

COMPUTER AND CONTROL ENGINEERING

Efficient 6G Softwarized Network Infrastructures

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Context of the research activity	6G infrastructure, Cloud computing, Network functions virtualization, edge computing.
Objectives	<p>Telecommunication operators are increasingly relying on software network functions (NFs) to replace dedicated network appliances, which are being extensively deployed in current 5G networks. While bringing evident advantages in terms of agility, the performance of the current software sits well below the corresponding dedicated appliances counterpart, hence bringing clear efficiency problems.</p> <p>This Ph.D. will investigate how to increase the efficiency (i.e., throughput) of the future generation of network functions, focusing on telco-relevant (e.g., beyond 5G) network services. The ambition is to reach terabit speed on common off-the-shelf hardware (e.g., commodity server, possibly including some general-purpose accelerators such as smartNICs), which corresponds to an improvement of one order of magnitude compared to the current state of the art. In addition, this activity will also explore the problem of the orchestration of the above technologies in a cloud-native infrastructure, which would bring the above efficiency gains into future softwarized point-of-presence edge data centers managed by telecommunication operators.</p>
Skills and competencies for the development of the activity	Cloud computing Computer architecture Computer networks Network programming