

FLEX5GWARE



Flexible and efficient hardware/software platforms for 5G network elements and devices

TECHNICAL AND RESEARCH CHALLENGES

Flex5Gware will perform research, development and prototyping on key building blocks of 5G network elements and devices both in the hardware (HW) and software (SW) domains. These research, development and prototyping activities entail many system design challenges that will be solved through disruptive approaches and resulting technologies. Precisely, in Flex5Gware, design and development of analogue components to enable massive MIMO (Multiple Input Multiple Output) in mmWave (millimeter wave) spectrum bands will be carried out. In the mixed signal and conversion stages domain, important research and results will be obtained related to crucial 5G components like full duplex communications (simultaneous transmission and reception), high-speed broadband converters, etc. In the digital domain, drastic progress in the area of building HW components will be achieved for important features like FBMC (Filter Bank Multi-Carrier) transceivers, LDPC (low-density parity check) codes, etc. Moreover, a sophisticated, HW-agnostic, SW platform will be developed, capable of deciding the optimal splitting of functionality between HW and SW. This will yield powerful HW/SW systems, with interface abstractions, for flexible control and management, across heterogeneous wireless devices and access networks.

MAIN OBJECTIVES

The overall objective of Flex5Gware is to deliver highly reconfigurable HW platforms together with HW-agnostic SW environments, targeting both network elements and devices, and taking into account the need for increased capacity, reduced energy footprint, as well as scalability and modularity for enabling a smooth transition from 4G mobile wireless systems to the 5G era.

APPLICATIONS

Design requirements for 5G wireless networks and applications are expected to differ markedly from previous generations. Exponential growth in mobile data traffic, combined with a rapidly increasing diversity of traditional mobile devices, and new low-bitrate and low-power machine-to-machine devices, require enhanced HW/SW platforms for greater flexibility and efficiency.

Flex5Gware research will aim to improve technology in several key areas, including:

- quality of experience (e.g., capacity, latency, resilience).
- energy efficiency.
- scalability, modularity, versatility and reconfigurability for multiple radio access technologies.

IMPACT

Flex5Gware will evaluate and demonstrate the developed 5G technologies, through proofs-of-concept, which will be showcased in main events. The consortium includes large industry leaders, (infrastructure providers, semiconductor manufacturers and network operators), leading research institutions and academia, and active SMEs. This highly specialized consortium will bring disruptive HW/SW results that will impact and pave the way for the future 5th generation of cellular networks. Flex5Gware will also collaborate in the definition of 5G wireless systems together with the other 5G PPP projects, by providing the HW/SW implementation standpoint.



PROJECT COORDINATOR

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MORE INFORMATION

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