



5G PPP Information Day, Paris “Trends in Virtualization”

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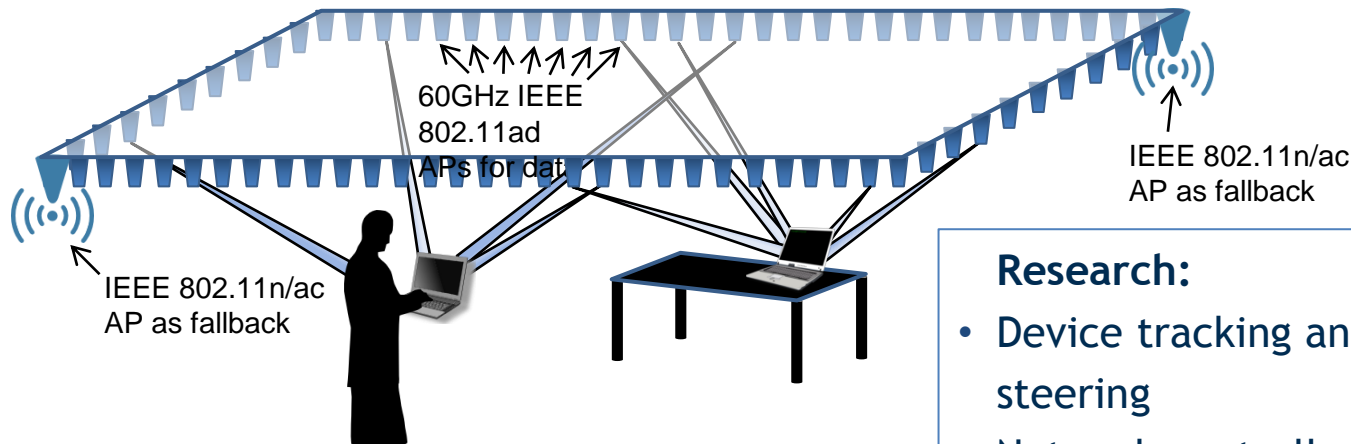
Univ. Carlos III and IMDEA Networks

Telco trends and Virtualization

- Voice and internet access are totally commoditized
- Telcos are forced to compete in price => sustained trend in profit margin reduction
- Moving bytes from here to there is a difficult business!
- Actions to increase profits:
 - Lower costs by combining SDN and NSV
 - Increase added value offering new, differentiated, services
- Aspects to virtualize: indoor wireless, infrastructure, endpoints, business-model, ...
- Telco Virtualization: from Hardware-based companies to Software-based companies

1. Virtualizing Indoor Wireless

- Provide a large number of highly directional line-of-sight channels between access points (APs) and end devices
- APs may have to be deployed ubiquitously and may vastly outnumber mobile devices
- No (or very basic) medium access control and interference management



Research:

- Device tracking and antenna steering
- Network controller to selects APs
- Coded transport
- Efficient sleep mechanism

2. Infrastructure Virtualization

- Research directions
 - Efficient share of radio access networks among different players → wireless access virtualization
 - Infrastructureless mobile operator networks → adaptative soft network core running on datacenters
 - Application aware networks → ability to open APIs allowing app providers to influence network behavior
 - Personalized connectivity → networks adapting to users profiles, location and context
 - Faster deployment of new network services → by benefiting from a software defined paradigm