

IEEE 802 OmniRAN for Cellular Offload

19 September 2012

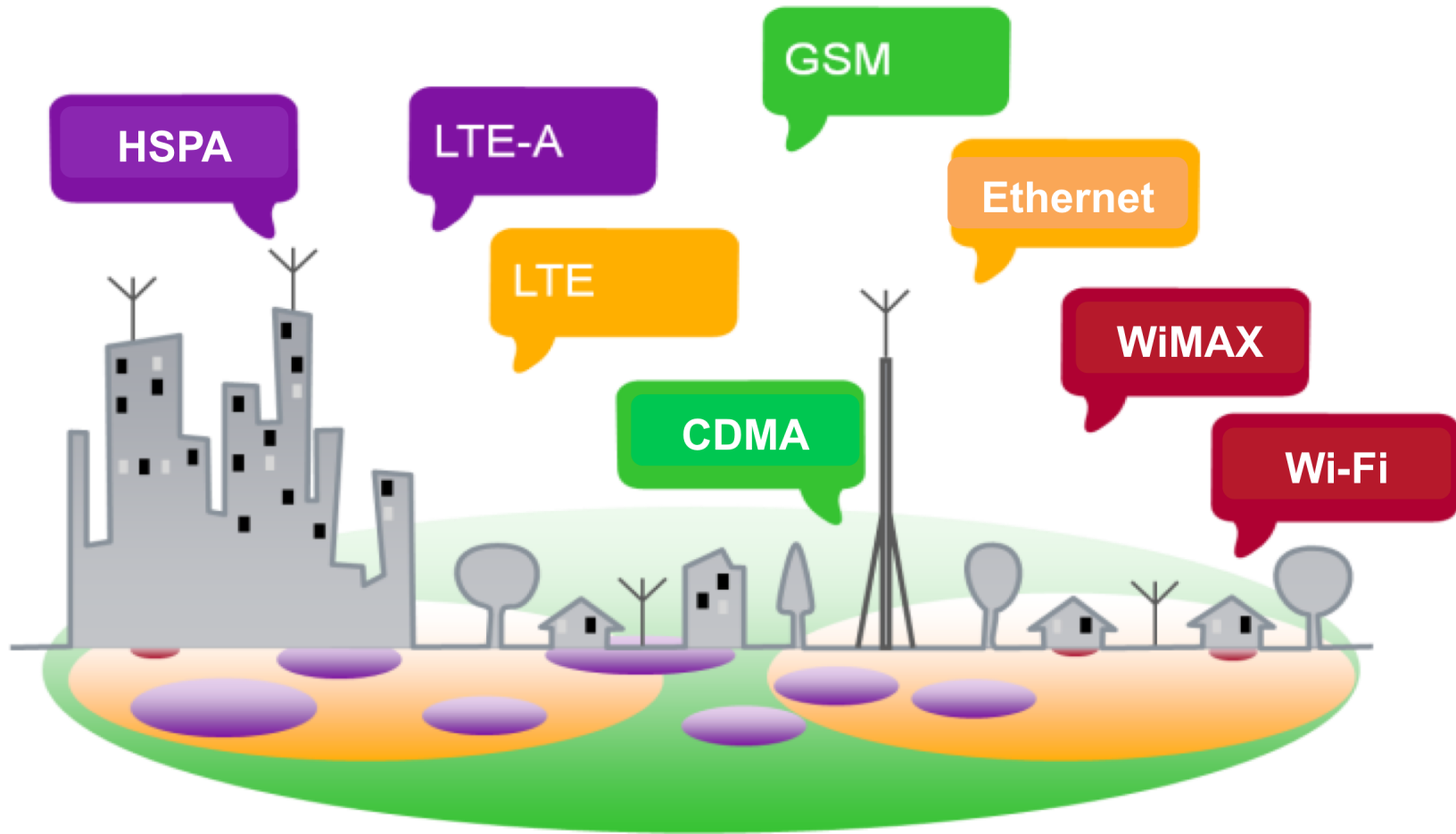
IEEE 802.16 HetNet Study Group

for IEEE 802.11 WNG

Introduction

- OmniRAN Tutorial presented at the last IEEE 802 Plenary meeting
 - *Heterogeneous Networking among the IEEE 802 Family*: <http://www.ieee802.org/Tutorials.shtml>
- Discussion currently in HetNet Study Group
- Proposal:
 - new IEEE 802 WG (e.g. IEEE 802.25) to specify access network abstraction layer above IEEE 802 (and possibly other) access technologies

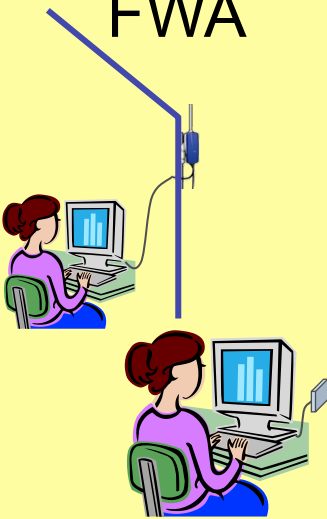
Multi-RAT Heterogeneous Network



Multi-Service Heterogeneous Network

Fixed

DSL, Cable,
FWA



Nomadic

Fixed WiMAX
Wi-Fi



***no session
continuity***

Portable

Wi-Fi



***session
continuity***

Mobile

Cellular

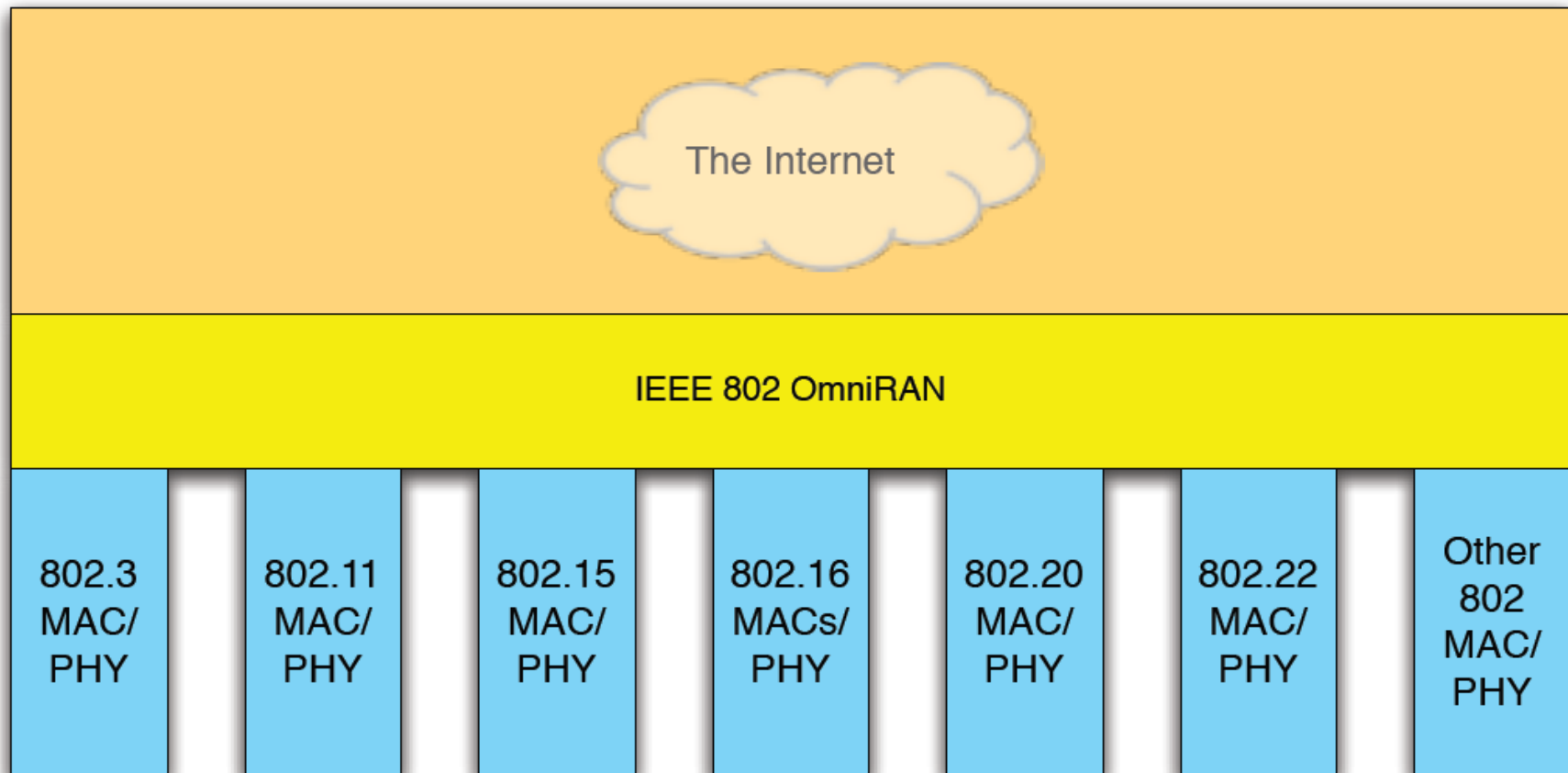


***seamless
handover***

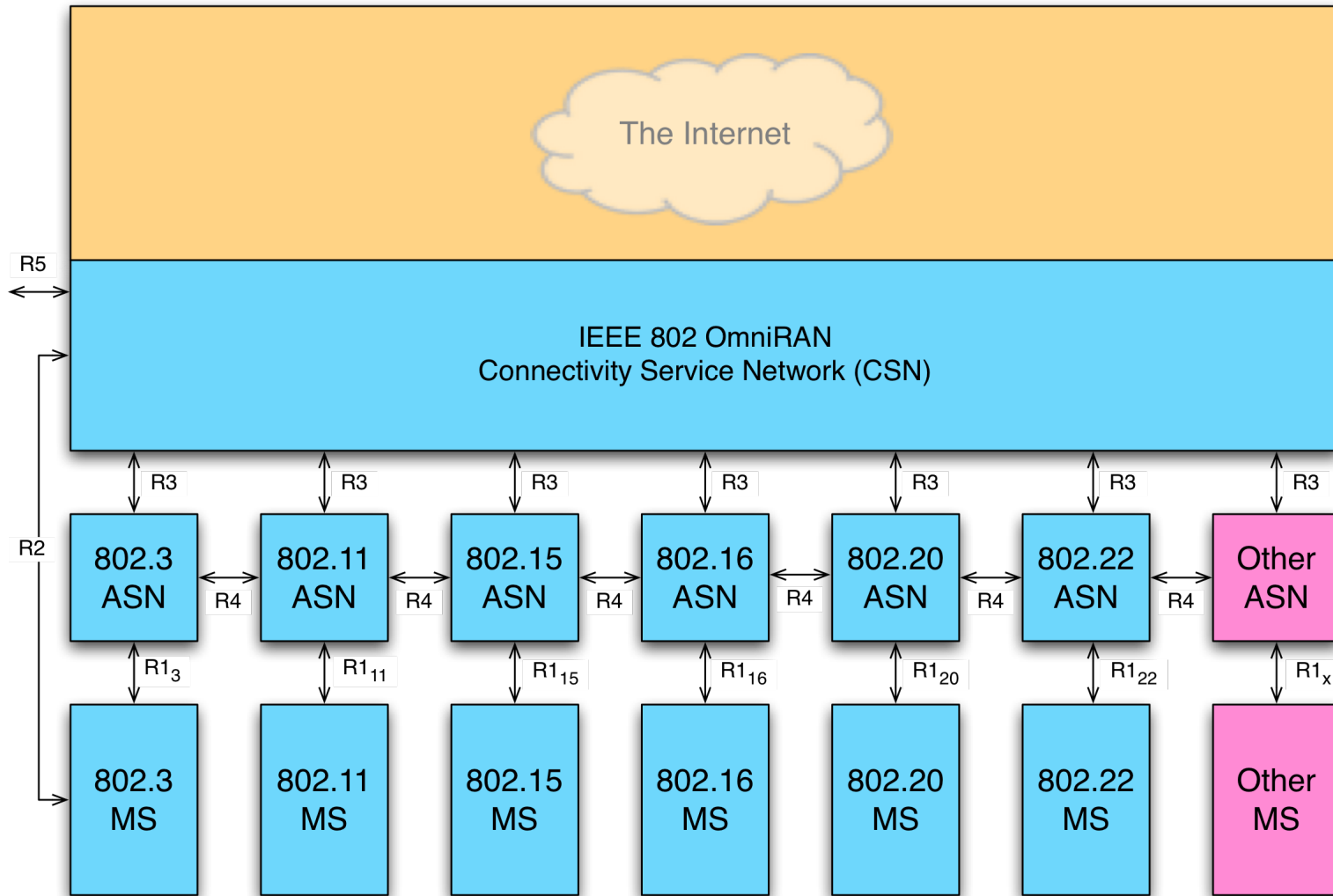
OmniRAN Directions

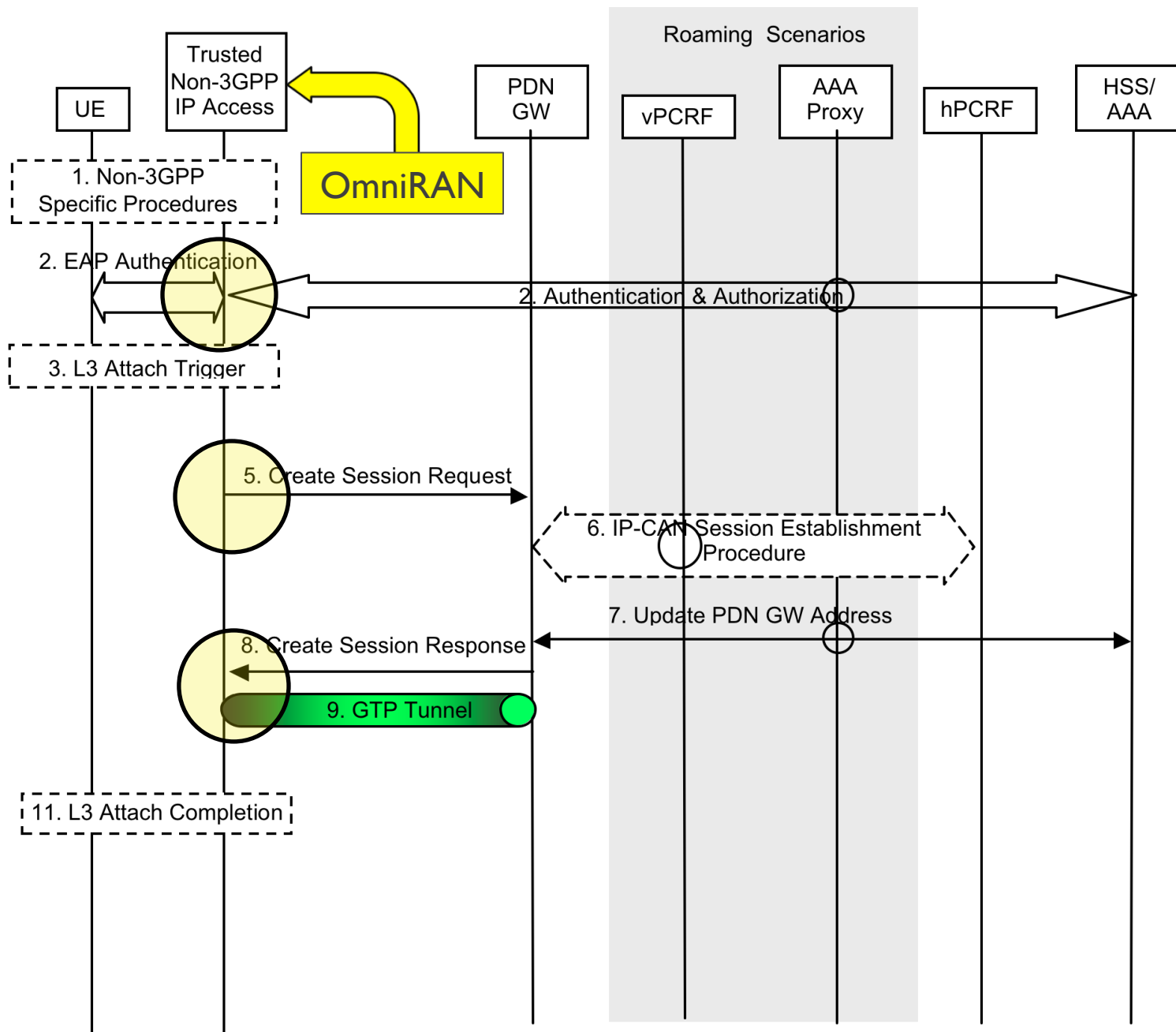
- Use existing IEEE 802 access specifications
- Begun interactions with IETF
 - Use existing IETF RFCs
 - Relate to some IETF working groups:
 - DMM, MIF, ...
- Provide a fully-specified view down into 802
 - Simplify spec requirements from 3GPP side for cellular offload
 - Time to consider interactions with cellular features

IEEE 802 OmniRAN fills a gap



OmniRAN Architecture





3GPP SaMOG [TR 23.852] Figure 7.1.1.2-1

OmniRAN Functionality: Top Priorities?

1. Authentication & Security
2. Accounting, Charging, and Settlement
3. QoS, Admission Control and Service Flow
4. Lawful Interception
5. Emergency Telecommunications Service

OmniRAN Functionality: Lower Priorities?

6. Location Services
7. Interworking and Roaming
8. Operation, Administration, Maintenance
9. Provisioning
10. Network Discovery and Selection
11. Connection Management
12. Power Management
13. Radio Resource Management
14. VoIP

What value does OmniRAN add?

- Consistent, future-proof architecture for IEEE 802
 - Valuable for adding a single IEEE 802 radio interface (e.g., 802.11) to another network for offload
- Common network interface for IEEE 802 technologies
 - More valuable when adding multiple IEEE 802 radio interfaces (present and future)
- Can be optimized for high performance

Conclusions / Recommendations

- IEEE 802 OmniRAN can close the gap and tie 802 devices supporting evolving IETF standards
 - Can extend to 3GPP networks as well
- IEEE 802, IETF, and 3GPP communities should...
 - leverage each other's expertise
 - plan communications
 - identify commonalities
 - link solutions
 - organize a team to coordinate milestones and progress

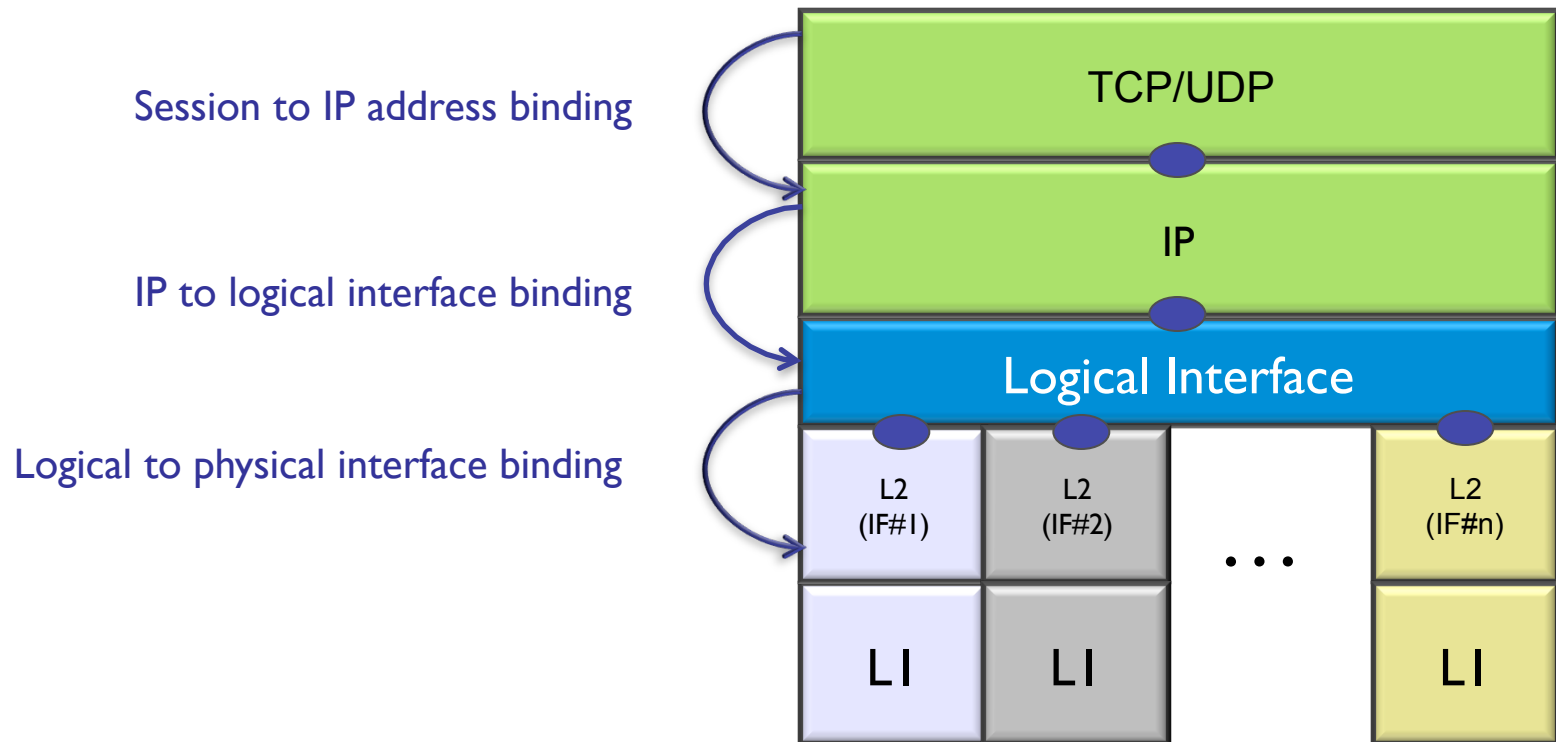
Backup slides

OmniRAN and IP Mobility

- Heterogeneous devices require integrated solutions for inter-RAT mobility
 - IETF – LIF informational / recommended practices
 - IETF – DMM not addressing issues below L3
 - IEEE 802.21 offers partial solution to mobility
 - IEEE 802.3, 802.11, 802.15, 802.16, etc, & 3GPP: out of scope
- OmniRAN can fill the gap

IETF NETEXT Logical Interface (Data Plane)

- Allows hiding L2/L1 changes to IP stack and maintaining session bindings active
- Permits forwarding traffic to different access networks / interfaces regardless of the original IP address assignment



IEEE 802.21 MIHS (Control Plane)

- Provides predictive signaling that can proactively trigger handovers or flow mobility and hence enhance QoE (ES)
- Allows a better control of lower layers to enforce Operator and User's policies (CS)
- Provides information about available access networks (IS)

