

## AFFORDABLE5G

AFFORDABLE5G, led by ATOS, aims at creating a 5G network that will deliver a complete and affordable solution covering the needs of private and enterprise networks through technical innovation that span across all parts of 5G network. AFFORDABLE5G leverages the need of cell densification, RU/DU/CU disaggregation on RAN, hardware acceleration, edge computing and core network virtualisation, seamlessly combined with the adoption of Open RAN, MEC deployments and open source MANO solutions, for cloud-native and micro-service based 5G roll-outs. With the combination of several European SMEs products with open interfaces, AFFORDABLE5G will offer a first-class opportunity to SMEs to become frontrunners in the global 5G competition, facilitating them in their

commercialisation paths in 5G private networks. A private 5G network is a particular realisation of the 5G system designed and configured for a private use by an enterprise or an exclusive group of users. It can be deployed to cover the needs of a specific application, or multiple applications or even a vertical domain.

The project goals and achievement will be evaluated and validated in **three vertical use cases that will be demonstrated in two pilots and a proof-of concept**. The use cases are used to identify and characterise the system requirements that allow the selection of the network elements and the 3GPP, ETSI and O-RAN specifications that are taken as a reference in the AFFORDABLE5G system architecture led by National and Kapodistrian University of Athens.

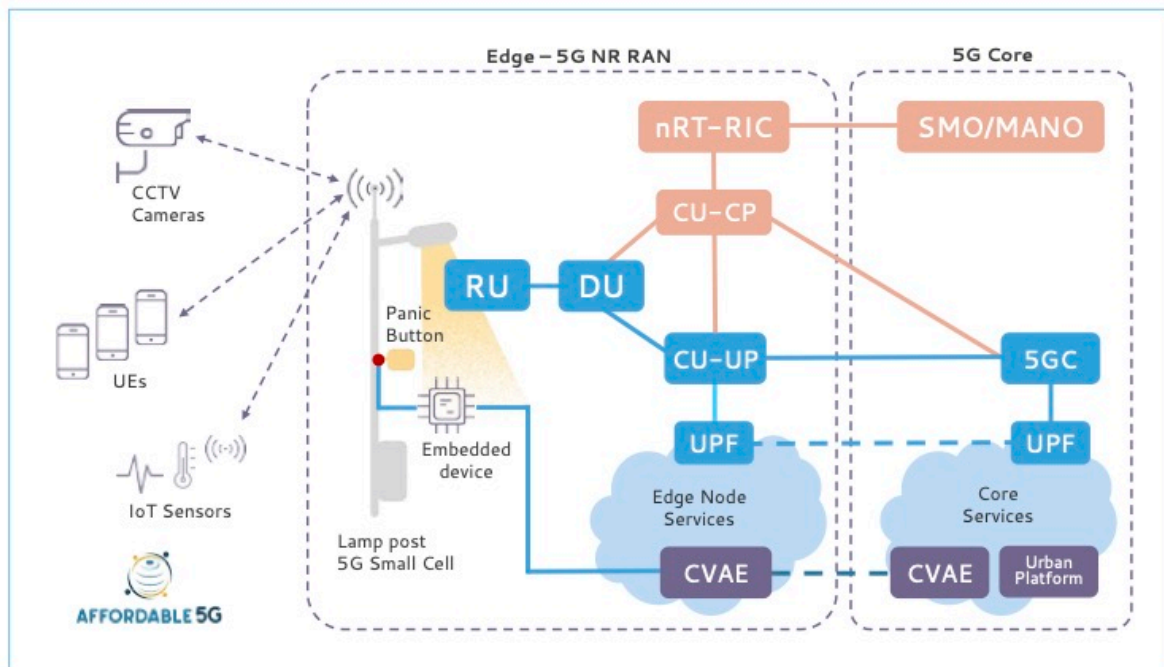


Fig. 43: AFFORDABLE5G - architecture

**The first use case is related to emergency communications.** Led by Nemergent Solutions, it aims to demonstrate the 5G private network concept, and the performance and reliability requirements of Mission Critical Services (MCS), allowing the owner to control their 5G network to serve a limited geographic area with optimised services using dedicated equipment.

The pilot will enable the implementation, validation and demonstration of a robust solution that will leverage the cloud native functions of monitoring, flexible deployment and scaling, as well as standardised 3GPP-compliant MCS communication channels, mainly including Mission Critical Push To Talk (MCPTT), Mission Critical Video (MCVideo) and Mission Critical



Data (MCData). Network slicing capabilities and low latency in both access and transport network are key requirements here.

The scope of the scenarios within this pilot is to achieve the provisioning of a responsive service that is able to cope with drastic service consumption increase or adverse network conditions so that the first responders are able to keep communicating regardless of outages, communication demand increase, detection of poor communication quality, and other challenging events.

**The second use case is related to smart cities.** In this context, AFFORDABLE5G will validate the 5G technology for efficient smart city monitoring, combining IoT data collection sensors integration and edge processing. This will allow deploying new applications for enhancing urban sustainability, mobility and safety and reducing deployment costs.

Project partner Ubiwhere leads the Smart Cities use case pilot in a sports cars circuit (Circuit ParcMotor) in Castellolí (Barcelona), Spain. Ubiwhere will provide a smart urban infrastructure product, Smartlamppost, as an integrator of diverse modules delivered by the partners (such as Edge Computing processing) and its Urban Platform for unified data collected within the facilities. End-user devices, such as CCTV

cameras, User Equipment's and IoT devices, will connect to the small cell via 5G NR. Here the EMBB traffic and mMTC connectivity are key elements of the scenarios. The architecture developed by Affordable 5G will allow the creation of a network and edge computing hardware marketplace for the partner entities operating in this business. In the pilot, by integrating a CCTV camera into Smartlamppost, partners will become capable of assisting security agents in detecting safety issues.

**The third pilot consists of two use cases covering different parts of the manufacturing process** and will be demonstrated only as lab proof of concept (PoC) regarding Time Sensitive Network (TSN) and the offer of 5G LAN functionality:

- The first use case deals with Process Automation. The automation of various processes of the Factory of the Future (FoF) can be enhanced with advanced wireless features (increased data rates, reduced latency), enabled by 5G mobile networks.
- The second use case concerns the benefits arising from the introduction of TSN concept to manage Automated Mobile Robots (AMRs) and mechanical robotic arms within a manufacturing shop floor.

## COREnect

### European Core Technologies for future connectivity systems and components

COREnect is a 2-year Coordination and Support Action project selected by the European Commission in the frame of the Horizon 2020 Research & Innovation programme, starting from 1<sup>st</sup> July 2020. In COREnect, European industry and R&D leaders from both the micro-electronics and telecommunications sectors are jointly developing a high-level strategic roadmap of core technologies for future connectivity systems and components, targeting 6G, the next generation telecommunications networks and services.

COREnect has the potential to significantly impact European research and innovation (R&I) and the industry landscape of future connectivity systems, strengthening Europe's position in the global digital scene. The consortium consists of the most prominent European industrial and academia players in the telecommunications sector (Ericsson, III-V Lab (Nokia), Technische Universitaet Dresden/Barkhausen Institut) and the microelectronics sector (Infineon, NXP, STMicroelectronics, IMEC, CEA), industrial associations that represent the SNS (5G IA)

