OmniRAN
Overview and status

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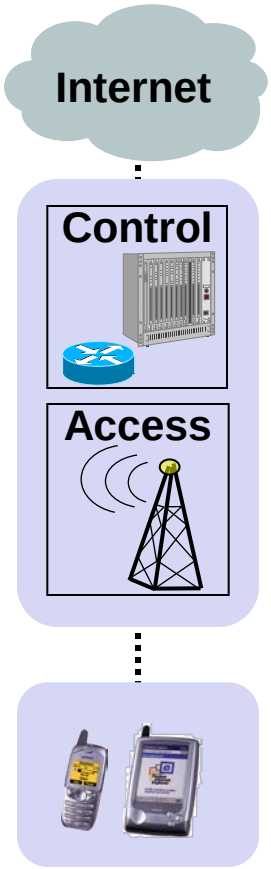
OmniRAN

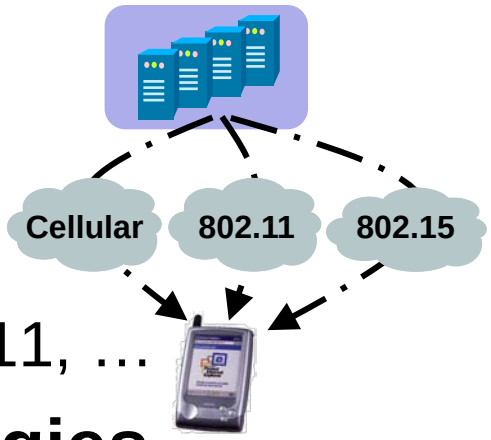
- OmniRAN discussed in 802.16 HetNet study group since March 2012
  - IEEE 802 tutorial in July 2012
- OmniRAN defines generic network side interfaces for access networks based on IEEE 802 technologies
- What does OmniRAN stand for?
  - Open mobile network interface for omni-Range Area Networks
- It addresses all IEEE 802 access technologies including IEEE 802.3!

Legacy Communication Networking

- Close relationship between user terminal, access network and service provider
  - Single interface in terminal
  - Single access network topology
  - Single operator
    - single entity (operator, IT department) controls complete service chain
- Operators with long-term experience in networking



OmniRAN for Hetereogeneous Networks



- User-Terminals have to support
  - **multiple network interfaces**
    - e.g. Cellular, IEEE 802.3, IEEE 802.11, …
  - **multiple access network topologies**
    - e.g. IEEE802.11 in residential, corporate and public

  - **multiple network subscriptions**
    - e.g. multiple subscriptions for same interface
- Generic solution to cope with complexity

OmniRAN for Emerging Networking Markets

- Many more (huge) networks are coming up by everything gets connected
  - e.g. SmartGrid, HomeAutomation, Car, …
- Many new markets for IEEE 802 access technologies
  - e.g. factory automation, in-car communication
- New deployments often suffering by the same old networking issues
  - e.g. service control, security, provisioning
  - new operators lacking long-term experience
- Generic solution to foster market growth

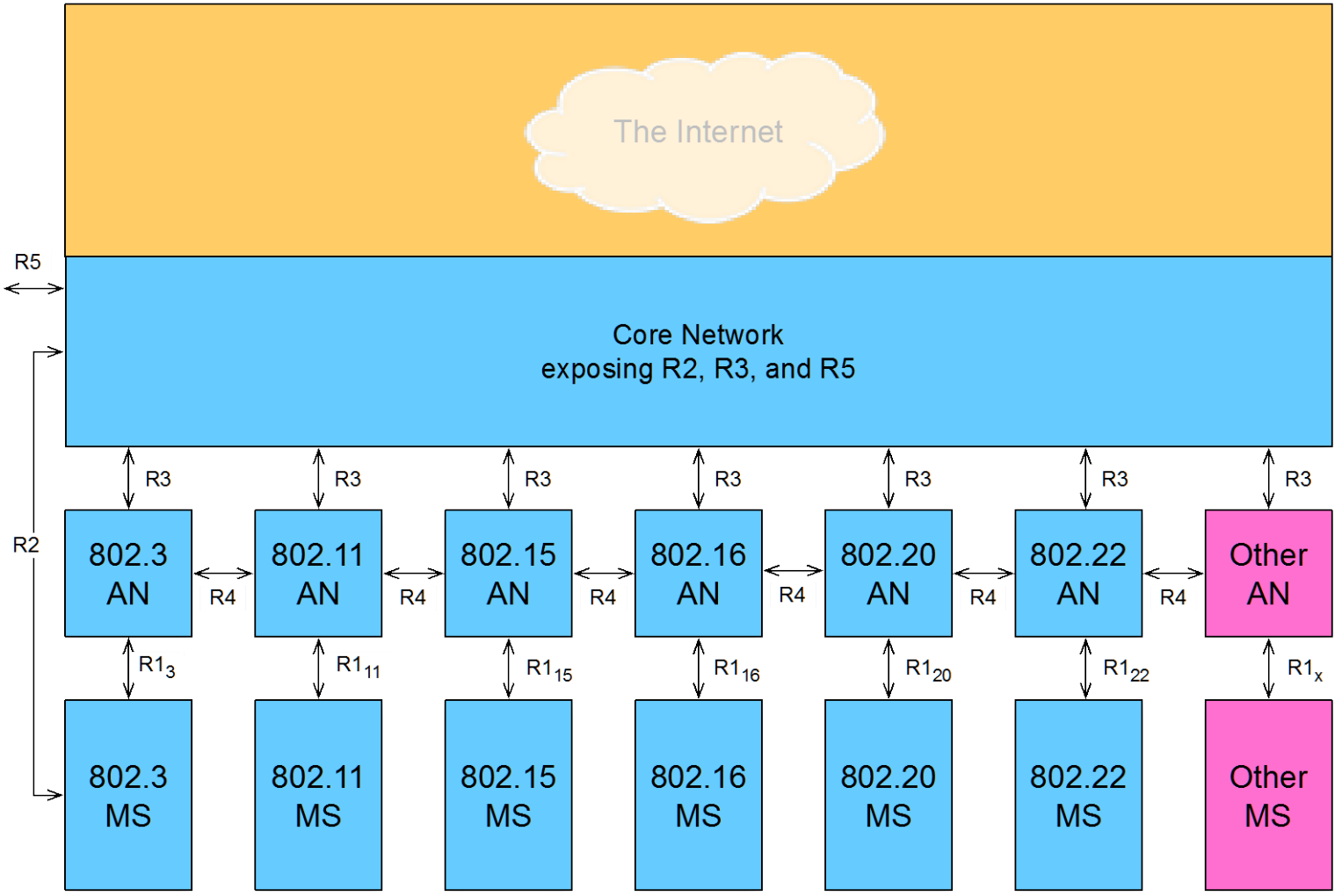
Scope of OmniRAN

- Network detection and selection
  - Finding the most appropriate network when multiple networks are available
- *Setting up the access link*
  - *Scope of individual IEEE 802.xx specifications*
- Authentication
  - Framework, *based on IEEE 802.1X*
- Setting up the e2e communication link
  - Authorization, Service management
- Management of user data connection
  - mobility support to maintain connectivity
- Usage and inventory reporting
  - accounting, monitoring, location

Additional functions for large scale networks

- Subscription management
  - Adding new users to a network
  - Maintaining subscriptions
    - e.g. renewal, change, termination
- Management of terminals
  - Initial configuration of new terminals
  - Provisioning and update of policies

OmniRAN Architecture Overview



OmniRAN Interfaces

- R1: Access link, *technology specific*
- R2: User & terminal authentication, subscription & terminal management
- R3: Authorization, service management, user data connection, accounting, monitoring
- R4: Inter-access network coordination and cooperation, fast inter-technology handover
- R5: Inter-operator roaming control interface

Specification work can be done in sequence!

Summary slide of Contribution IEEE 802.16-12-0660-00

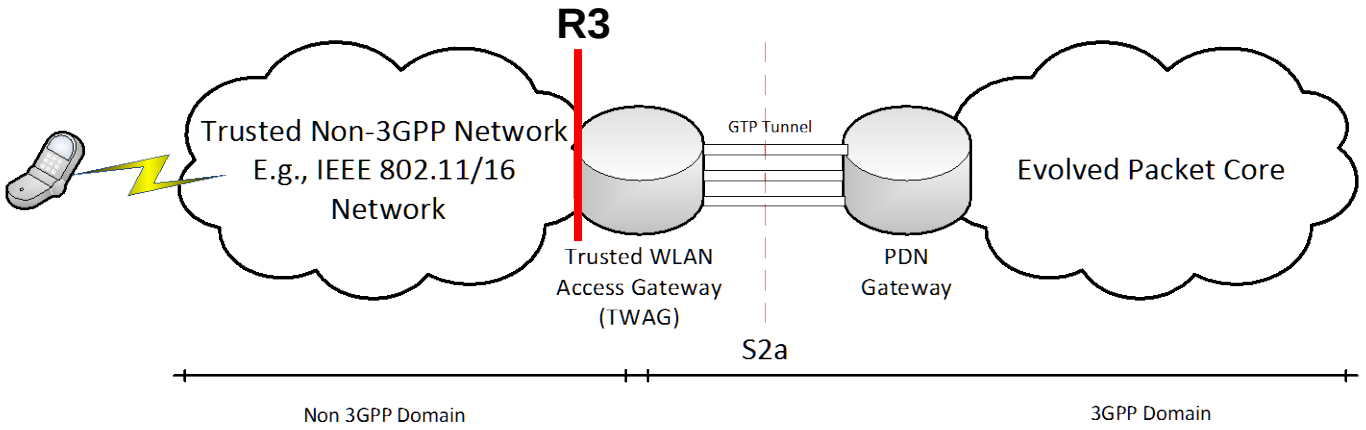
OMNIRAN-3GPP SaMOG

Antonio de la Oliva (UC3M),Ivano Guardini (Telecom Italia),
Carlos J. Bernardos (UC3M),Loris Marchetti (Telecom Italia)

- *Work at the 3GPP SaMOG groups and OMNIRAN can be complementary*
  - *OMNIRAN would need to define how the Trusted Non-3GPP network behaves according to requirements from 3GPP*
  - *Work can be done for both network and terminal sides*
  - *The use of OMNIRAN can open the door to the use of more IEEE 802 technologies as part of the operator´s RAN in a managed way*

What OmniRAN would provide to 3GPP

- SaMOG is defining a gateway controlling the Trusted Non-3GPP network by the EPC



- OmniRAN would provide an interface (R3) to which 3GPP would be able to reference.
  - Expanded beyond IEEE 802.11/802.16

Relation to other standardization activities

- There are plenty of related standardization activities
  - WFA Hotspot 2.0
    - solving the networking issues for IEEE802.11
  - WiMAX Forum
    - Mobile WiMAX network specifications
  - 3GPP
    - interworking with non-3GPP technologies
    - OmniRAN group could provide the interface for network oriented liaisons to IEEE 802.
  - IEEE1905.1
    - integration of multiple access technologies in home networks
  - SmartGrid, IoT and M2M
    - many activities somehow touching the topic
  - …
    - there may be even many more related activities

How to proceed?

- There are benefits to work on OmniRAN in IEEE 802.
- Further analysis necessary to define the missing pieces to enable broader ecosystem for IEEE 802 networks
- Discussions need involvement across all IEEE 802 WGs.
- Proposal: Establish IEEE 802 EC Study Group on OmniRAN this week.