5G USE CASES

Media (Industry Vertical)

5GCity consortium includes different media-related partners, a television channel, a national broadcaster, and a SME focused on content acquisition and production in the Cloud or an association of media companies. Three different media use cases will be deployed and evaluated (mobile real-time transmission, UHD video distribution, and real-time video acquisition and production in the Edge & Cloud).

Unauthorized waste dumping prevention

The city of Lucca holds some yearly events that are highly disproportionate to the city size, resulting in a number of issues including illegal waste dumping. 5GCity will use the cities' surveillance cameras and deploy (multiple instances of) a virtualized service that can process video streams near cameras automatically to identify illegal dumping.

Neutral host (Telecom Use Case)

GCity will leverage its virtualization platform in order to enable the cities to create dynamic end-to-end slices containing both virtualized edge and network resources and lease it to third-party operators.

5GCITY'S CHANNELS

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H2020 5GCity

PROJECT COORDINATOR i2cat

TECHNICAL COORDINATOR NEC

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5GPPP

5GCity

A DISTRIBUTED CLOUD & RADIO PLATFORM FOR 5G NEUTRAL HOSTS

MAIN OBJECTIVES

Build and deploy a common, multi-tenant, open platform that extends the (centralized) cloud model to the extreme edge of the network

The ultimate goal of 5GCity is to maximize the return on investment for the whole digital market chain (users, application, cloud providers, i.e., the municipalities themselves, telecom providers, and infrastructure providers).
To do so, 5GCity's main aim is to build and deploy a common, multi-tenant, open platform that extends the (centralized) cloud model to the extreme edge of the network, with a demonstration in three different cities (Barcelona, Bristol and Lucca), and thus advance the state of the art to solve the main open research challenges in the 5G-based edge virtualization domain, including the neutral host perspective in dense deployment environments such as cities. Thus, 5GCity will design, develop, deploy and demonstrate, in operational conditions, a distributed cloud and radio platform for municipalities and infrastructure owners acting as 5G neutral hosts.

TECHNICAL AND RESEARCH CHALLENGES

From a technical perspective, evolving cloud architectures and adapting them to the edge of the network within the 5G ecosystem brings a number of **open challenges**

1. **Deployment and run-time management** of densely interconnected and decentralized cloud and network infrastructures.
2. **Tight-loop interactions** between the computing and networking infrastructures at the edge of the network.
3. **Performance issues** arising from the use of resource-constrained devices (e.g., Single Board Computers with ARM processors) placed at the edge of the network to perform workloads that have been traditionally carried out by powerful servers in centralized data centers.
4. **Slicing and neutral hosting** support at the wireless edge, where bandwidth needs to be guaranteed for different slices (e.g. media), and tenant-specific counters need to be added to support elastic usage and billing of resources.

EXPECTED IMPACT

5GCity will directly impact a large and varied range of actors: (i) telecom providers; (ii) municipalities; and (iii) a number of different vertical sectors utilizing the city infrastructure. The real strength of 5GCity, in terms of real-world impact, lies in the envisioned deployment of its 5G-based edge platform in three distinct smart cities: Barcelona, Lucca and Bristol, which is foreseen as a concrete first step towards 5G trials. Other expected impact of 5GCity project includes, i) Open environments for creation of network apps, ii) Open repository of network apps that may be validated and leveraged by third party developers, iii) Validation at scale of VNF aggregation capability of the proposed environment.