Saló de Cent - Barcelona – Source: IMI

Barcelona City Council
5GCity Project Indoor Field Tests

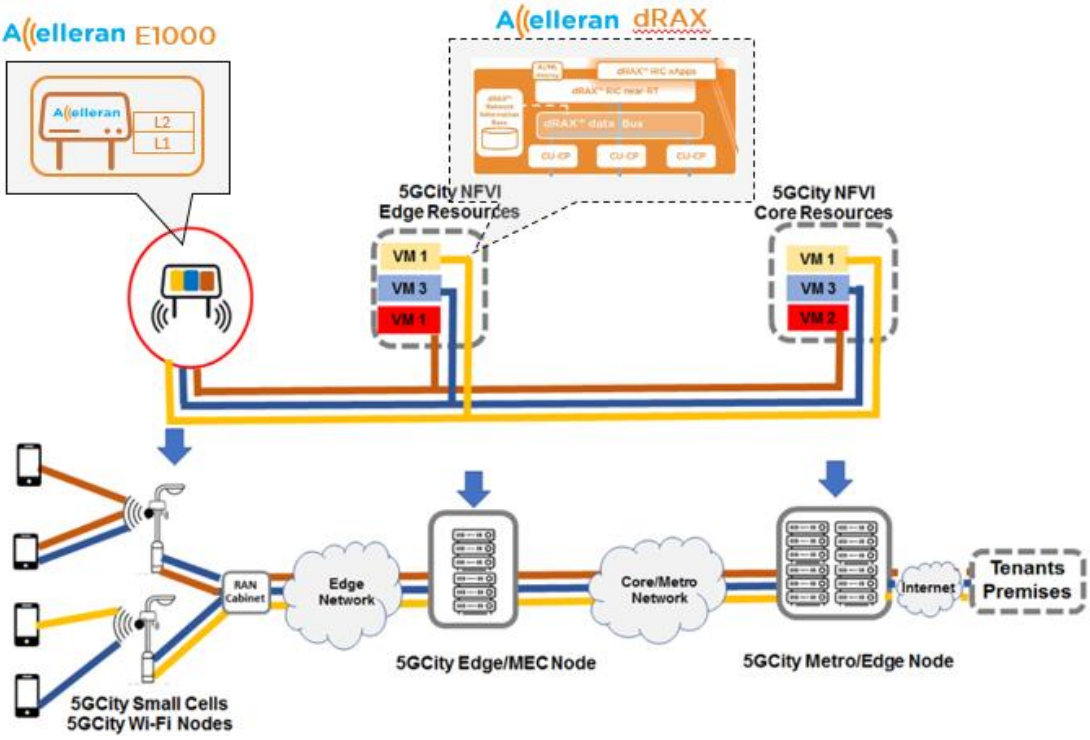
Barcelona - July 2020 – The 5GCity project, a **5G PPP Phase 2 project**, that started in 2017 reached successfully its final stage last March 2020, with 34 month of development, deployment and testing and the satisfactory achievement of all its challenges, objectives, and milestones. The synergy created between the **18 partners from 7 European countries** has allowed the achievement of successful use cases, reaching important results from development work, while handling the complexity of deploying scenarios in real live trials.

The project is among the very few from 5GPPP projects that validated orchestration and innovation solutions in three different cities with live trials: Barcelona (ES), Bristol (UK) and Lucca (IT).

During its lifespan, the 5GCity project designed, deployed, and validated a **three-tier architecture** including a cloud native RAN Intelligent Controller and a **orchestration platform** supporting the **Neutral Host model**:

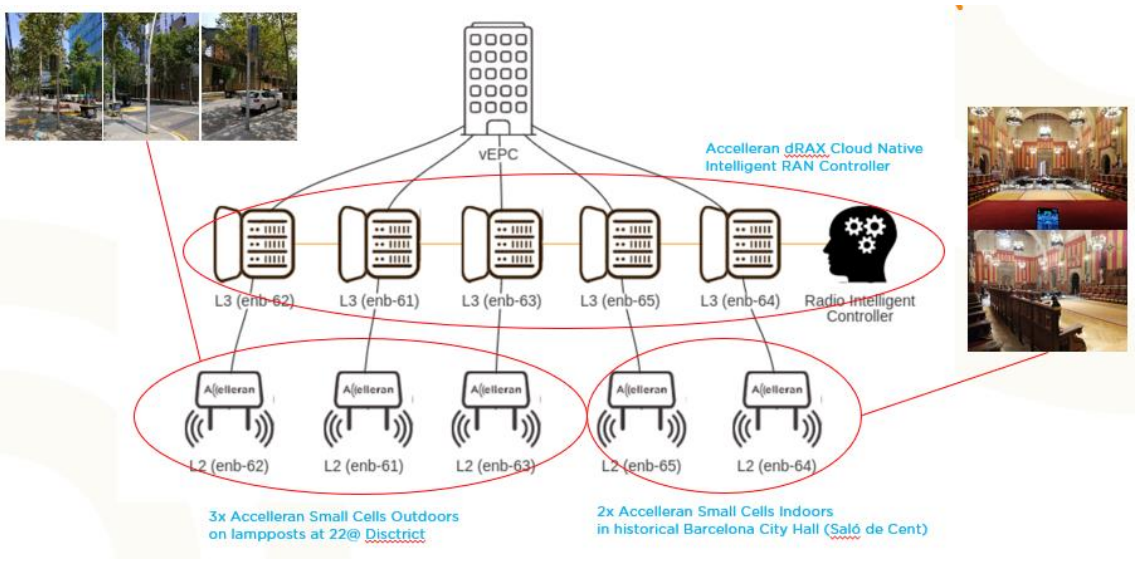
- *The 5GCity Tier 1 (RAN)* - a dense urban radio access network installed in lampposts and other street furniture/buildings using unlicensed and licensed technologies

- *The 5GCity Tier 2 -Edge/Multi-Access Edge Computing (MEC)* –comprising compute and storage at the edge running a neutral host enabled cloud native RAN intelligent controller placed between the 5GCity Metro/Edge Node and the RAN.
- *The 5GCity Tier 3-Metro/Edge* – comprising computing and storage elements used from a metropolitan data centre to run core compute workloads. This tier also hosted most of the 5GCity Platform components.



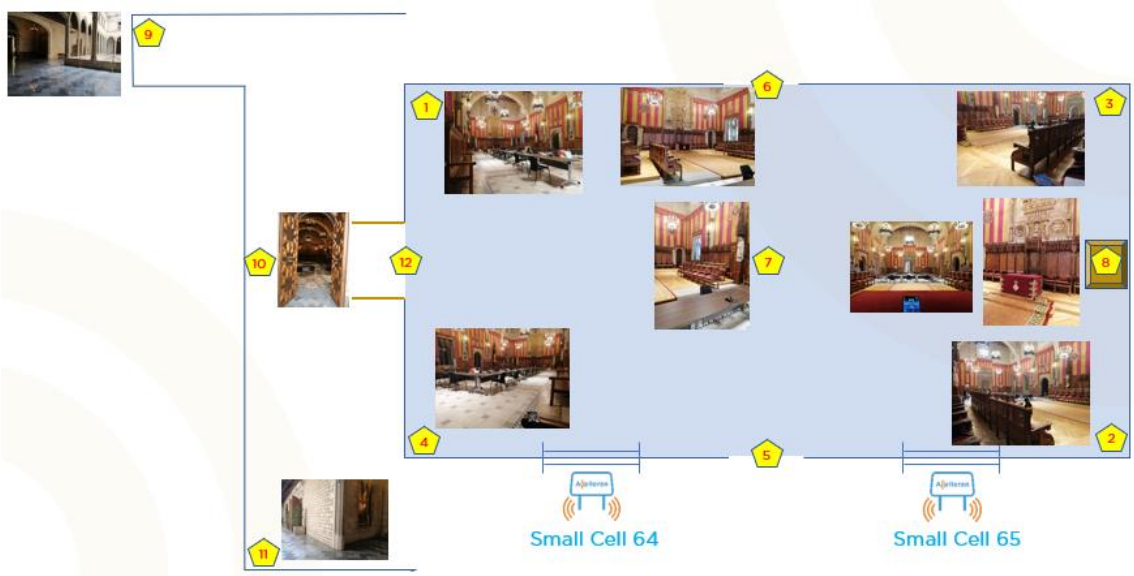
Three-tier 5GCity Infrastructure - Source: 5GCity

5GCity Barcelona main pilot validation in licensed spectrum was already performed and finalised using 3 **Accelleran** Small Cells deployed outdoors in lampposts at 22@ District. Additionally, 2 further Small Cells were added as an indoor deployment in Barcelona City Council - Saló de Cent to enable **BTV Mobile Backpack** video transmissions of the Barcelona City Council plenaries. After some pre-covid19 installation and pre-testing sessions, the final indoor field tests were performed using these additional Small Cells by 5GCity partners: **Accelleran, IMI, i2CAT and Betevé**.



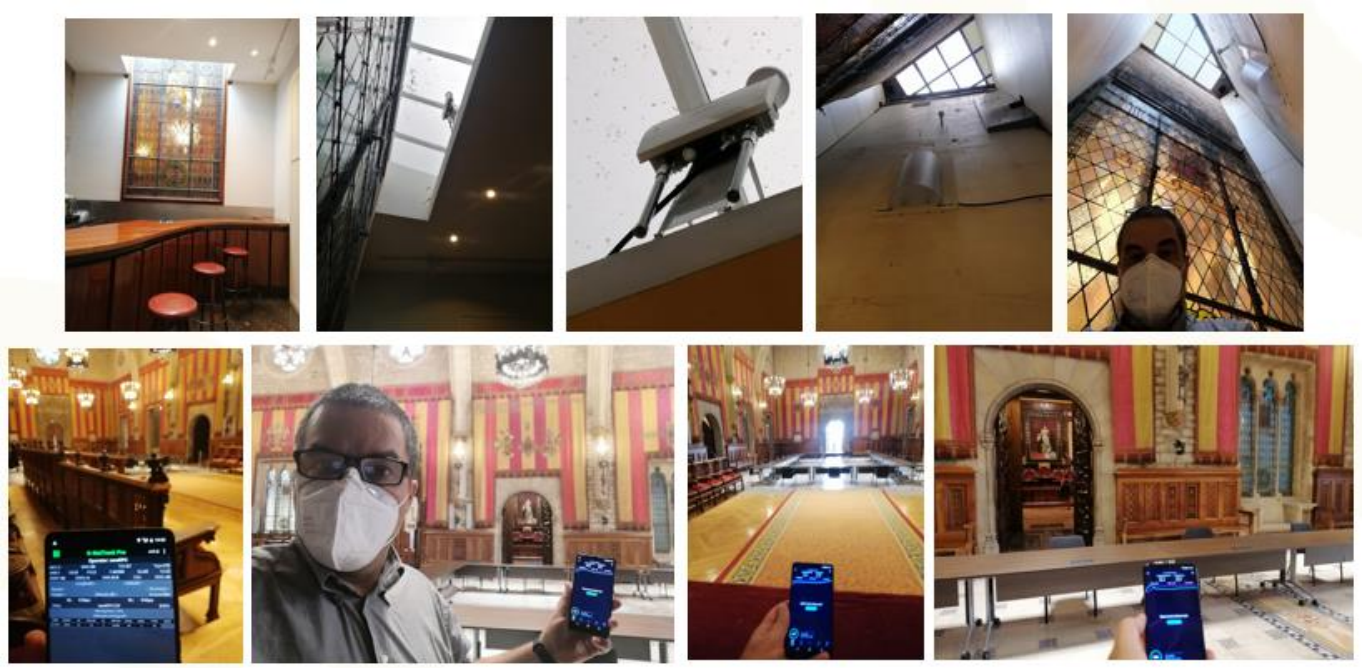
5GCity Field Tests Barcelona – Source: i2CAT

The indoor field tests at Saló de Cent consisted in the measurement of coverage and throughputs inside and outside the main room at different locations. Measurements consisted on radio interface signal quality (SNR/RSRP/RSRQ/RSSI) and DL/UL throughput/jitter/latency/packet loss.



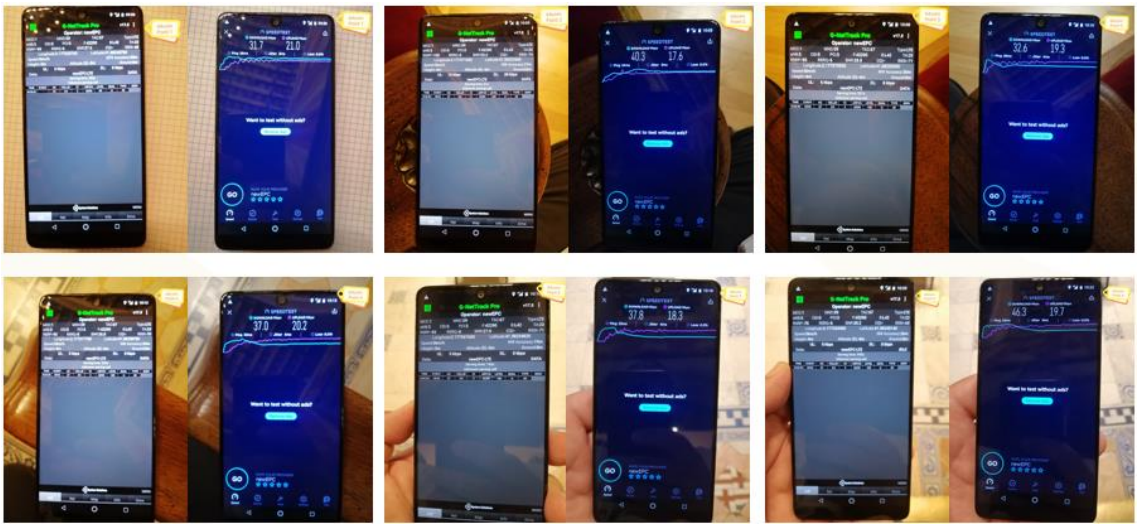
5GCity Saló de Cent Barcelona Testing Location – Source: Accelleran

5GCity Saló de Cent Barcelona Field Test Prep. & inst. – Source: Accelleran



5GCity Saló de Cent Barcelona Indoor Tests – Source: Accelleran

CONCLUSIONS:



5GCity Saló de Cent – Barcelona Indoor Test Results excerpt – Source: Accelleran

The results of the tests showed that signal quality inside the building were remarkably high for both small cells, regardless of their relative position in the room and exceptionally good throughputs were achieved consistent to that high signal quality. In locations outside the building the signal quality was as expected from a historical building with thick stone walls lower that inside the main room, except for the help of certain windows/doors providing nLOS conditions.

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