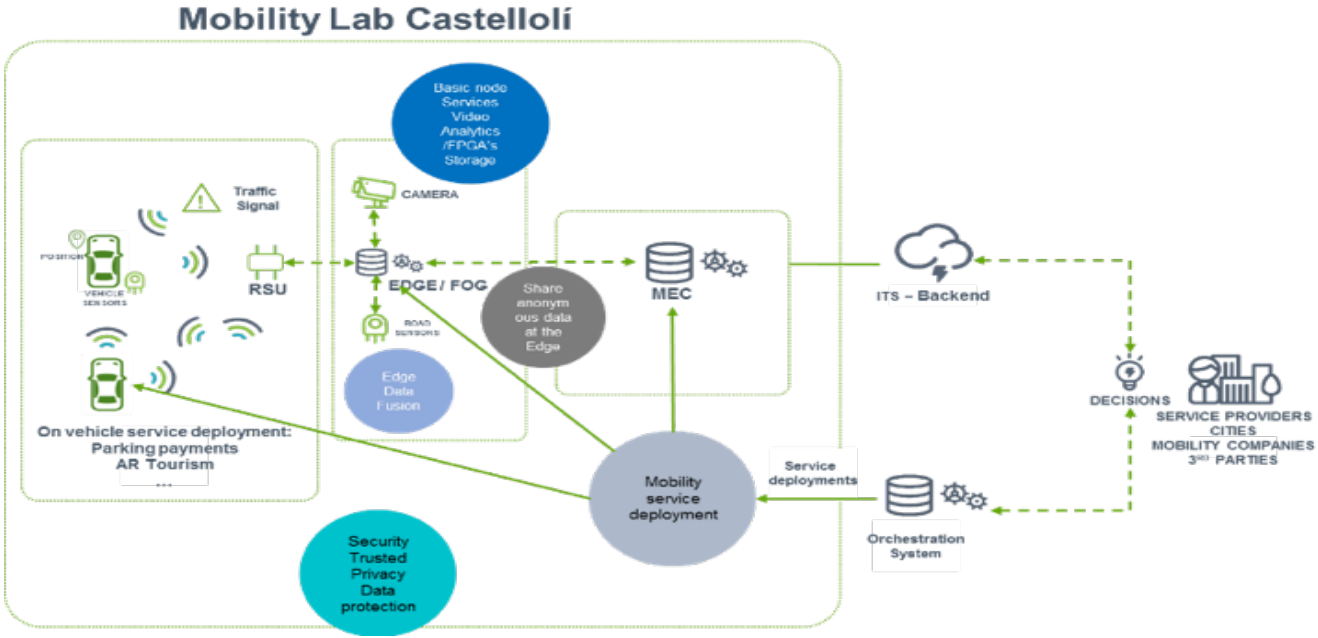
5GENESIS Málaga node (Spain)

- ✓ 5G platform deployed at UMA campus and connected to the Málaga city in the context of the phase 3 project 5GENESIS



Available 5G Testbeds (2/2)

Circuit ParcMotor Castelloli (Spain)



Partners

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THIS PROJECT IS PART OF THE 5G PUBLIC AND PRIVATE PARTNERSHIP

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Affordable5G project is funded by the EU's Horizon2020 programme under Grant Agreement number 957317.

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THANKS FOR YOUR ATTENTION