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**TECHNISCHE
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Motivation:

In wireless communication systems, different applications have to share the same hardware and spectral bands, making it very challenging to attain diverging QoS requirements simultaneously. In addition, the control mechanisms that are provided today in wireless technologies are not adequate to deal with extreme (ultra-low latency, ultra-high throughput, ultra-high reliability) and diverging (low and high data rate, time-critical and non-time critical) communication needs. Important evolutions are being made at different levels that allow the instantiation of parallel network slices, each one composing a particular network sharing the underlying wireless infrastructure and spectrum.

To contribute to the achievement of a functional network under diverse application requirements, ORCA targets to drive end-to-end wireless network innovation by benefiting from software-defined radio (SDR) and software-defined network (SDN) solutions, exploiting flexibility at PHY, MAC and network level.

Vodafone Chair Contribution:

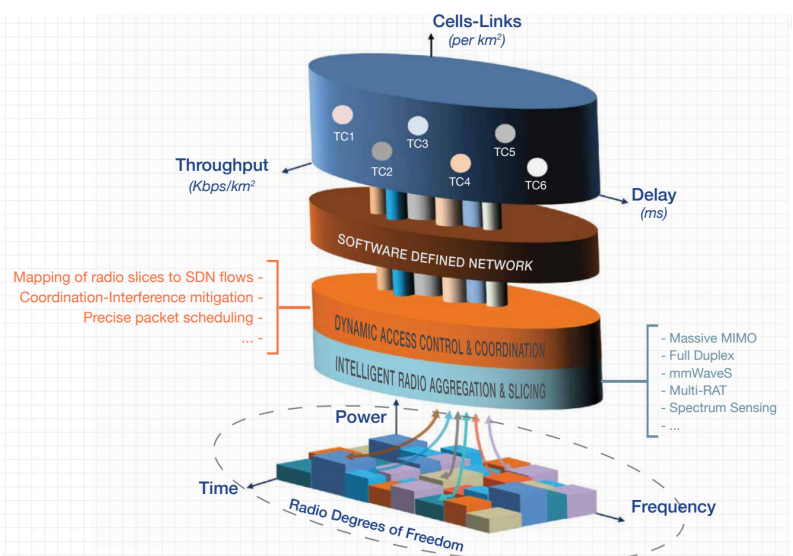
The Vodafone Chair contributes to ORCA by offering its indoor and outdoor testbed with remote access for external users, counting with flexible GFDM PHY for sub-6 GHz systems as well as mmWaves for high throughput applications.

Objective:

ORCA will accelerate end-to-end network experimentation by making open and modular software and hardware architectures available. ORCA aims at offering experimental facilities with flexible SDR devices and Cognitive Radio as a Service for the research community. To this end, ORCA will support flexibility at RF, PHY, MAC and network level and extend SDN architecture by use of flexible PHY. Furthermore, appropriate interfaces to integrate network functionality with PHY and MAC in SDR will be offered.

Approach:

The ORCA project will distribute 2M € via several Open Calls for experiments and extensions to financially support the involvement of third parties. The open calls for extensions are intended for experts in the community to develop missing functionalities and extend ORCA platforms. And the open calls for experiments target the validation of innovative SDR solutions using ORCA facilities.



The overall ORCA vision is to drive end-to-end wireless network innovation by bridging real-time SDR and SDN exploiting maximum flexibility at radio level, medium access level and network level in order to meet very diverse application requirements.