

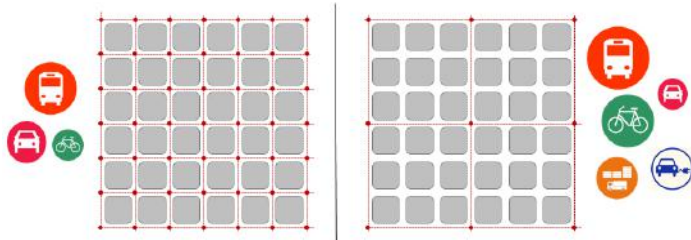
5GCity

Distributed cloud & radio platform
for **5G** neutral hosts



01 Vision

Barcelona Urban Model: Macroblock Project



CONCEPT

The superblocks are defined theoretically as an "area of urban organization, from which a series of structured transformation strategies towards a new urban model, where mobility and reorganization of public space represent the first step".

Inside the superblocks the traffic and the environmental pollution (noise and gas) are reduced.

SERVICES

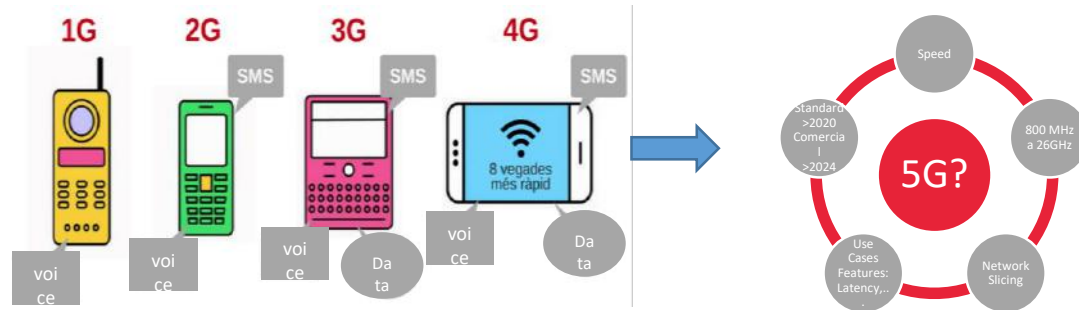
Each Macroblock is based on a combination of City user services (US).

Each US is composed by elements (Basic City Services).



01 Vision

5G as Service over Urban Lab Initiative: 5GCITY



OPEN issues:

- USE cases paradigma. Speed? Latency?
- Macrostations vs Smallcells / Terminal Technology
- How integrate Legacy? Devices Reduction?
- Worldwide Massive Impact in Technology and Society
 - What about:
 - Digital Divide?,
 - Enviroment Impact?
 - Urban Furniture and Radomos?



5G is coming but not mature, so it is difficult to evaluate cities&citizens impact.
5GCITY is one of H2020 initiatives to answer these questions

01 Vision

5GCity at a Glance

Quick Facts

- Innovation Action
- i2CAT (PC) & NEC (TM)
- 30 months Duration
- 18 partners



NEC



PRISMTECH



NEXTWORKS
ENGINEERING FORWARD



ITALTEL



ubiwhere
SUITING THE FUTURE

Acelleran
Small Cells, Done Right



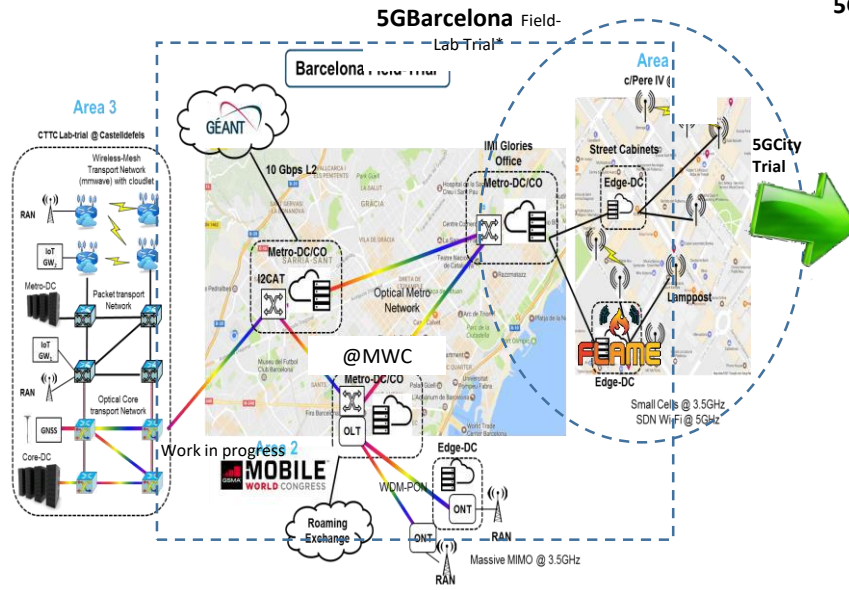
02 Objectives

Design, develop, deploy and demonstrate, in operational conditions, a distributed cloud & radio platform for municipalities and infrastructure owners acting as 5G neutral hosts (BCN, Bristol & Lucca)

- ✓ Build & deploy a common, multi-tenant, open platform that extends the (centralized) cloud model to the extreme edge of the network
- ✓ Distributed, 3-tier architecture with network sharing, slicing & MEC capabilities.
- ✓ MEC node virtualization platform and guest optimizations
- ✓ Network virtualization @ edge
- ✓ Scalable edge management & orchestration and service programming models
- ✓ City-wide pilots' deployment and validation & commercial outreach and standardization

03 Technical & Open Challenges

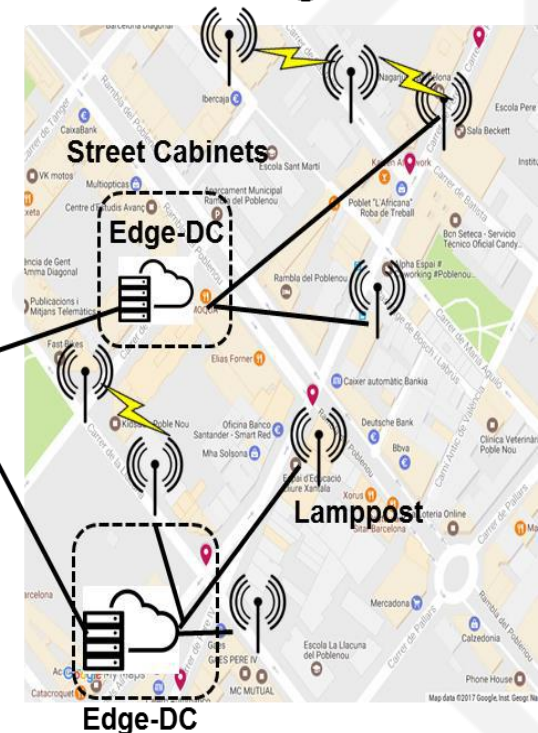
5GCity: Trial Example in BCN



5GCity Demo-Trial. An extension of the field trial deployed under the FLAME H2020 project










Area 1
c/Pere IV @ BCN



Small Cells @ 3.5GHz
SDN Wi-Fi @ 5GHz

04 Results

Expected results: Consortia Viewpoint

- 5GCity Architecture 
- 5GCity SDK and Service Programming Models 
- 5GCity MEC Node virtualization platform 
- 5GCity Machine-Learning models 
- 5GCity access network virtualization 
- 5GCity City Wide Pilots Demonstrators 
- 5GCity backend management & orchestrator component 



04 Results

Barcelona Infrastructure

MWC2018

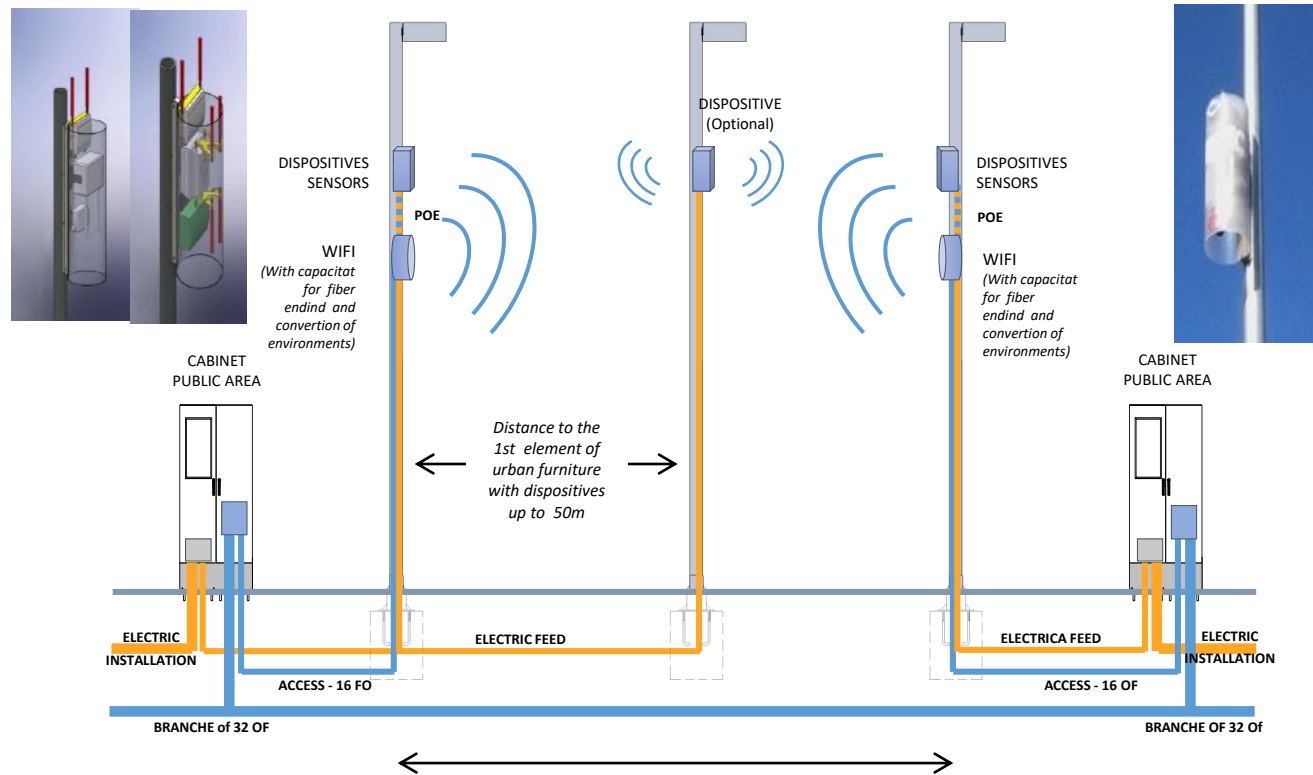
IMI developed a Lamppost portable testbed exposed in the MWC2018

- Accelleran integrated a video server in IMI the lamppost operating a 3.5GHz Small Cell with MEC video server and 3.5GHz smartphone.
- The testbed is being used by i2cat to:
 - Perform integration tests among different components
 - Evaluate coexistence of 3.5GHz LTE and 5GHz/2.4GHz WiFi nodes with 5GHz band



04 Results

Normalize and its integration with ITC at public space



05 Next steps for Barcelona

Identified interactions with 5G PPP & WGs

5G IA / NW2020 WGs

- SDN/NFV WG
- Trials WG
- 5G Architecture WG
- NetMgmt & QoS WG

5G PPP Projects

- Virtualization on resource-constrained devices
- End to end service management & orchestration over distributed and heterogeneous edge infrastructure
- Network Slicing and security
- 5G service programming models

Potential collaboration
opportunities

5Gtango

5G ESSENCE

5G PICTURE

5G MEDIA

ONE5G



05 Next steps for Barcelona

City Council Expected Role

5G is a new technology with expected impact in services and infrastructure. So it is key for cities participate in its definition and Deployment under a PPP and citizen friendly perspective.

Drive 5G deployments to enforce Barcelona challenges: equity, circular economy, open and sustainable. That means several action points:

1. Promoting 5G technologies in its Deployment,
2. Regulating use of public space and urban furniture integration,
3. Testing Neutral Operator Concept from infrastructure and host perspective as tool to fight against digital divide caused by coverage.
4. Early Adopter of 5G technologies in City Services, preventing application digital divide
5. As a consequence improve Operation and Maintenance of new implementations
6. And finally ...Normalize and Standardize



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www.5gcity.eu



Ajuntament
de Barcelona