5G-CLARITY

H2020 5G Infrastructure Phase 3 Project

Funded Collaborative 5GPPP Project, titled: "Beyond 5G Multi-Tenant Private Networks Integrating Cellular, Wi-Fi, and LiFi, Powered by Artificial Intelligence and Intent Based Policy", started November 2019, ended February 2023.

Problem

Private networks gaining momentum, but it requires: i) integration with legacy IEEE 802.11 technologies; ii) flexible integration with the public 5G networks; iii) easy operation; and iv) specific functionalities such as cm-level positioning in industry scenarios.

Consortium Partners

- Gigasys Solutions

- Innovations for High Performance microelectronics (Germany)

- Accelleran (Belgium)

- Robert Bosch (Spain)

- Fundació Privada i2CAT, Internet i Innovació Digital a Catalunya (Spain)

- Interdigital (UK)

- Ericsson LMI (Ireland)

- pureLiFi (UK)

- Telefónica Investigación y Desarrollo (Spain)

- University of Edinburgh (UK)

- Universidad de Granada (Spain)

- University of Bristol (UK)

Outcomes

The project solutions and innovations were demonstrated in two pilots, one and Industry 4.0 pilot demonstrated in Bosch factory in Madrid, Spain, and another one a smart tourism pilot demonstrated in M-Shed Museum, Bristol, UK. Based on the results obtained in the two project pilots, it is concluded that the aggregation of 5GNR, Wi-Fi and LiFi access networks within a common system for private networks can add significant value to vertical industries requiring novel eMBB, URLLC and positioning services. The highlight of some of the lessons learnt through the integration of the technologies considered in the project, as well as some of the open points that to be addressed in future are presented in the project's

final [Executive Summary](#).

Highlight

5G-CLARITY proposed an overall archiecture, composed of several strata, developed a multiconnectivity framework, a multitechnology positioning technique, and an intent based management, with an interface using natural language. The 5G-CLARITY platform includes a management plane for private 5G networks that allows to configure infrastructure-based slices.

The Approach

- Proposed architecture for 5G Private Networks archiecture, composed of several strata: infrastructure, network and application functions, management and orchestration, and intelligence stratums.

- Introducing 5GNR/Wi-Fi/LiFi multi-connectivity framework for private networks.

- Multitechnology cCm-level localization and synchronization capabilities.

- AI-driven and intent-based network management.

- IIntegration and interoperation of private and public networks.

Summary

Some of the good practices learnt through the integration of the 5G-CLARITY technologies in the two project pilots are discussed here. These good practices can be helpful to other R&D projects that expand on the use of 5G in private networks:

- Stability of open source 5GSA core networks.
- Availability of 5GSA compatible devices.
- ORAN interoperability problems.

For further insight you can look at the project's Executive Summary.