WHAT AND WHY?
This project has investigated different options to extend the existing wireless communication infrastructure so as to improve its efficiency and quality of service in urban scenarios. The main goal was to address the scarce availability of wireless radio spectrum that might prevent the realization of novel digital services.

HOW AND WITH WHOM?
The project has built and validated models to complement the cellular network with the use of TV whitespaces (i.e., frequencies made available by the transition from analog to digital TV) in collaboration with Princeton University, University of California, and TU Berlin. Moreover, it has characterized the performance of long-range wireless communications using the LoRa technology in urban IoT scenarios, in collaboration with Digita Oy. Finally, the project has employed edge computing to improve the quality of service in interactive IoT applications and mobile video delivery.

RESULTS, IMPACT AND RECOMMENDATIONS
The most important outcomes of the project are: a thorough understanding of the constraints for using diverse communication technologies in urban scenarios, which had impact on the standardization process of LoRa; the release of the FLoRa open-source simulation framework for network planning and performance evaluation of urban IoT applications. Our main observation is that the landscape of digital services in urban scenarios is extremely dynamic. Policymakers should be aware of the consequences of long-term regulations on emerging businesses and services.

What next?
Ongoing research addresses scenarios where infrastructure and content providers compete to offer digital services to users in urban scenarios. The undertaken approach is based on network economics and optimization theory.

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Digital services through wireless communications in urban scenarios
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