



Software-defined RAN for 5G and beyond – how flexible can it really be?

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IEEE Globecom 2017 Singapore

- **Classification:** H2020 5G-PPP Phase 2 project
- **Scope:** The project addresses the paradigms of Edge Cloud computing and Small Cell as a Service by fueling the drivers and removing the barriers in the Small Cell market, forecasted to grow at an impressive pace up to 2020 and beyond and to play a key role in the 5G ecosystem.
- **Timeframe:** June 2017-December 2019
- **Partners**



Network architecture transition

Networks of the past



EPC cabinet



databases



base station cabinet



base station tower

Networks of the future



MEC server (COTS) including:
vRAN, vEPC, possibly applications
Share among many base stations



Small cell base stations:
RRH, DAS, femto, pico

Software-defined RAN

Virtualization framework

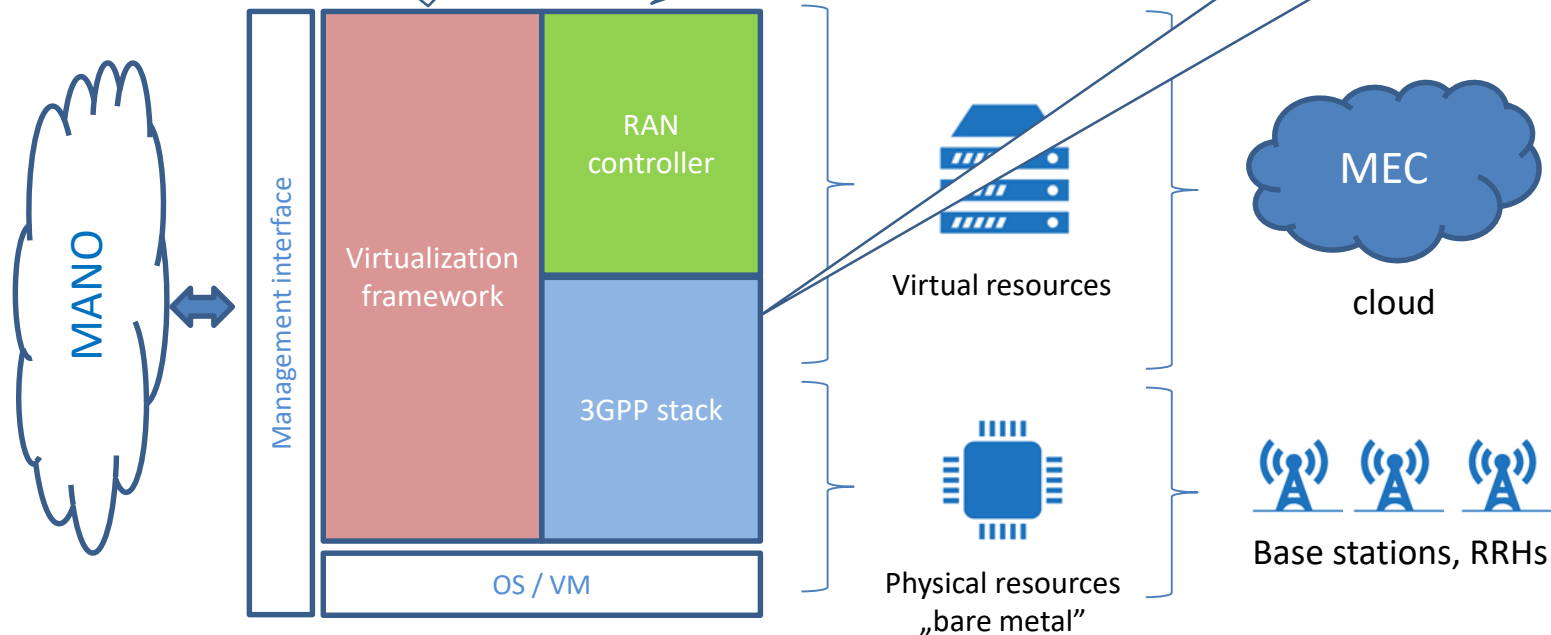
- Enables virtual operation and RAN slicing – key technical change in 5G
- Allows for execution on any infrastructure
- Enables easy extensions and customizations
- Allows for various functionality mappings

RAN controller

- Controls whole RAN
- Manages 3D radio resources
- Enables support of various traffic types (e.g., IoT)
- Enables QoS guarantees
- Optimizes latency

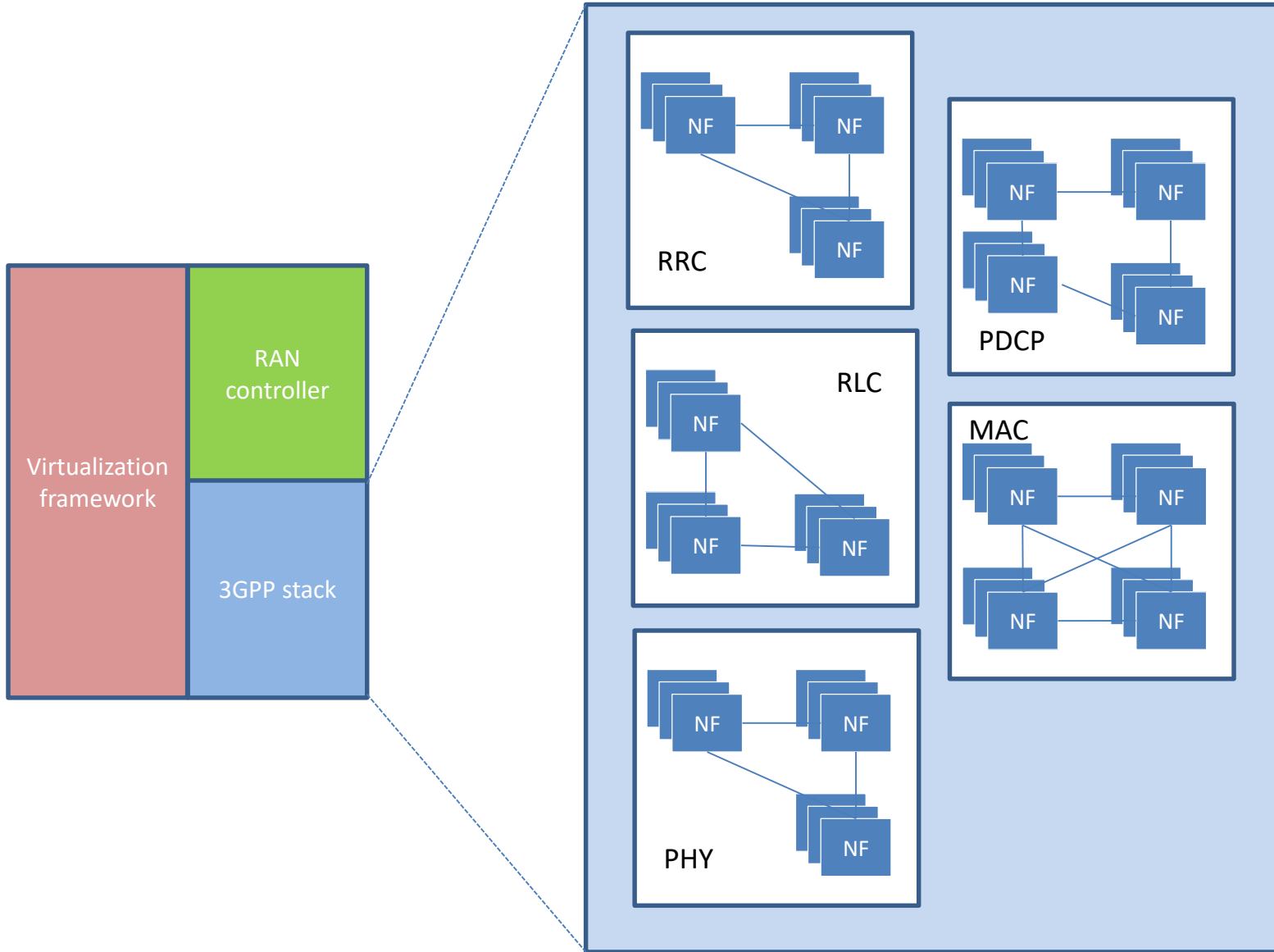
3GPP stack

- Realizes standard base station protocol stack functions



Fully software-defined and NFV-compatible RAN functionality ready to be deployed on physical (base station) or virtual (MEC servers) resources using proprietary technology

Example zoom-in: 3GPP stack



- How flexible can SD-RAN be with regards to?
 - Functional split and NFV independence
 - Mapping on physical or virtual resources
 - Opening APIs within protocol stack
 - Core NFVs reusability for various verticals
 - Use of customized NFVs for various verticals
- What new players do we see in an open value (and processing) chain?
 - Role of telcos
 - Other roles: e.g., data center provider or service integrator



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