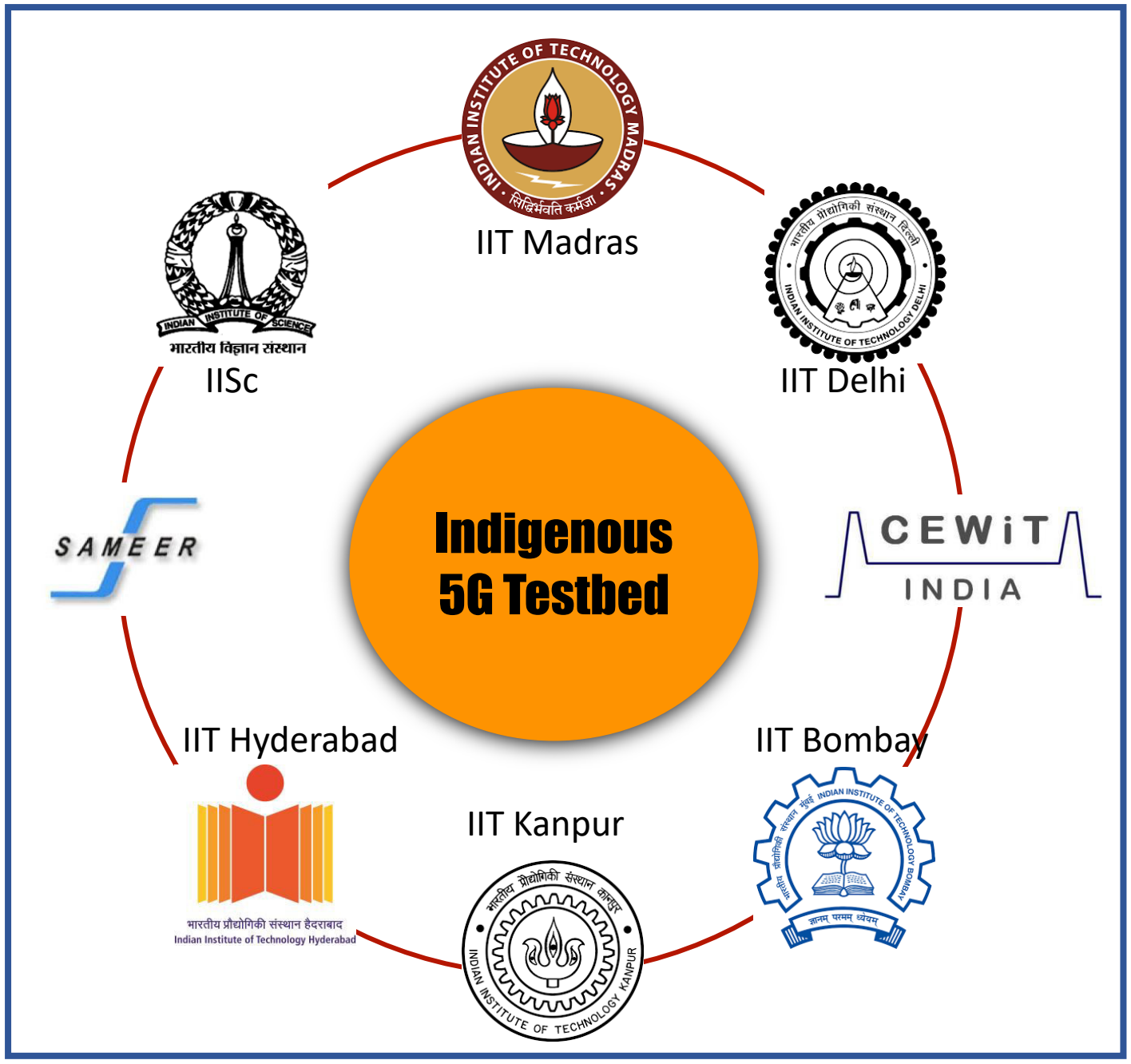


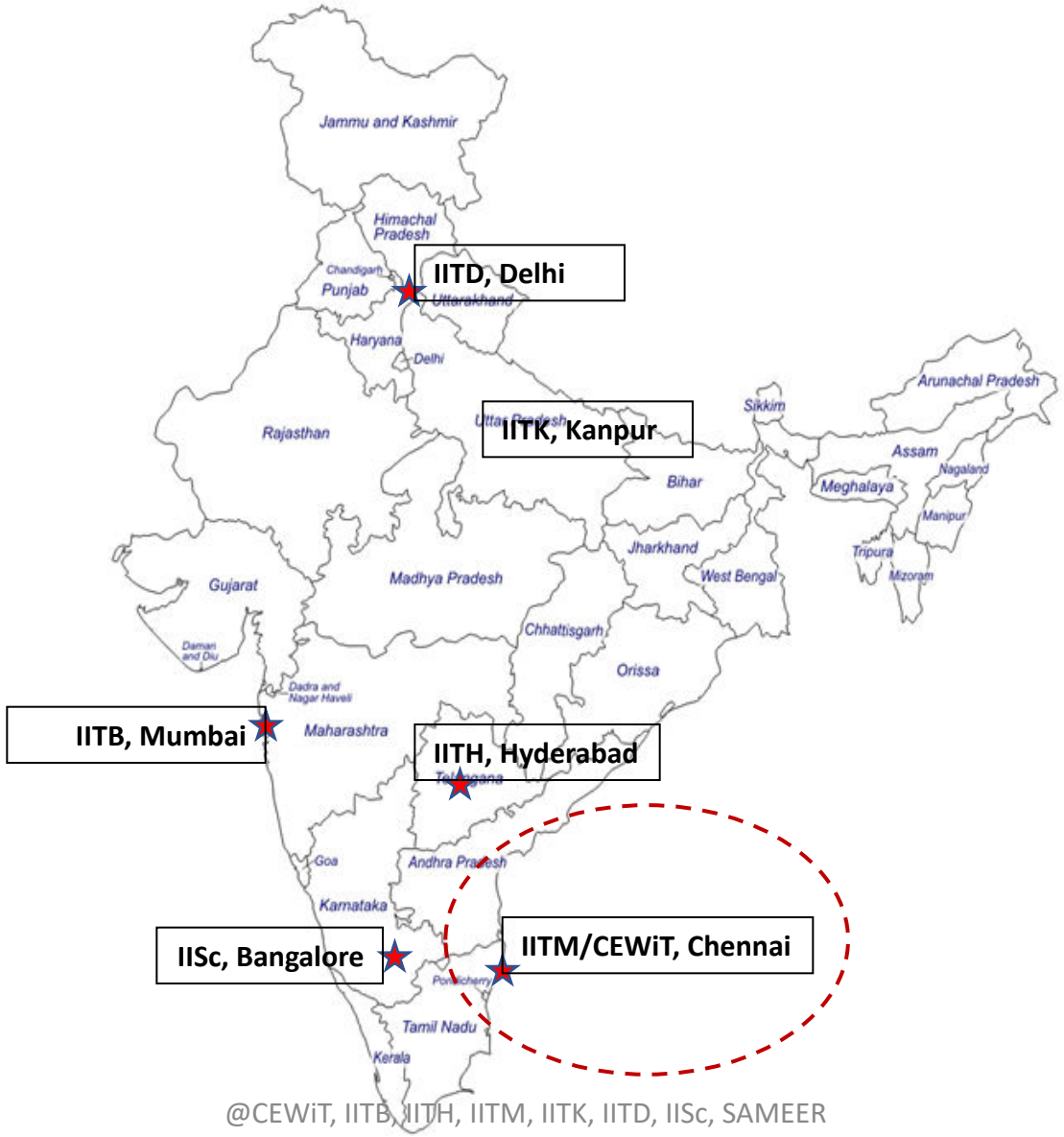
Indigenous End-to-end 5G Test Bed

Supported By

सत्यमेव जयते

Department of Telecommunications
Ministry of Communications
Government of India

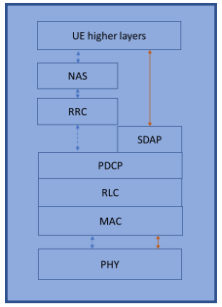
5G Test Bed Planned in these Locations



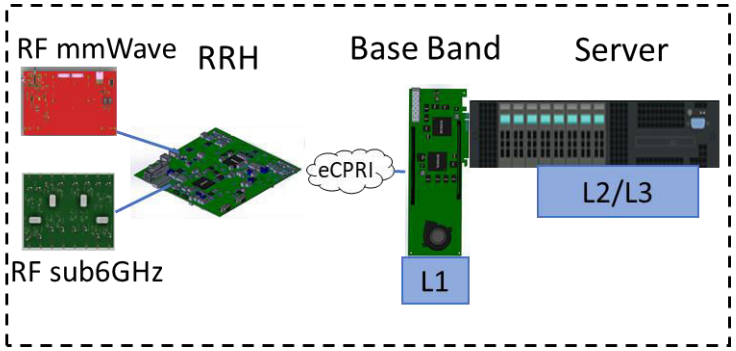
Components of the End-to-end 5G Test Bed (located at CEWiT/IITM)

These are the components which can be scheduled independently

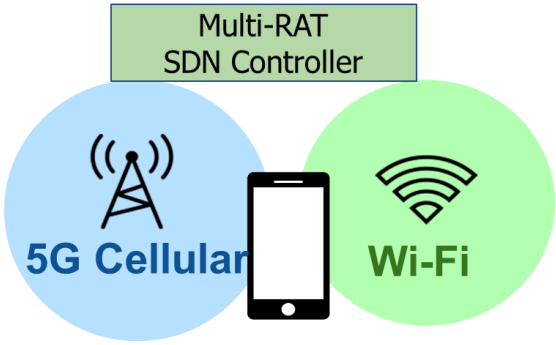
Test Equipments



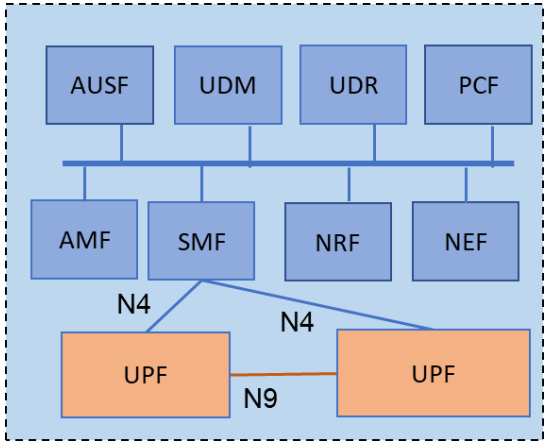
UE



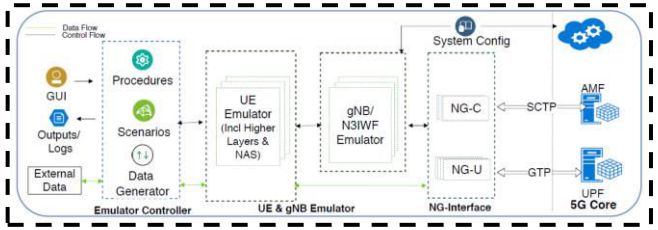
gNodeB



Non-3GPP (WiFi)



5G Core



RAN Emulator

Indigenous end-to-end 5G Test Bed (located at CEWiT/IITM)

APPs

UE

gNodeB

5G Core

Multimedia Apps

Vertical Industry Apps

Internet Apps

3rd Party Apps

UE higher layers
NAS
RRC
SDAP
PDCP
RLC
MAC
PHY

NR

WiFi

RRH
Base Band
Server
eCPRI
L1
L2/L3

Non-3GPP (N3IWF)

RAN Emulator (UE Emu + gNodeB/N3IWF Emu)

N2

N3

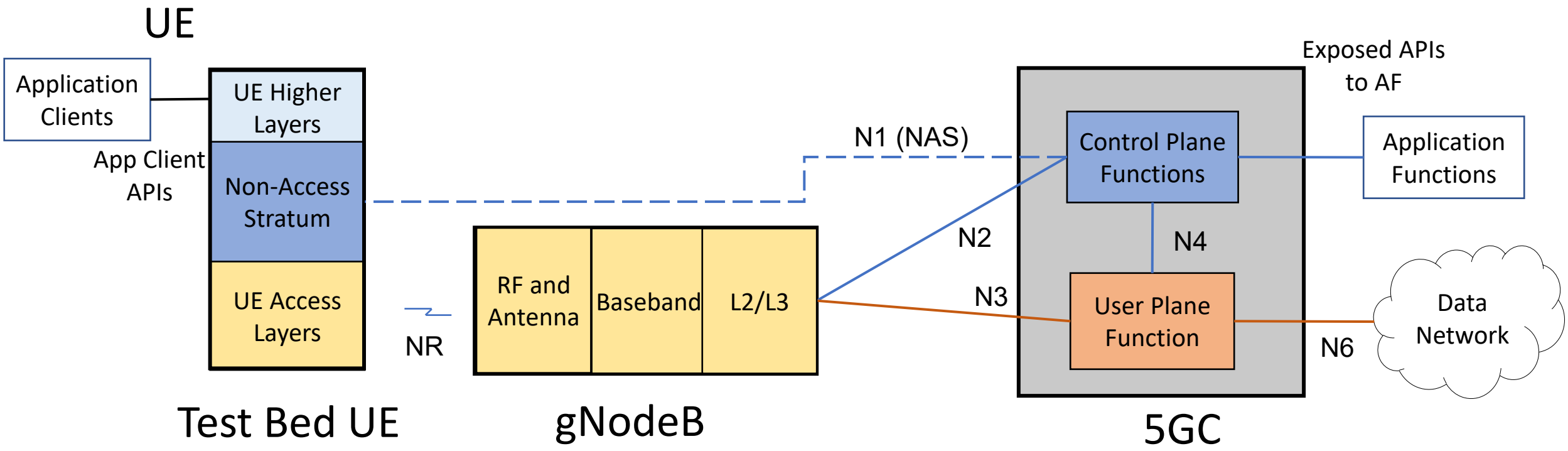
AUSF
UDM
UDR
PCF
AMF
SMF
NRF
NEF
N4
N4
UPF
N9
UPF
N6

Multimedia Services

Vertical Industry Domain

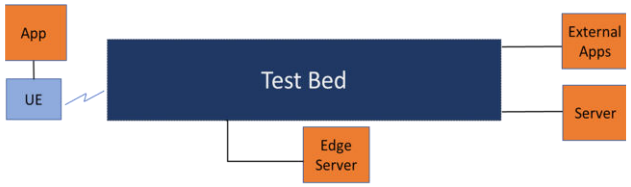
External Network

Interfaces in the end-to-end test bed

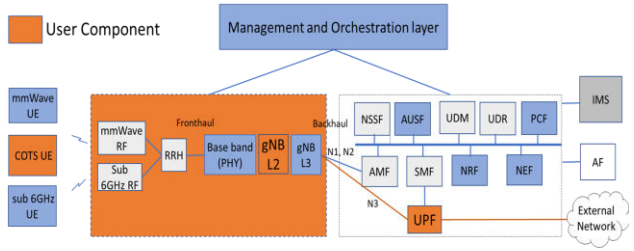


- 3GPP Standard Interfaces – N1, N2, N3, N4, N6
- App Interfaces at Client and Server sides

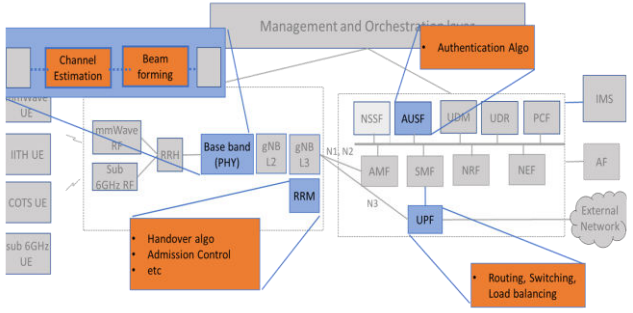
Categories of Test bed Users



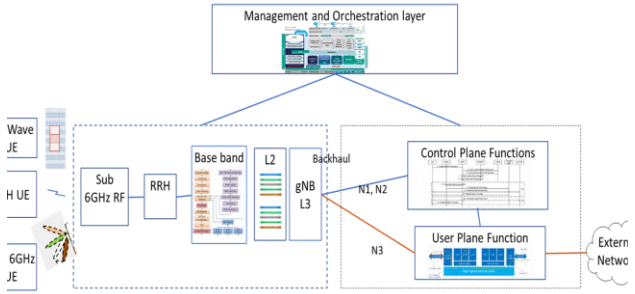
Application Users (Use case developers)



Technology developer (SMEs/Start-ups)

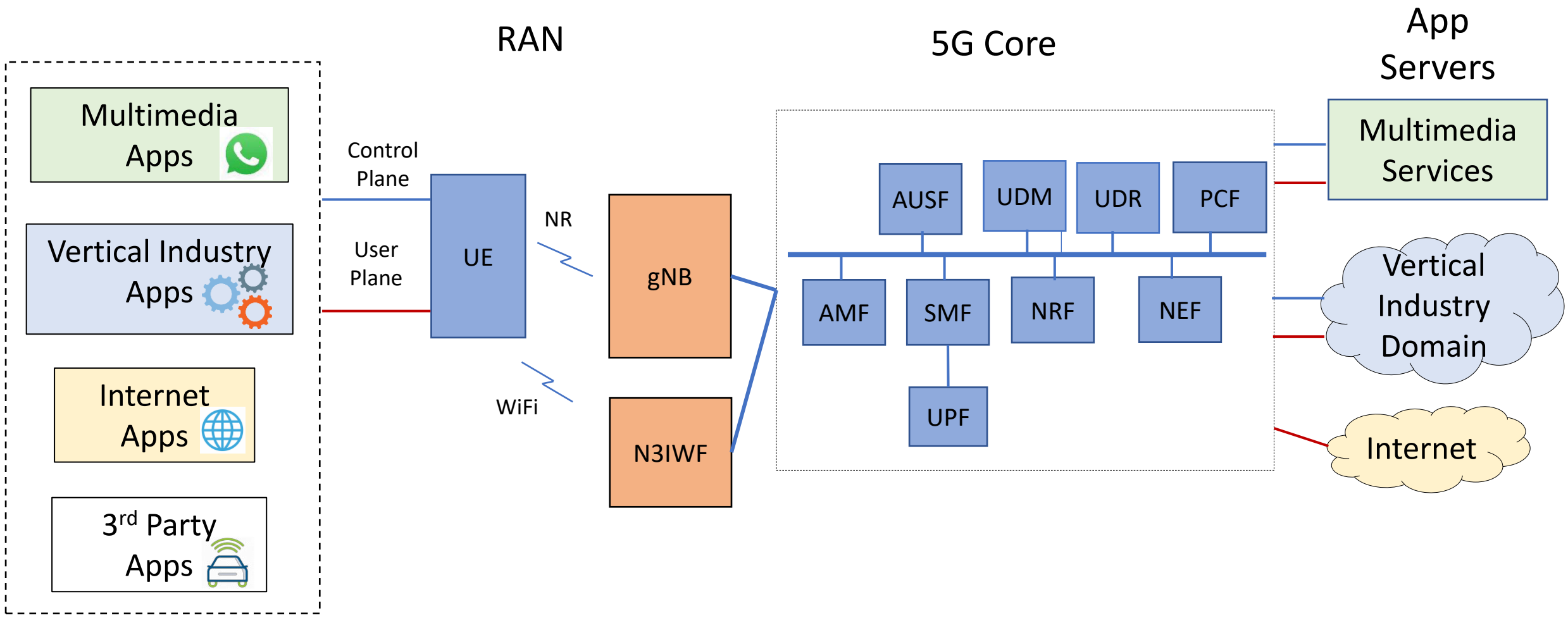


Researchers



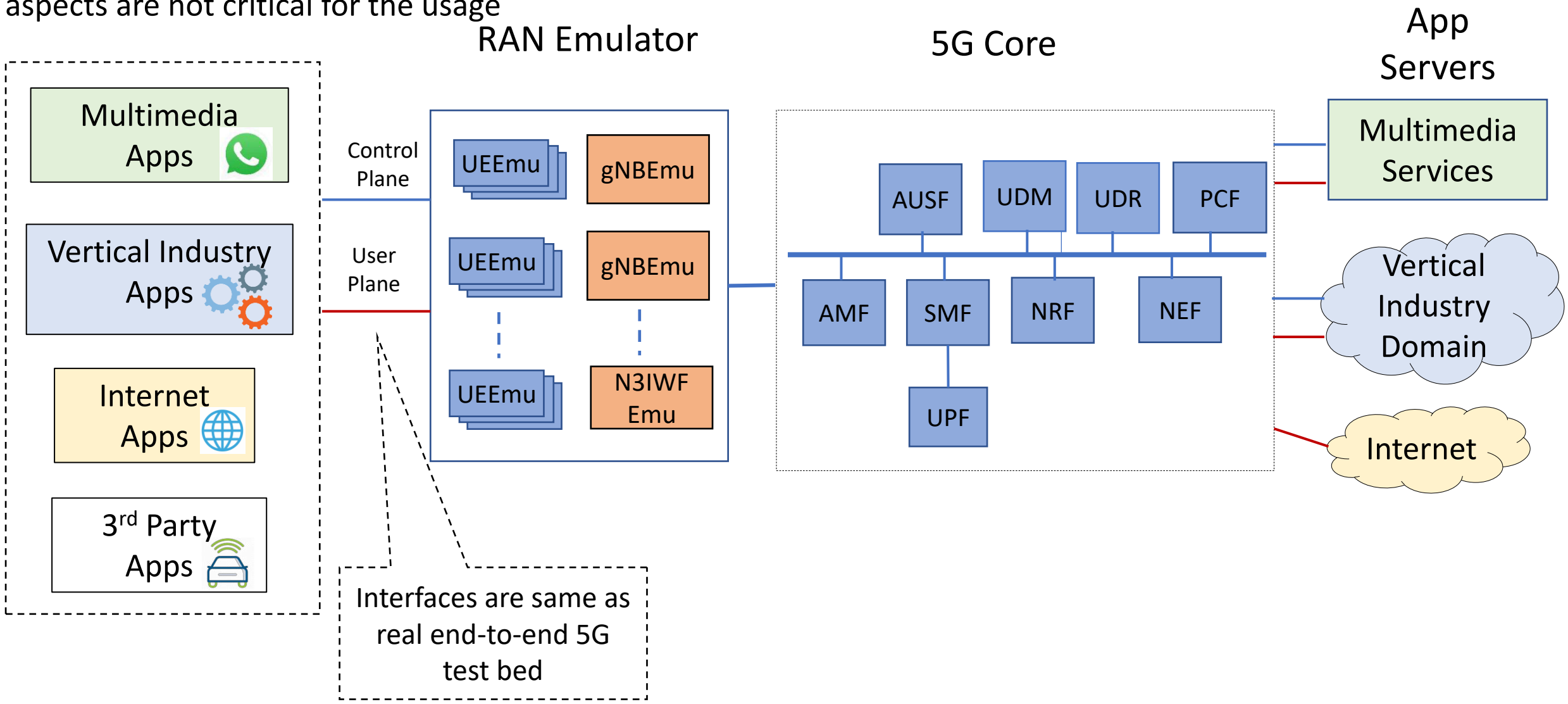
Students (for Learning)

End to End setup with RAN and RAN Emulator



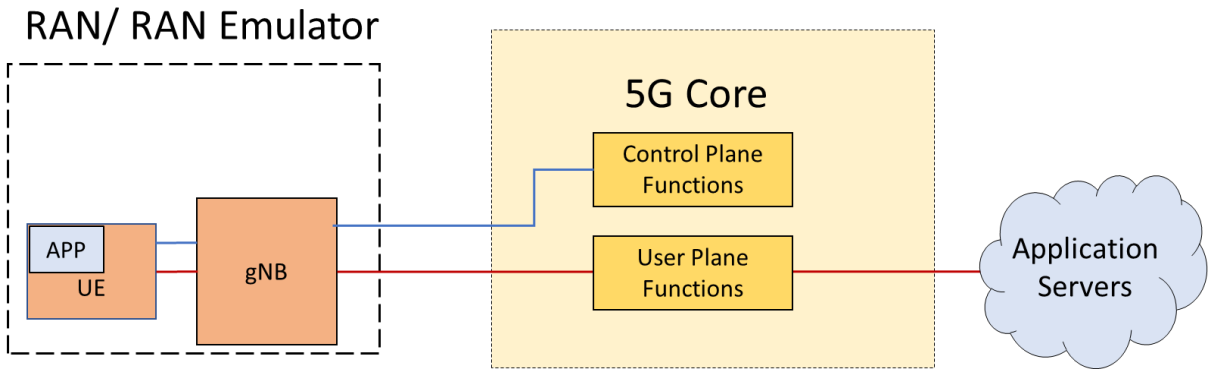
Emulated End to End setup

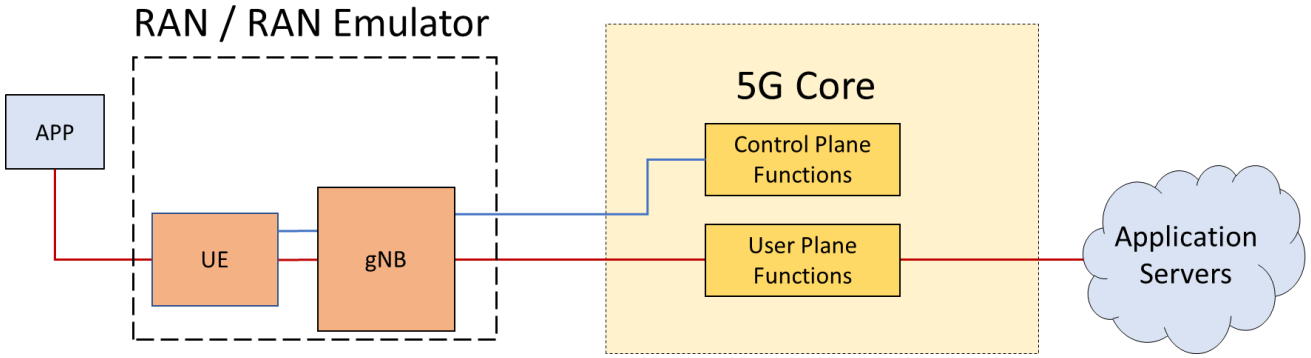
RAN Emulator can be used in certain scenarios when the RAN hardware is not available or when the radio aspects are not critical for the usage



Application Connectivity's

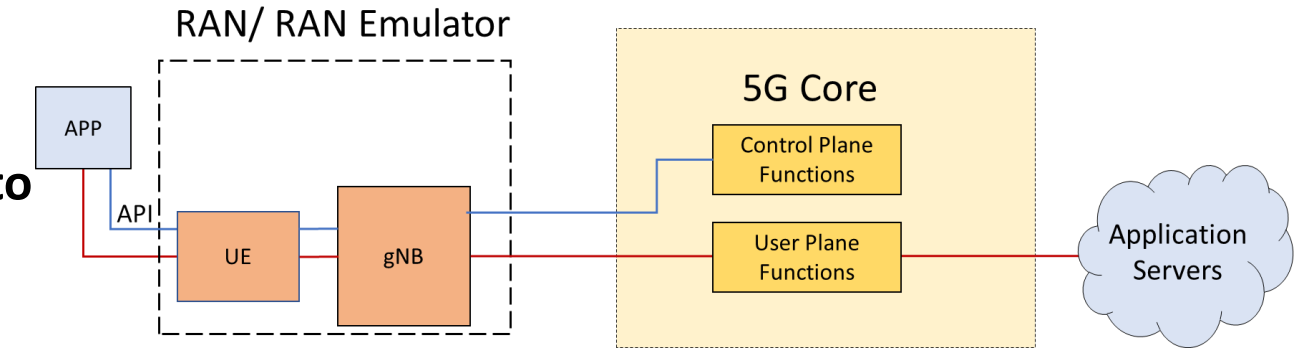
App Running in the UE machine





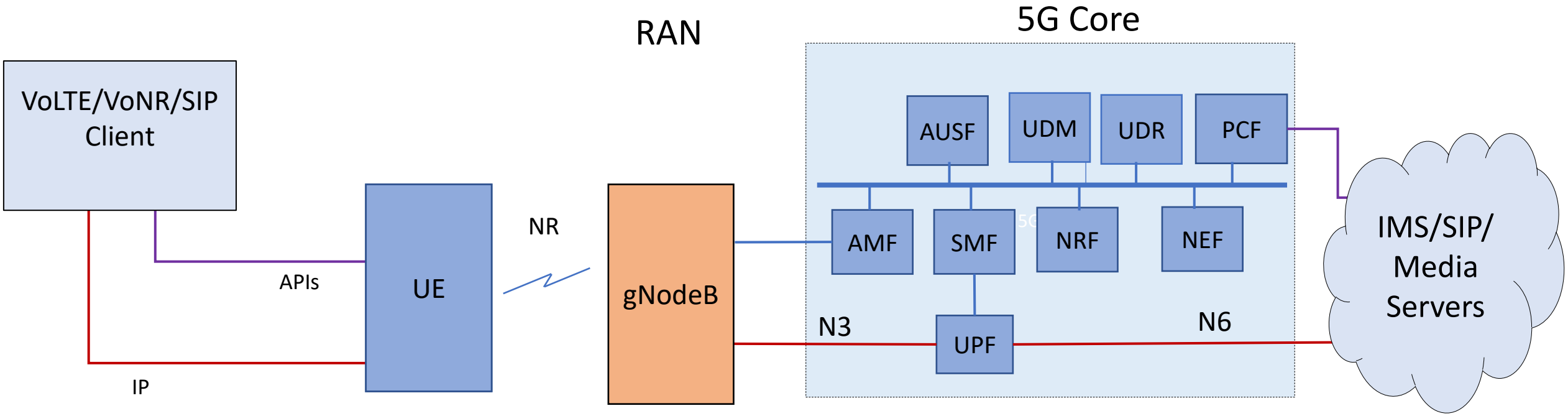
Non-5G Aware App Running in any machine connected to UE on an IP network

5G Aware App Running in any machine connected to UE on an IP network (APIs to 5G UE)



Ex1 : IMS Use case

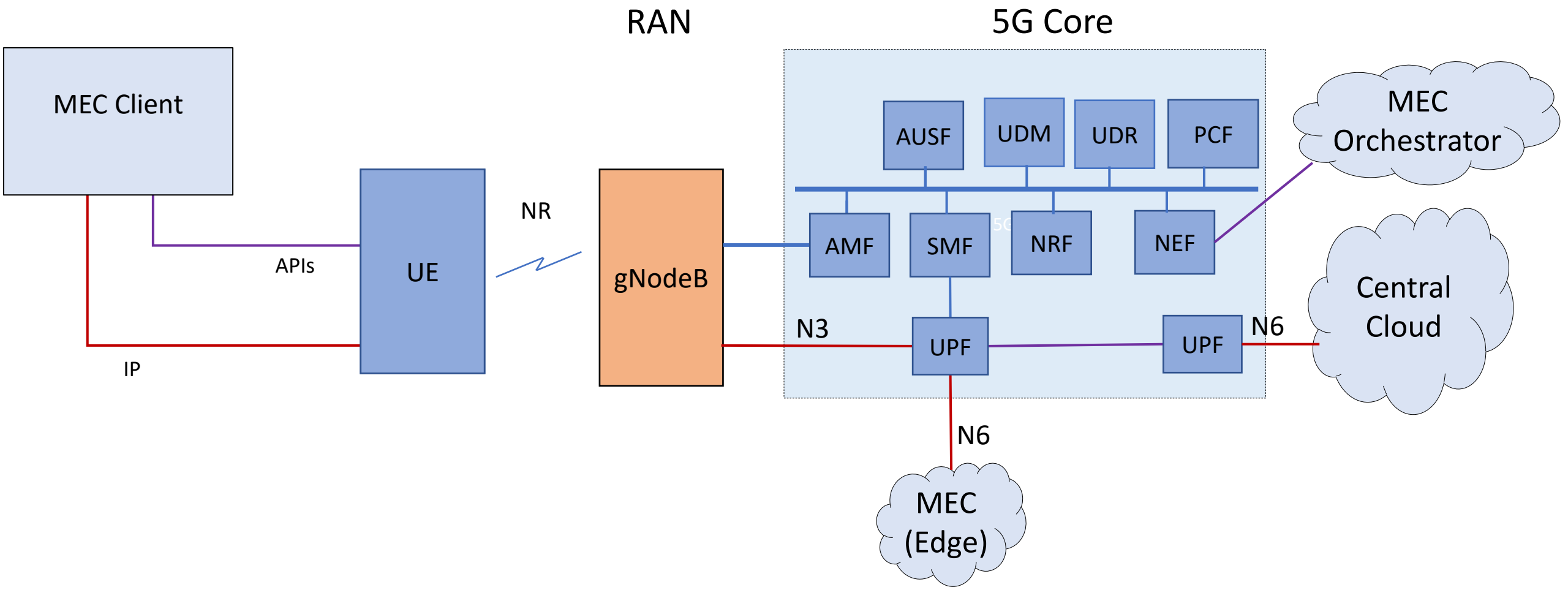
3rd party IMS system can be brought in and demo'd over the test bed.



SIP/RTP servers can be used in place of IMS

Ex2: MEC (Multi-Access Edge Computing)

Demonstrating the MEC scenarios.



Thank You