ACM SIGCOMM 2021 Workshop on Flexible Networks (FlexNets'21)

AI-Supported Network Flexibility and Agility

Virtual Event, August 27, 2021

Call for Papers

Scope

As the next generation communication systems beyond 5G, such as 6G, are expected to address a wider range of services and applications with a wider range of dynamic environmental and service-specific requirements, these systems evolve towards an architecture supported by enhanced capabilities to adapt to such flexible environments and connectivity needs. Envisioned 6G systems are expected to see a further increase of applications with stricter and heterogeneous requirements, be adaptive to connectivity requirements through dynamic topologies, and take autonomous decisions to reconfigure the networks for efficiency and resiliency purposes. Flexible and agile networking solutions are required to deal with uncertainties and dynamic parameters. As the number of QoS-demanding applications increases, the capability of end-to-end holistic network transformation is required triggered by the dynamicity and mobility of users and their service demands as well as the radio and resource topology. The complexity introduced by these flexible characteristics needs to be addressed with more adaptive network resource sharing mechanisms among users and applications. This includes the adaptation to individual QoE/QoS needs and the dynamics of the applications and services, starting from access networks to core networks.

Ability to process the big data generated by the network, derive necessary feedbacks from the network and AI-assisted cognitive network management are key enablers for elasticity and adaptiveness to network dynamics such as topology changes due to the mobility of the end users, base stations and rearrangement of network resources (either physical or virtual network functions). A distributed, self-*, AI-assisted and deeply programmable/reconfigurable end-to-end network architecture is required to address such network dynamics.

Topics of Interest

- All aspects of cognitive, flexible, dynamic, agile network architectures
- Autonomous management of such networks, (real-time) zero-touch management
- Autonomous network function allocation and placement
- AI-assisted deeply-programmable networks, programmable data planes and nodes
- Edge assistance and device-edge-cloud collaboration for elasticity, edge-AI networks
- Distributed computing environments, hyper-distributed applications, integration of computing, connectivity, IoT, AI
- Architectures for collaborative smart nodes with decentralised intelligence, federated machine learning in 6G
- Microservice-based flexible architectures, network management, service orchestration
- Open interfaces and open source solutions for smart networks
- Virtual radio access technologies, programmable RAN, RANaaS
- Energy-oriented network management, ultra-low-energy 6G networks
- Multi-context awareness, dynamic multi-service and multi-tenancy and network slicing
- Flexible backhauling/fronthauling, Integrated access/backhaul (IAB), multi-hop mesh backhauling
- Runtime flexibility in services and applications, application-driven optimization
- Drone-assisted agile networks, base stations on wheels or wings
- Flexible and software-defined security, physical-layer security
- Flexible and rapid deployment for automated and smart services
- Private Beyond 5G Networks: Solutions to simplify the lifecycle, deployment, and operation

All in all, future networks must be flexible and elastic to easily introduce new services, applications and models. Any topic related to this concept is welcome

IMPORTANT DATES

Submission deadline	May 21, 2021
Acceptance notification	June 21, 2021
Camera-ready deadline	July 2, 2021

General Chairs
Raouf Boutaba, University of Waterloo, Canada
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Keynote Talk: Gunnar Mildh, Ericsson Research, Sweden
"Drivers and directions for 6G network architecture"

Cadence Talk: David M Guiterrez Estevez, Samsung, UK
"3GPP Standardization of AI-based Network Automation"

https://flexnets21.hotcrp.com

Full details of submission procedures are available at http://conferences.sigcomm.org/sigcomm/2021/workshop-flexnets.html