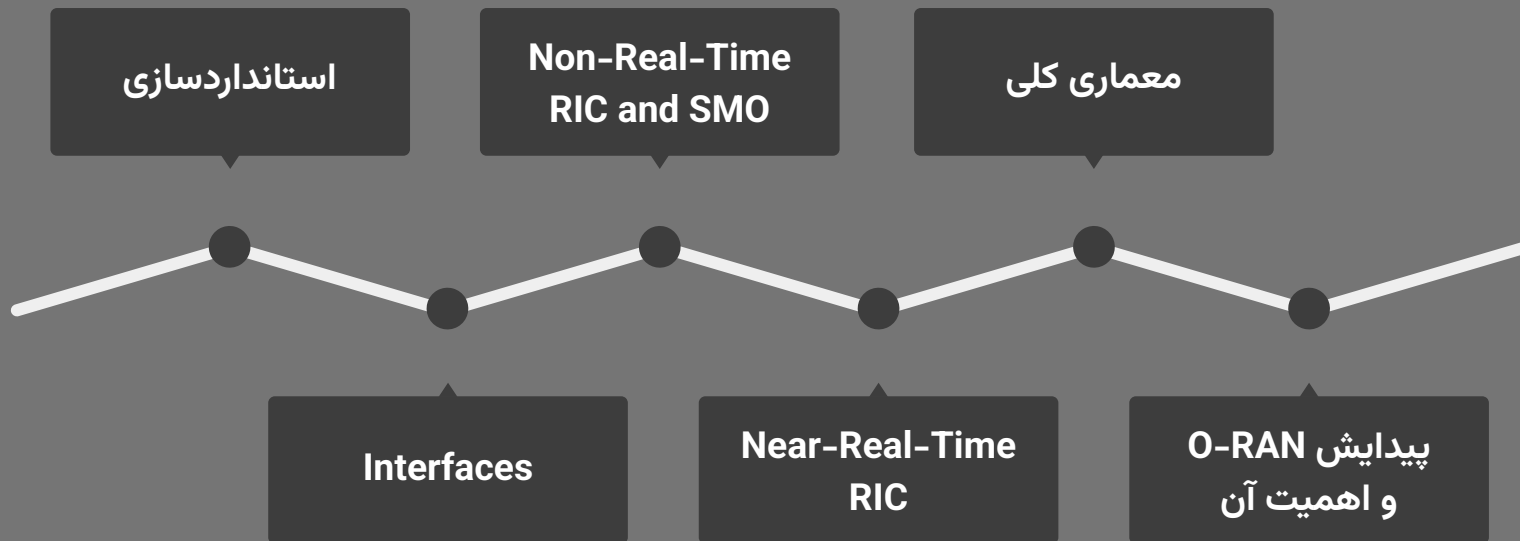

O-RAN

علی نظری

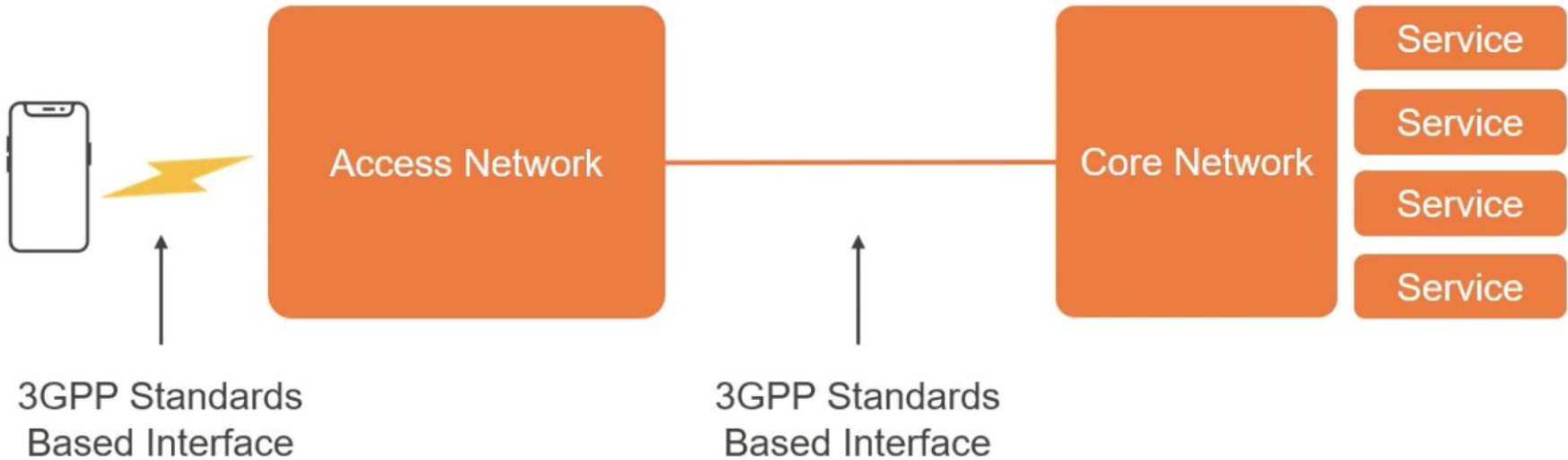
پاییز ۱۴۰۱

سیرارائه

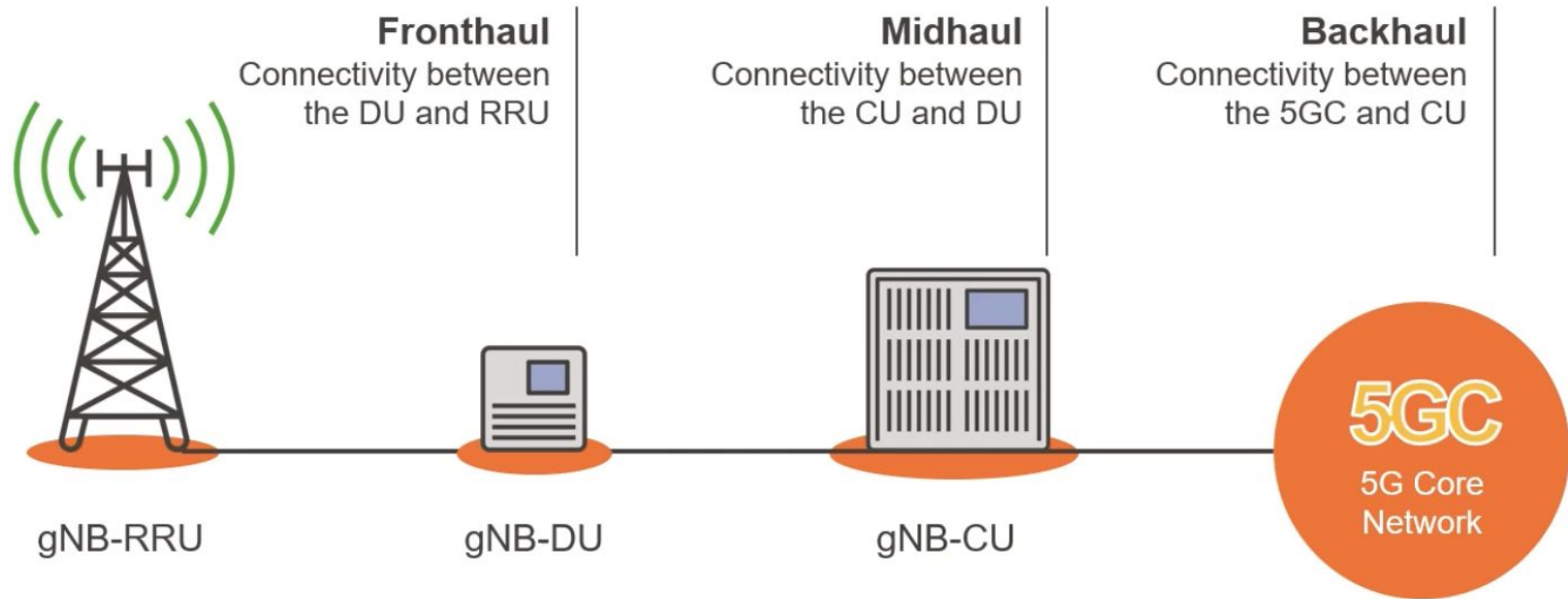


پیدایش 0-RAN و اهمیت آن

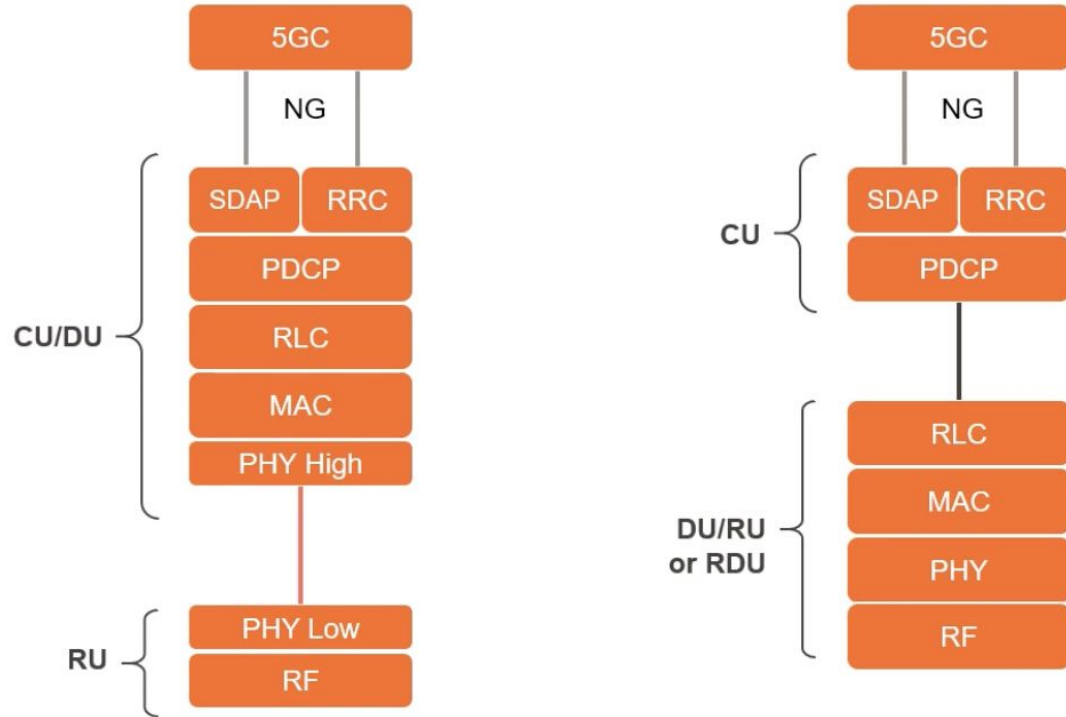
شبکه‌های تلفن همراه



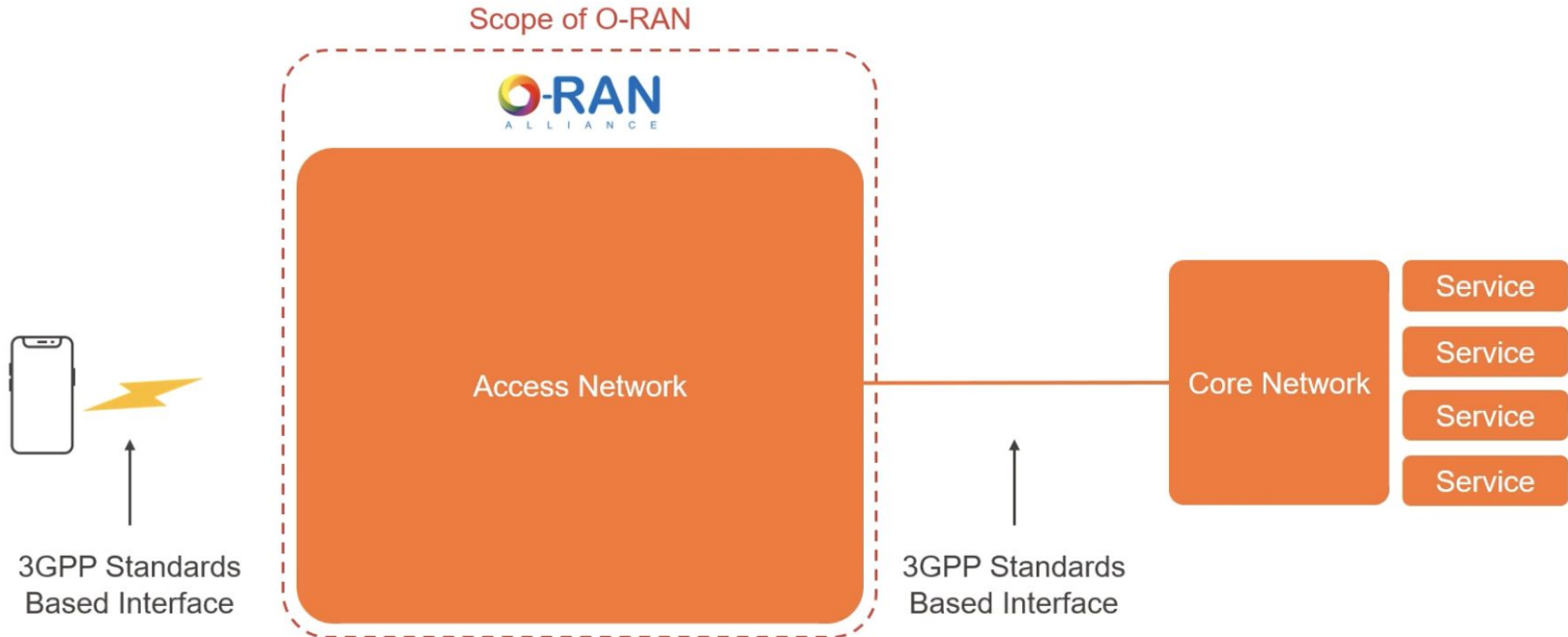
پیشبرد 5G توسط 3GPP



پیشبرد 5G توسط 3GPP (ادامه)

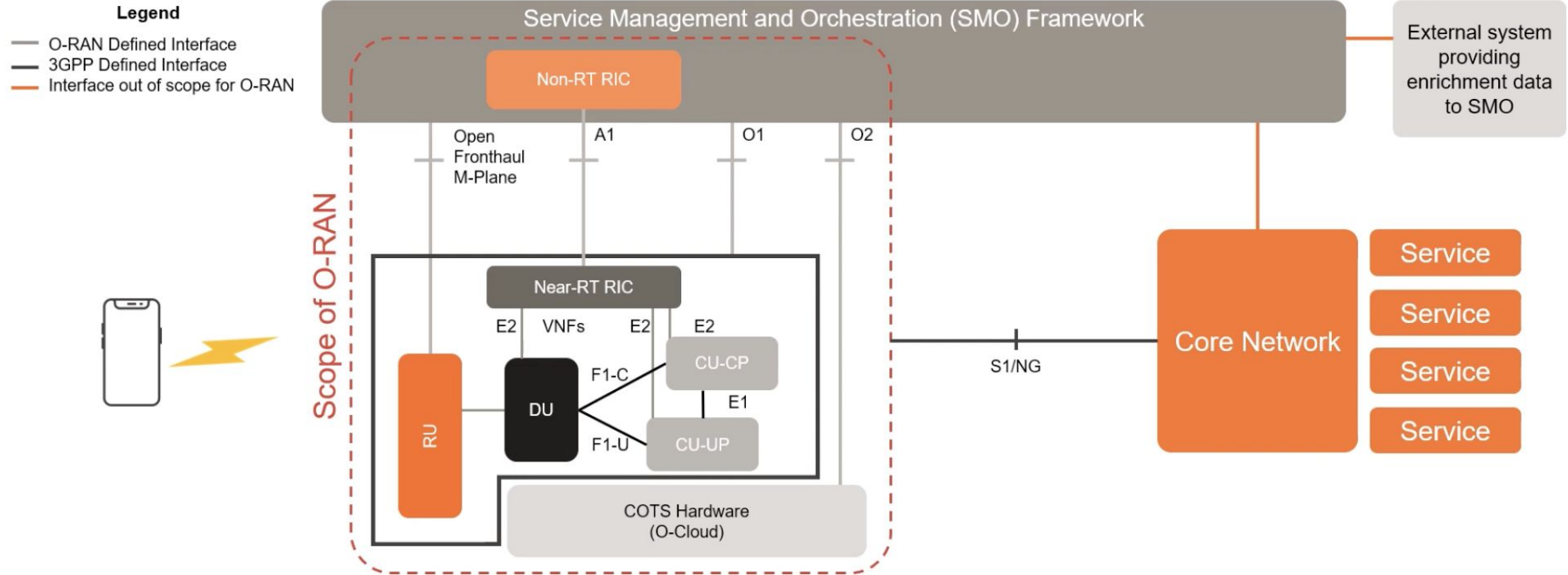


پیدایش O-RAN و تشکیل O-RAN Alliance

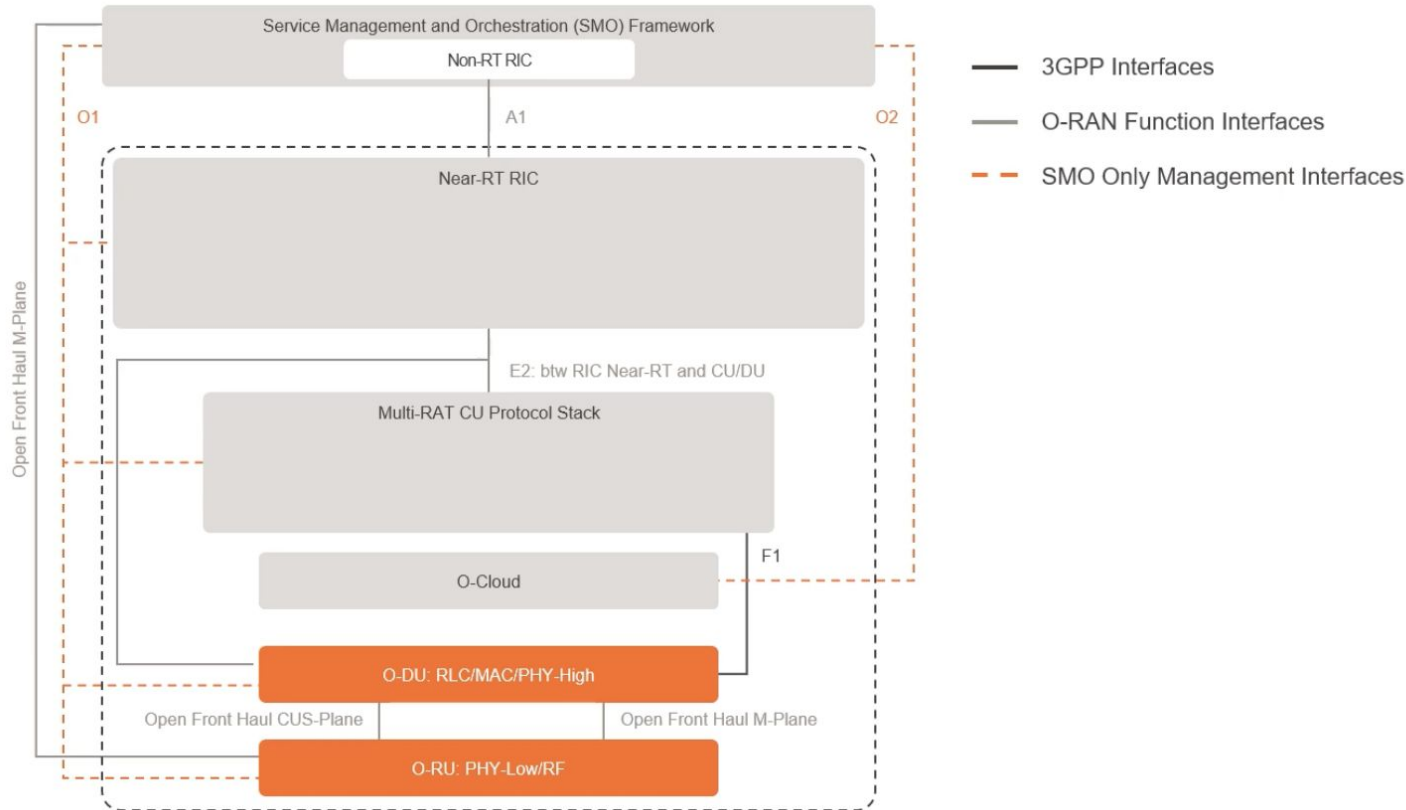


معماری کلی

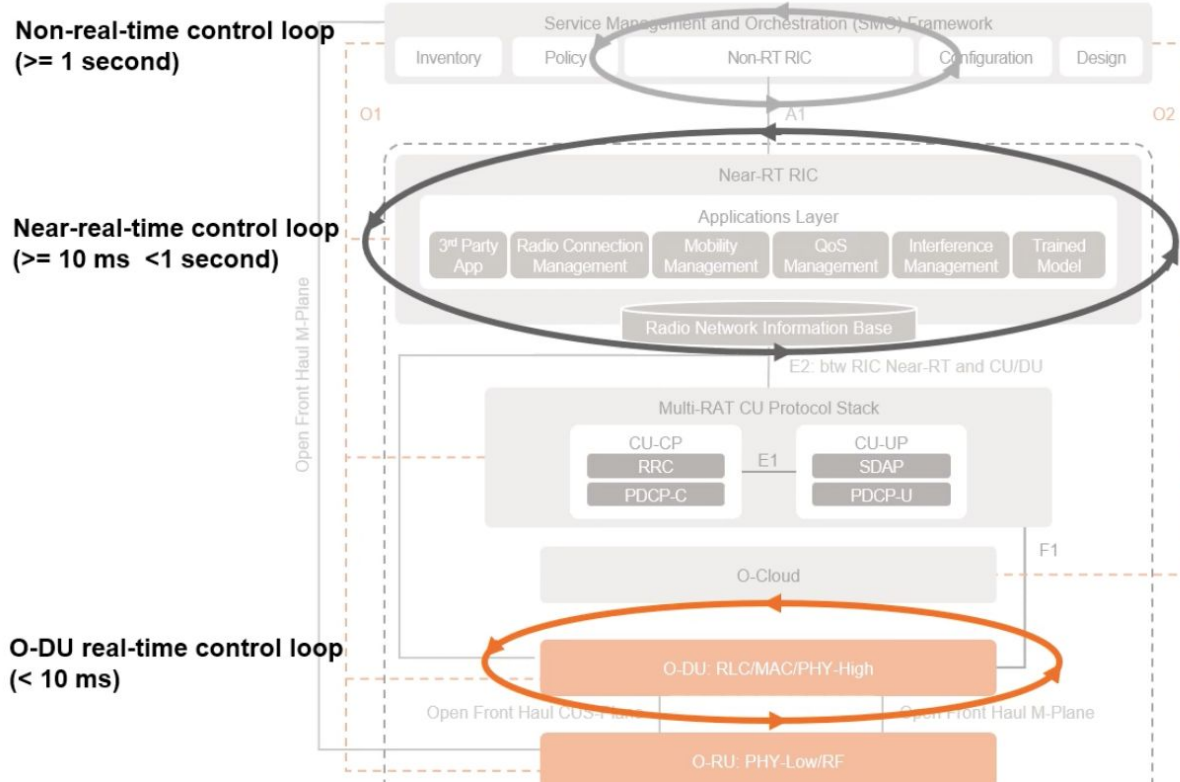
معماری O-RAN



معماری O-RAN (ادامه)

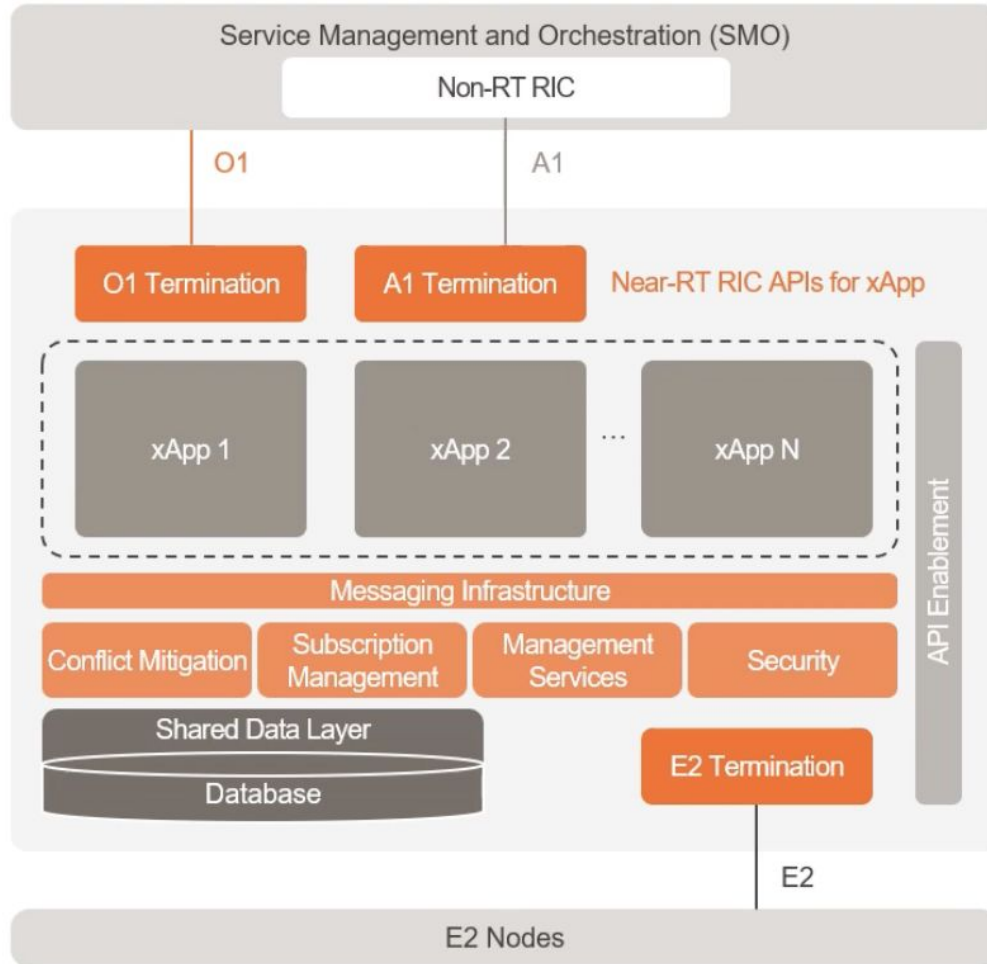


معماری O-RAN (ادامه)

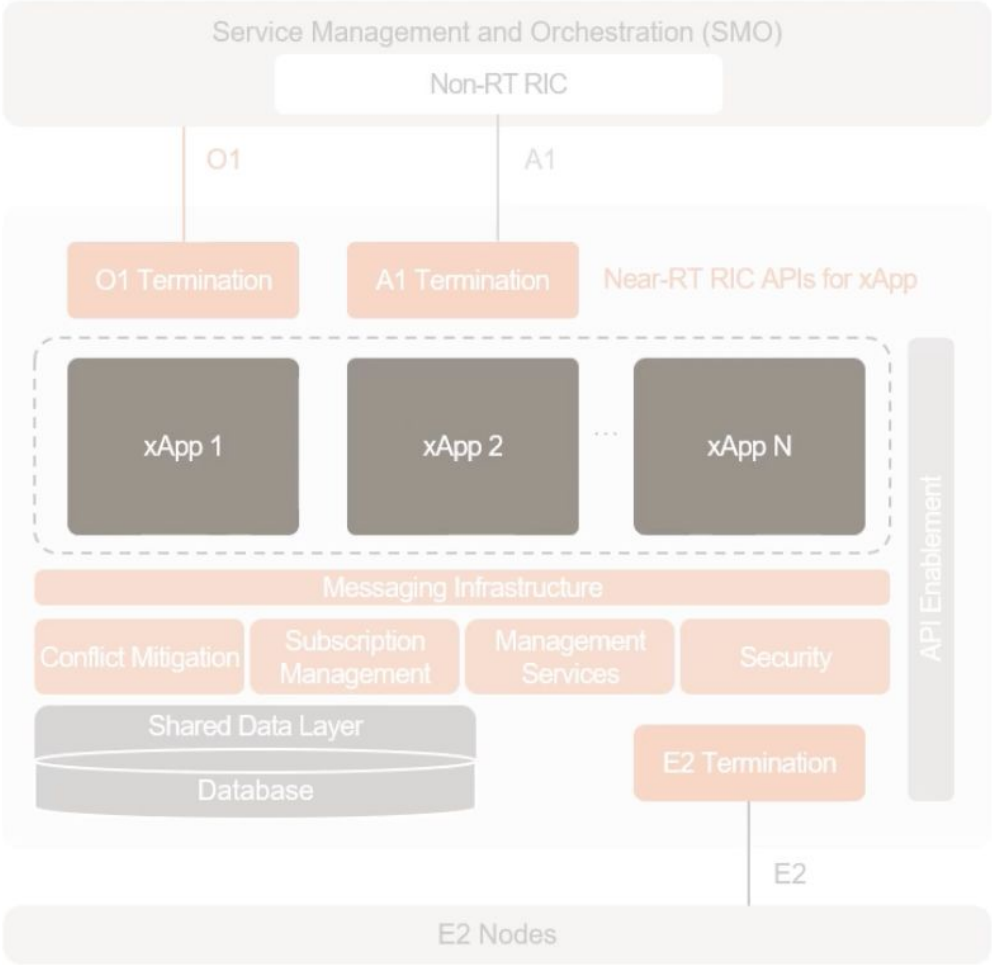


Near-Real-Time RIC

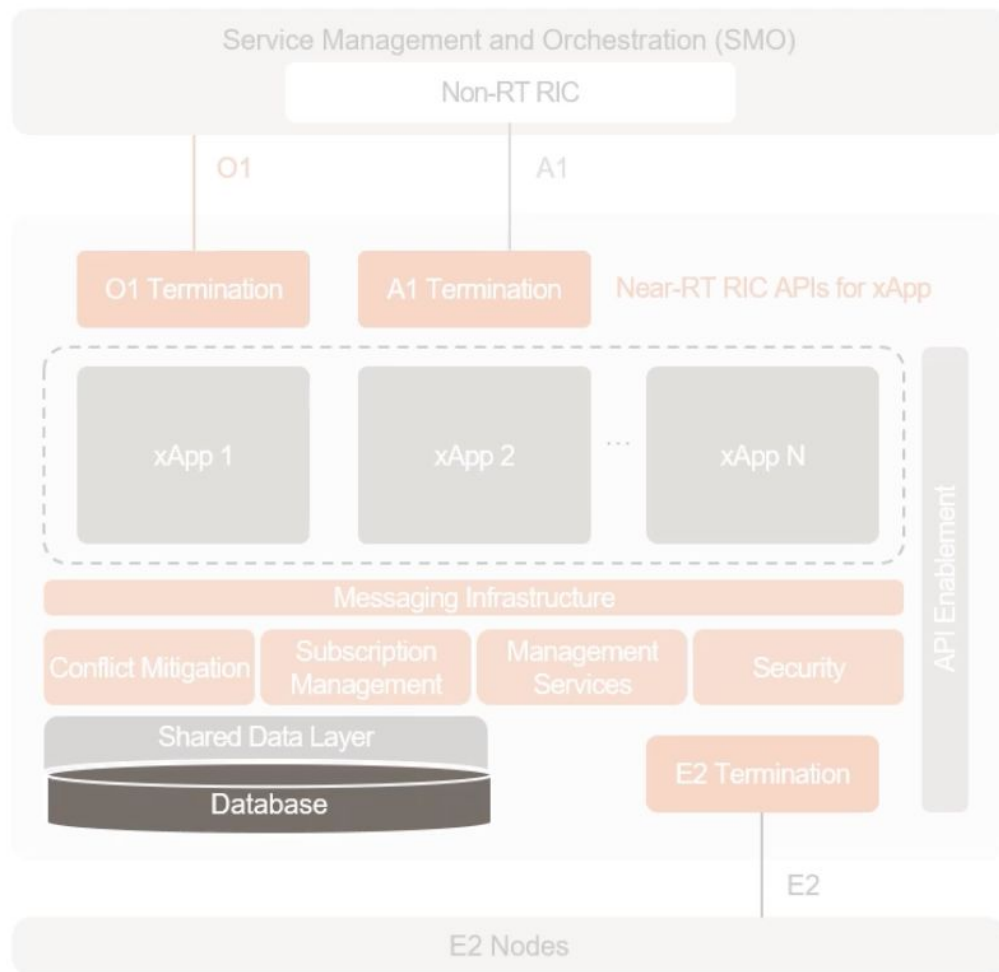
Near-RT RIC



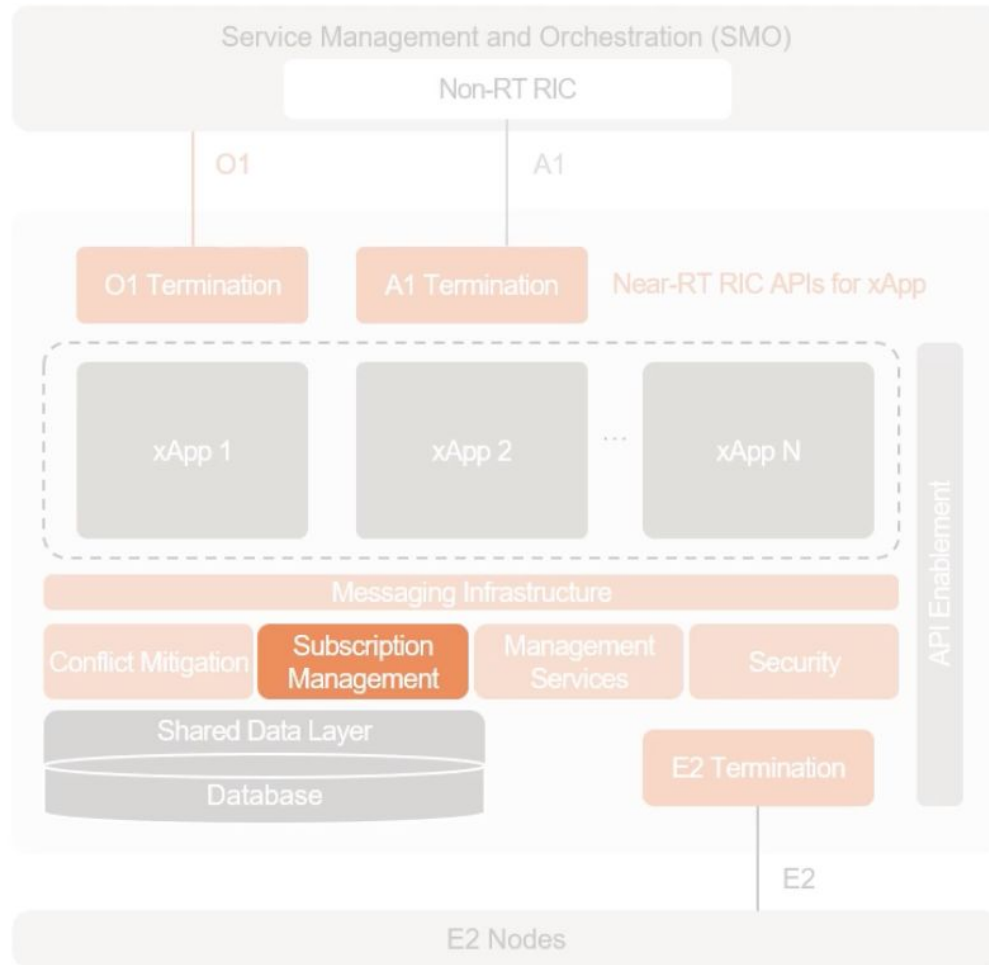
xApp

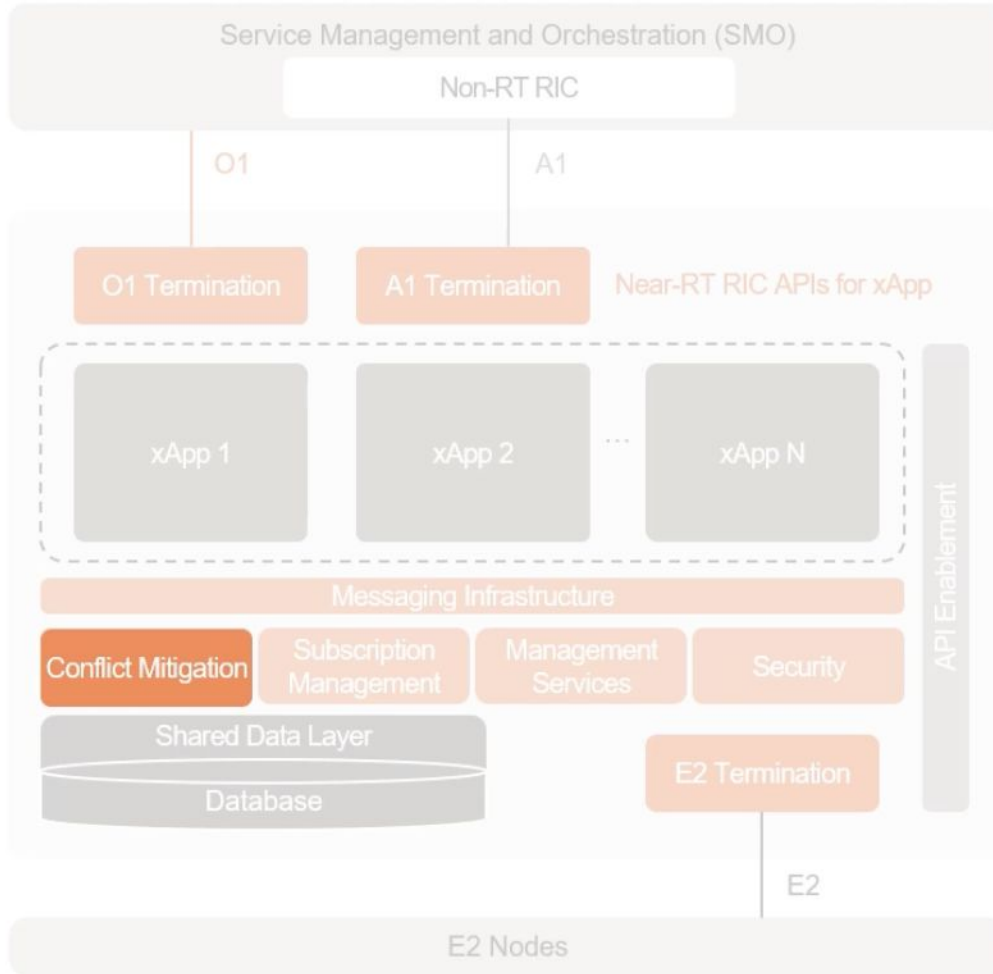


Database



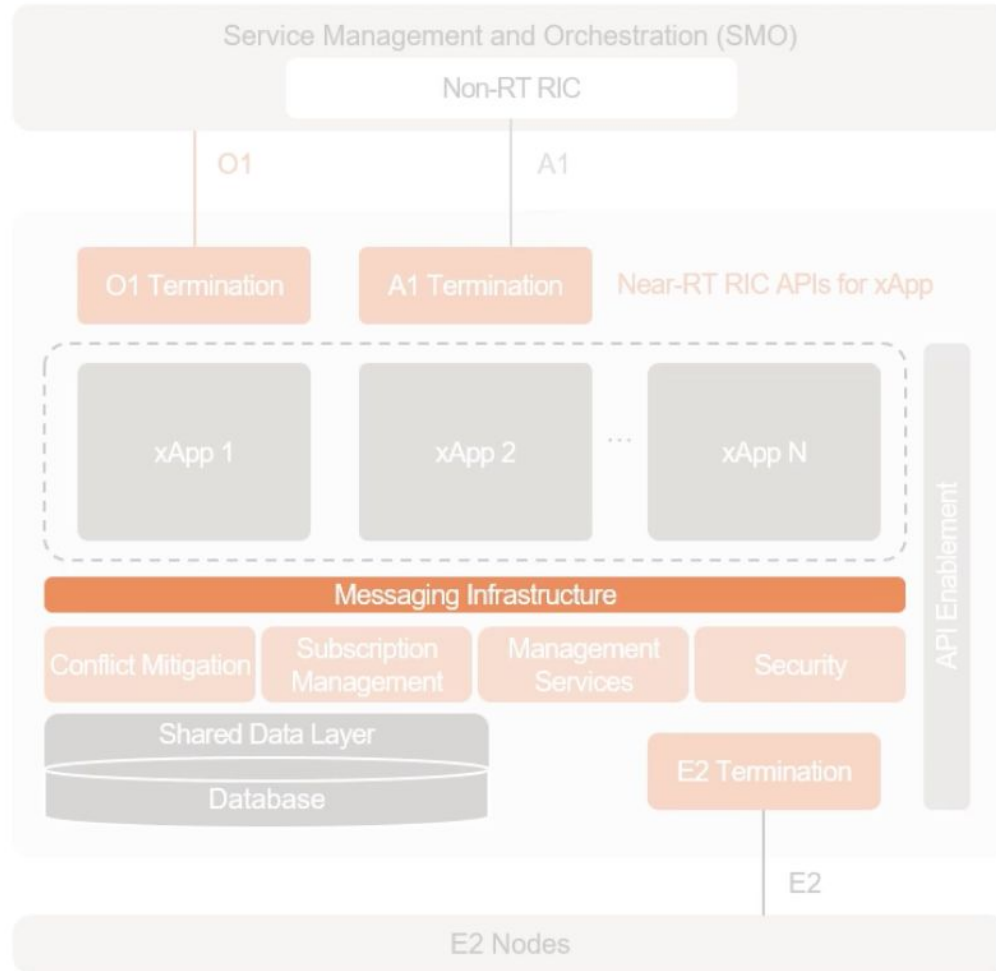
Subscription Management



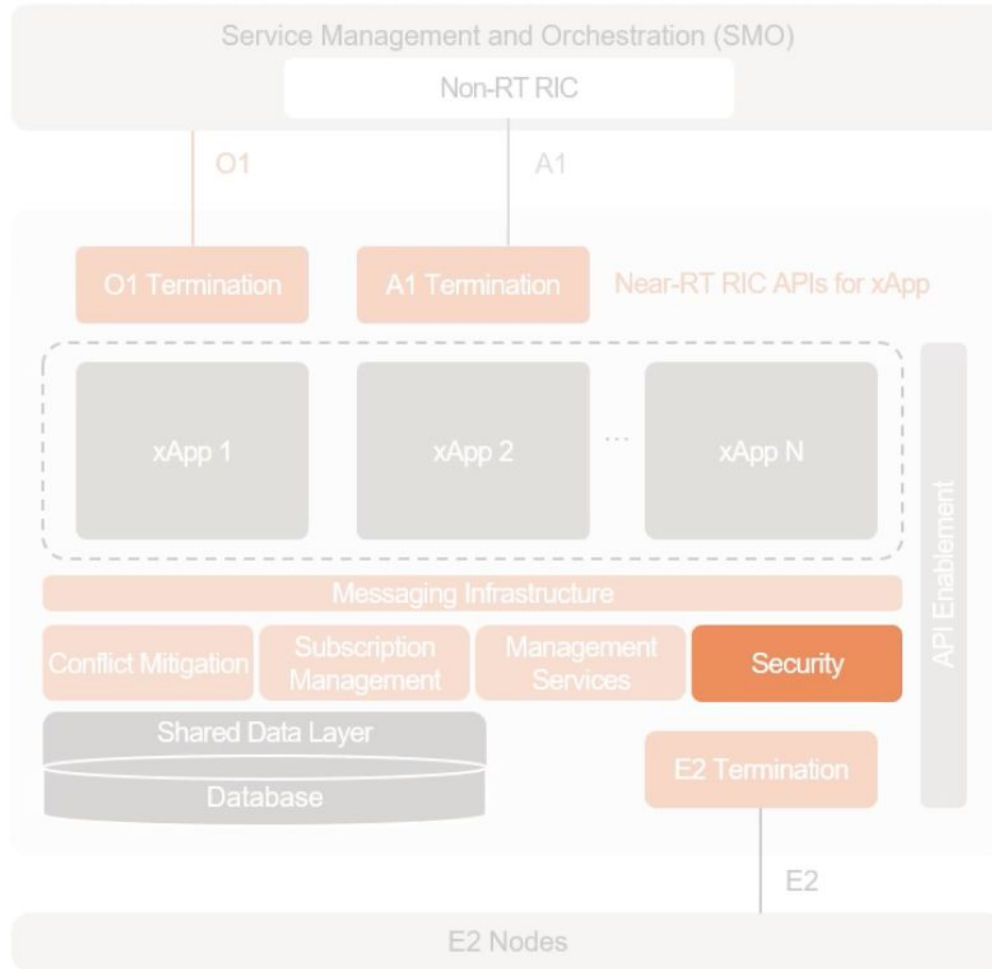


Conflict Mitigation

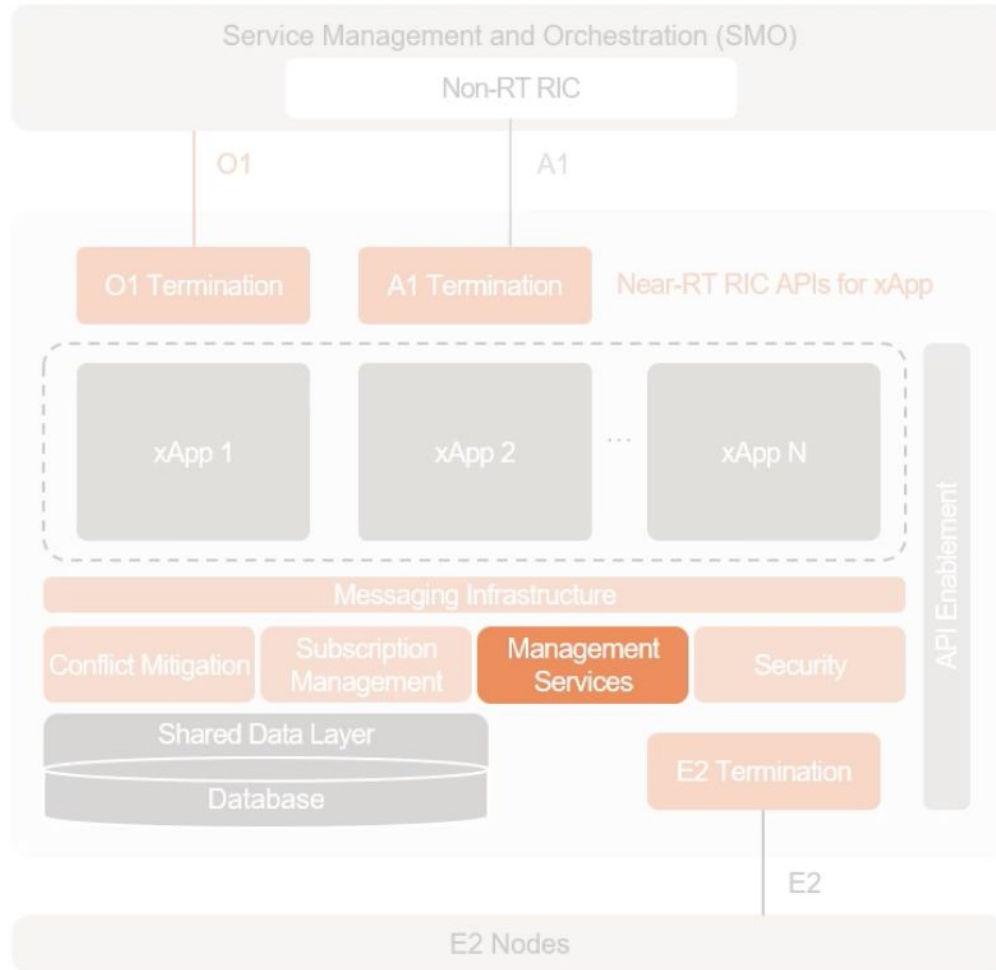
Messaging Infra



Security

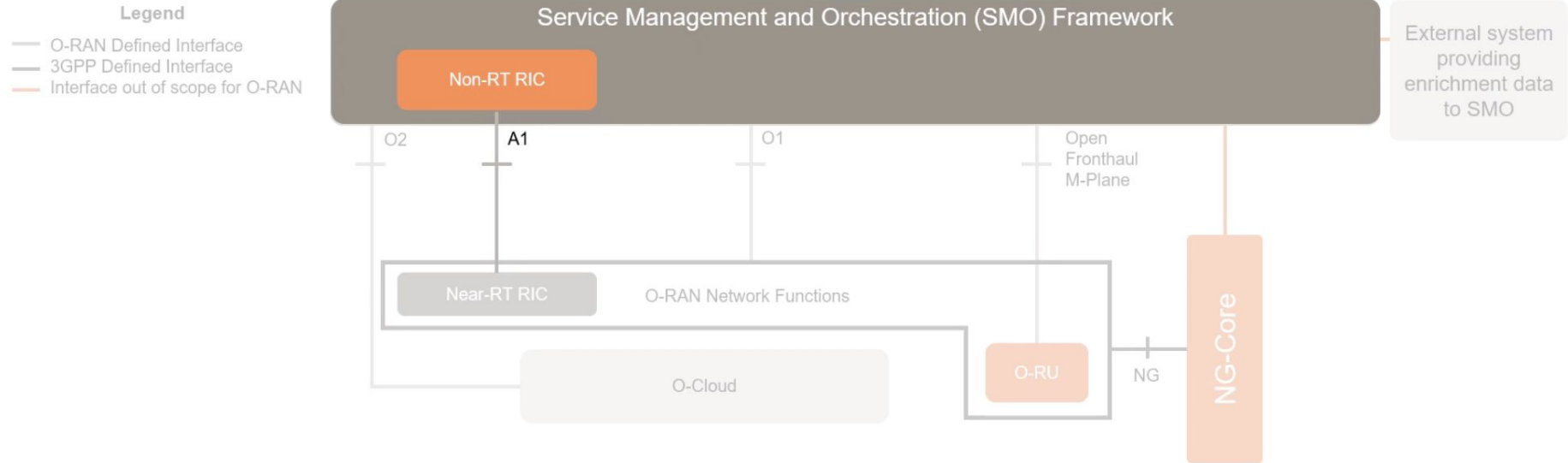


Management Services

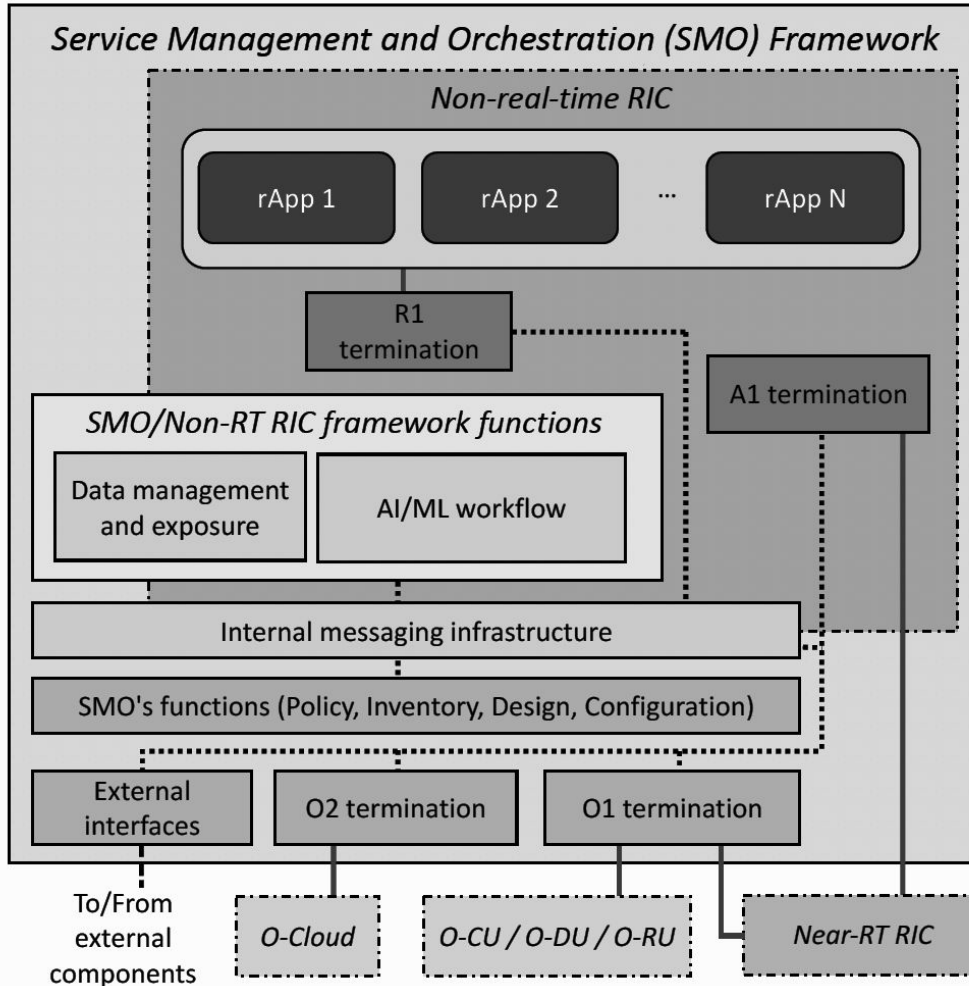


Non-Real-Time RIC & SMO

Non-RT RIC & SMO

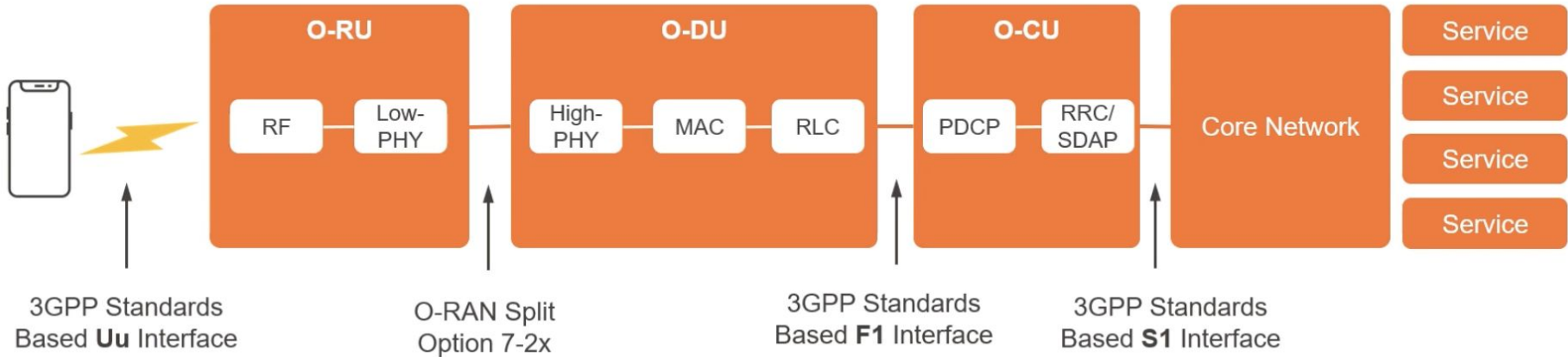


Non-RT RIC & SMO

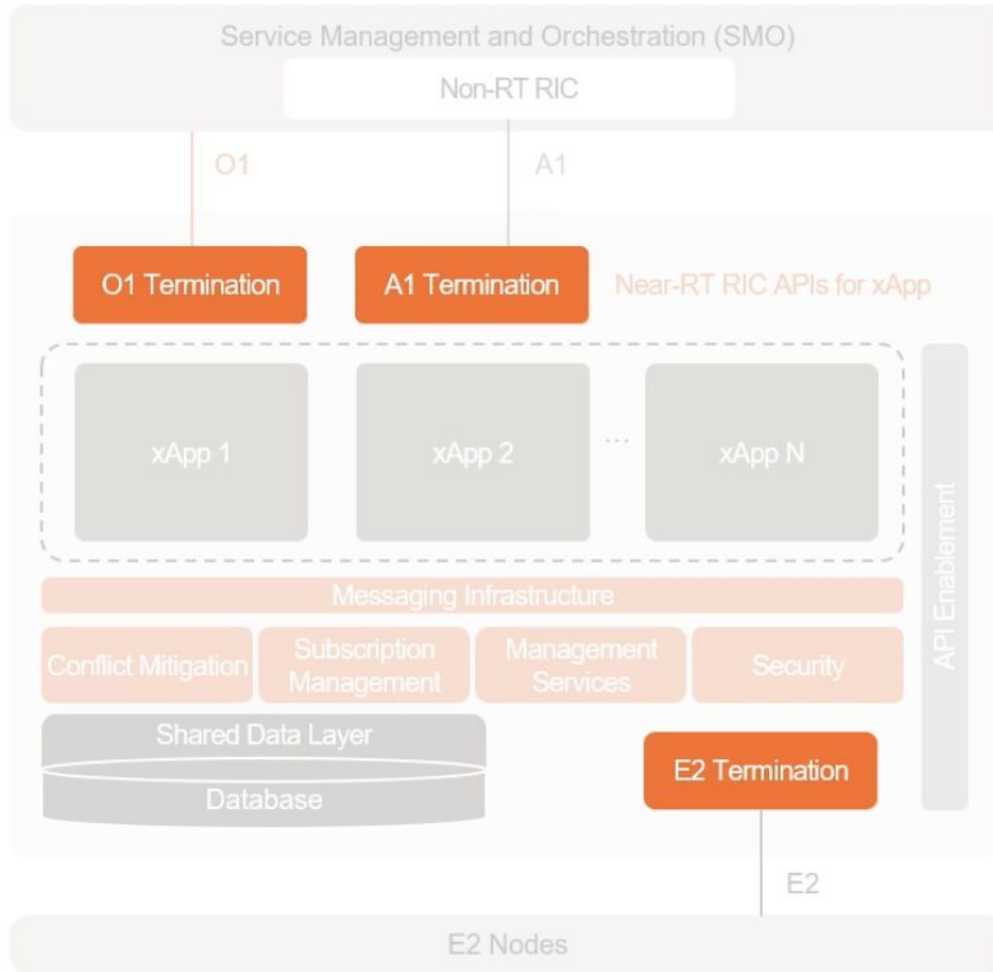


Interfaces

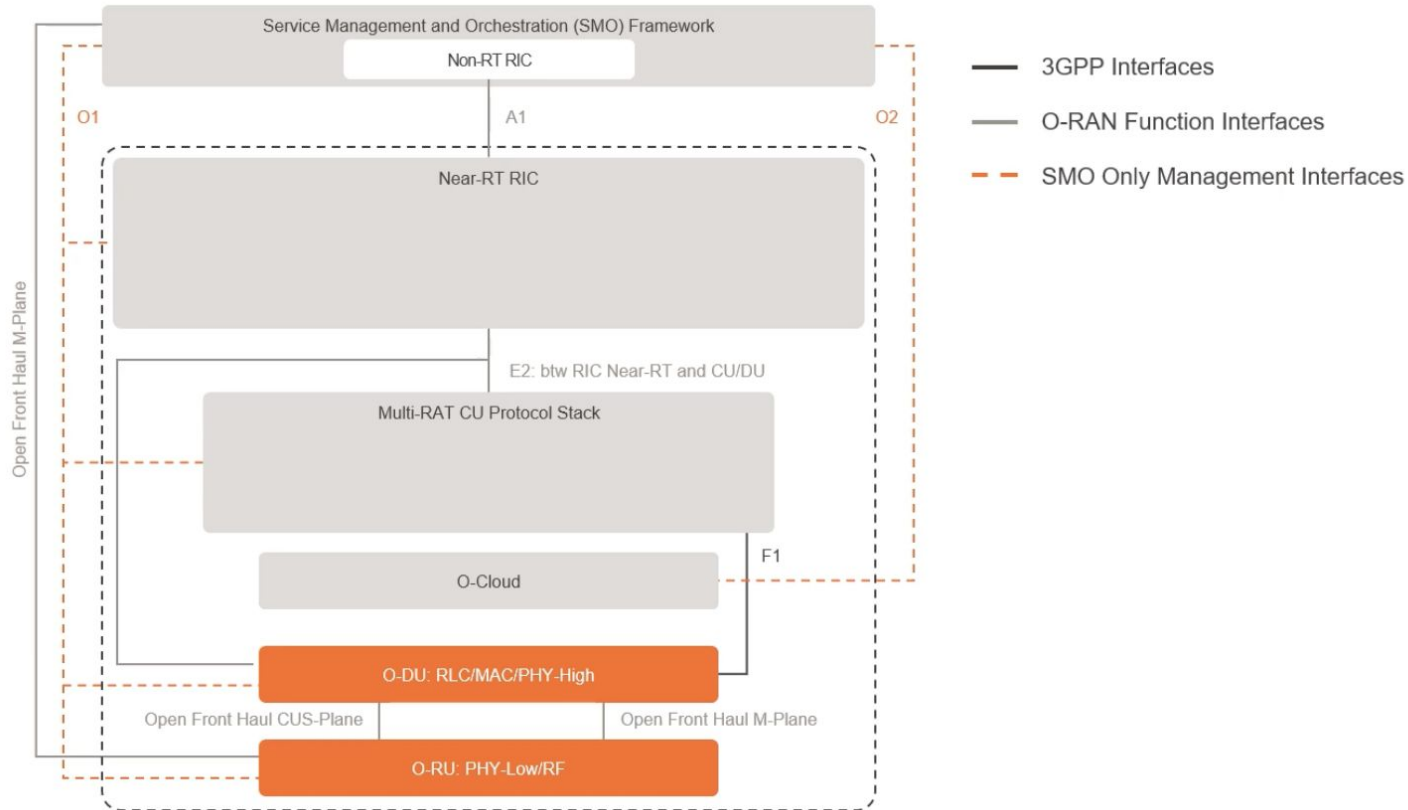
3GPP Interfaces



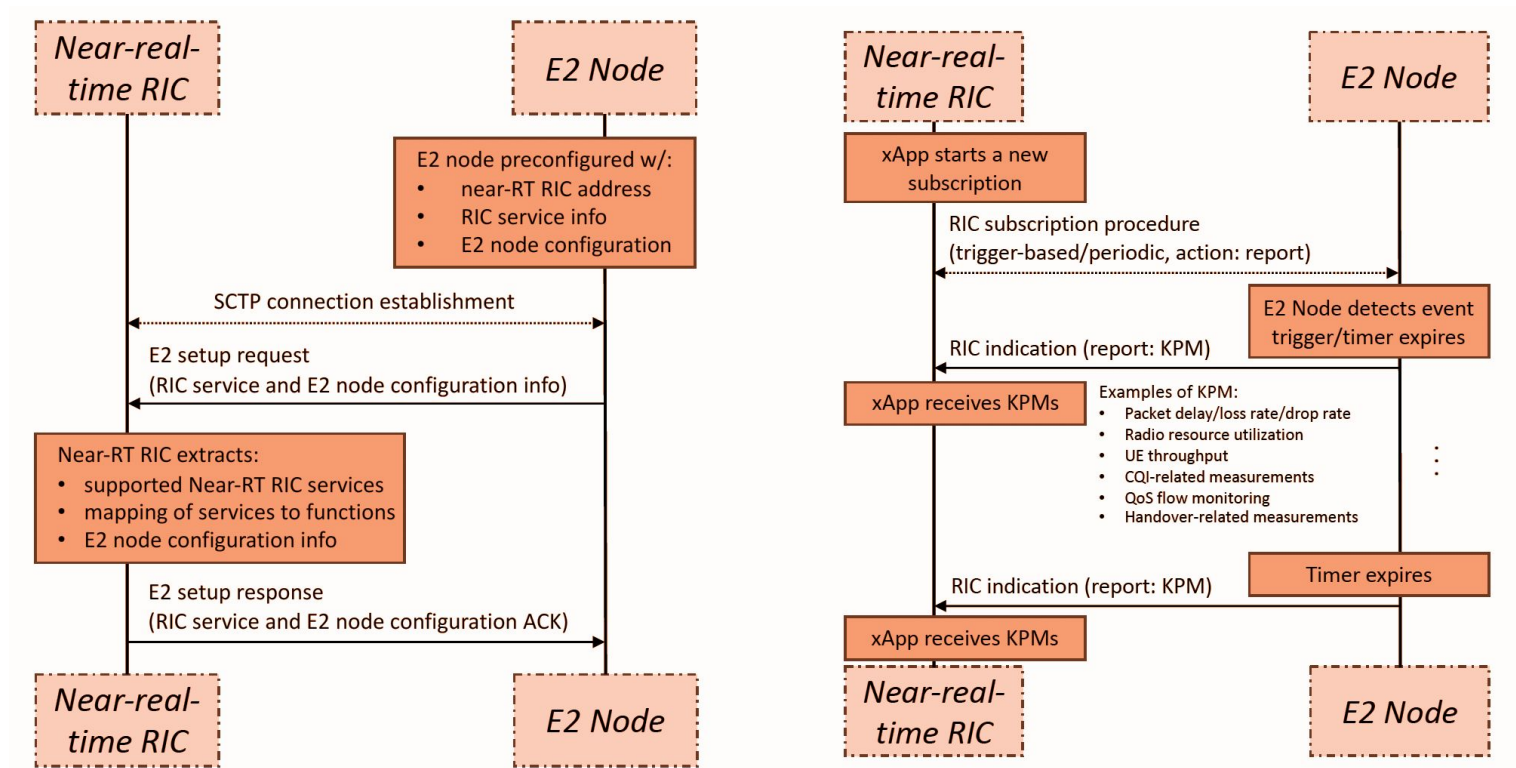
O-RAN Interfaces



(ادامه) O-RAN Interfaces



مثالی از E2



استانداردسازی

استانداردسازی

WG2: RIC (Non-RT) and A1 Interface

Specify AI enabled RIC (non-RT) functionality for the operational supervision, intelligent RRM; specify A1 interface

WG3: RIC (Near-RT) and E2 Interface

Specify RIC (near-RT) architecture that enables control and optimization of RAN elements and resources via E2 interface

WG8: Stack Reference Design

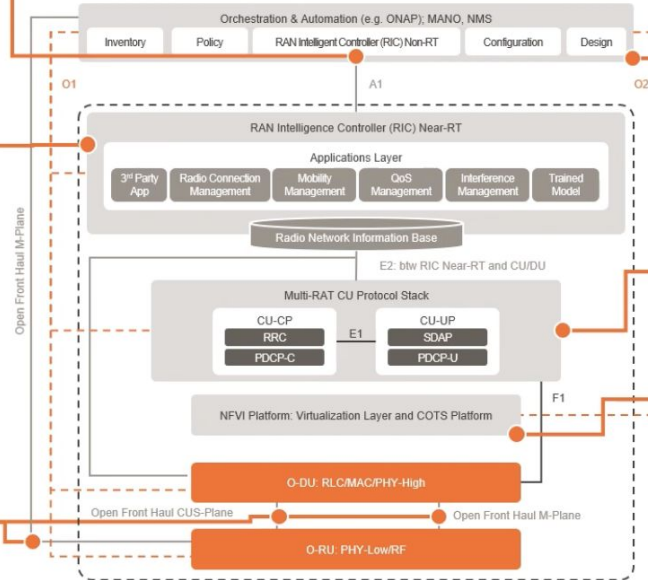
Focus is to develop the software architecture, design, and release plan for the O-RAN Central Unit (O-CU) and O-RAN Distributed Unit (O-DU) based on O-RAN and 3GPP specifications

WG4: Open FH Interface

Specify open front-haul interface (NGF-H) between DU and AAU, based on C-RAN and xRAN's work (IEEE 1914, eCPRI, CPRI)

WG1: Use Cases and Overall Architecture

Focus on all identifying use cases and requirements, and planning overall architecture of O-RAN and Proof-of-Concepts



WG9: Open X-Haul Transport

Focus on transport domain - consisting of transport equipment, physical media and control/mgmt. protocols associated with the transport network underlying the assumed Ethernet interfaces (for fronthaul, mid-haul, and backhaul)

WG10: OAM and O1 Interface

Focus on creating detailed OAM architecture and requirements and has full responsibility for the O1 interface specifications

WG5: Open F1, W1, E1, X2, Xn Interfaces

Focus on design of Open CU, RAN virtualization and splits with related interfaces that intersect with 3GPP specifications

WG6: Cloudification and Orchestration

Focus on specifying virtualization layer and HW, decoupling VNF and NFVI and MANO Enhancement

WG7: White-Box Hardware

Specify and release a complete reference design to foster a decoupled software and hardware platform

مراجع

- Understanding O-RAN: Architecture, Interfaces, Algorithms, Security, and Research Challenges
- Parallelwireless O-RAN Documents

با تشکر از توجه شما

ali4nazari4@gmail.com