

Contributions to IEEE Standards in 5G

- Our group has initiated a new IEEE standard on Software defined networking in 5G-
 - IEEE P1930.1: Recommended Practice for Software Defined Networking (SDN) based Middleware for Control and Management of Wireless Networks
- We have also pioneered the concept of Frugal 5G for rural broadband and initiated a pre-standardization study group—
 - IEEE ComSoc "Frugal 5G" Study Group

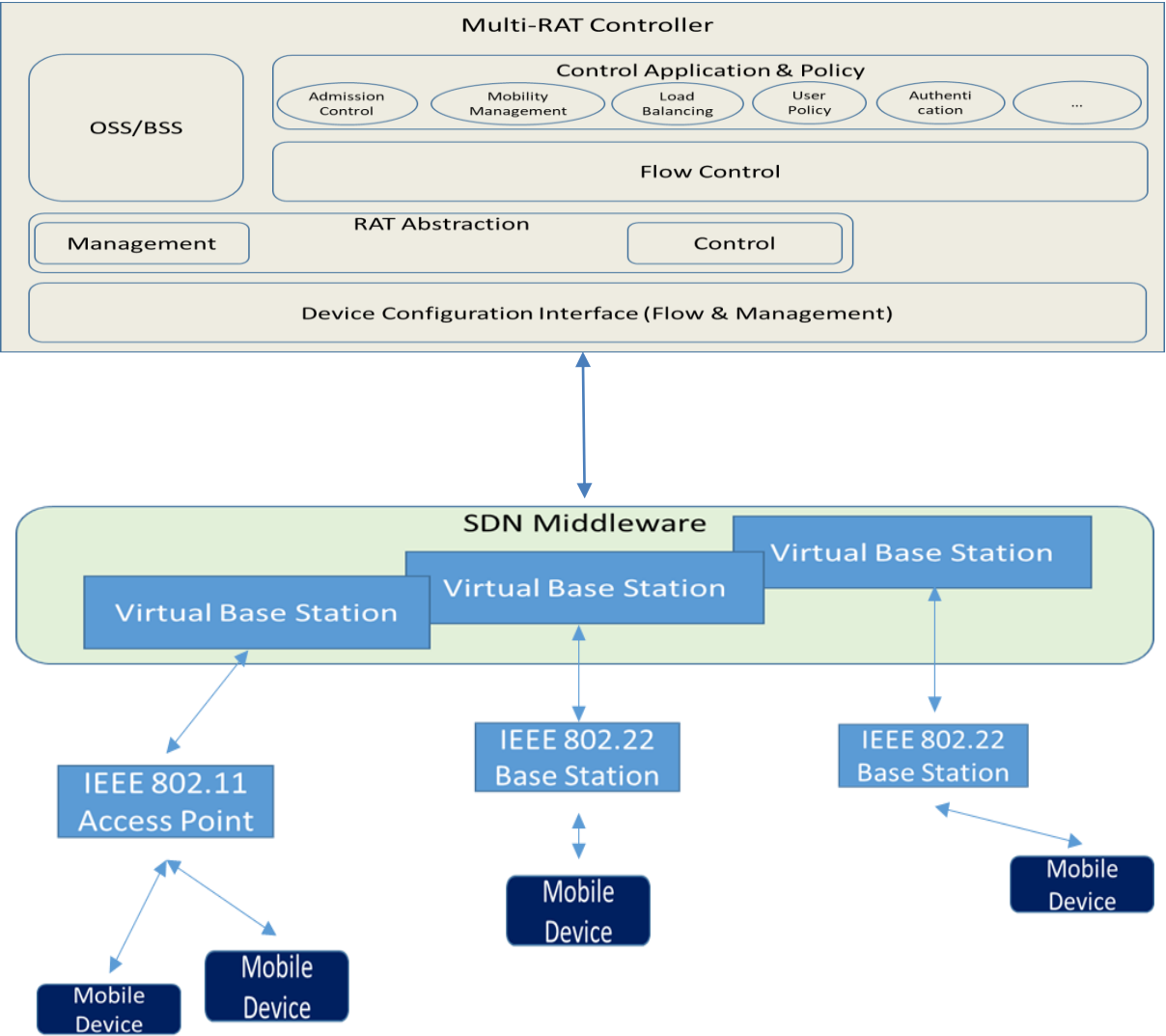
Standard Development for SDN based Wireless Networks

- IEEE P1930.1
 - Working Group SDN-MCM - SDN based Middleware for Control and Management of Networks
- Project : Recommended Practice for Software Defined Networking based Middleware for Control & Management of Wireless Networks
- Project Goal : To define an SDN based Middleware for Management & Control of
 - IEEE 802.11 based Wireless Local Area Networks
 - IEEE 802.22 based Wireless Regional Area Networks
 - *Single middleware to control both IEEE 802.11 WLAN & IEEE 802.22 WRAN*

IEEE P1930.1 - Standard Development for SDN based Wireless Networks

- An open standard for SDN based Middleware to
 - Facilitate
 - Development of interoperable equipment by different vendors
 - Rapid deployment of these networks
 - Faster introduction of new services
 - Enable
 - Dynamic control of the Access Points (and Base Stations) through programmable open interfaces
 - Optimized resource utilization & granular control over deployment of policies/services in the network
 - Integration with non-IEEE radio access technologies within SDN framework

SDN Middleware for Wireless Networks – Architecture





STANDARDS DEVELOPMENT WORKING GROUP

SDN-MCM - SDN based Middleware for Control and Management of Networks

STATUS:

Active Working Group



Working Group Chair: Pranav Jha

Society: [IEEE Communications Society](#)

Sponsor: [Standards Development Board Committee \(COM/SDB\)](#)

IEEE-SA Liaison: Nicholas Orlando

Active Projects Managed by this Working Group

Project

[P1930.1 Recommended Practice for Software Defined Networking \(SDN\) based Middleware for Control and Management of Wireless Networks \(P\)](#)

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Frugal 5G – IEEE ComSoc Study Group

- Frugal 5G Study Group is a pre-standardization study group under IEEE ComSoc Standardization
- This is being led by me as Study Group Chair
- Project Scope
 - Gap analysis of existing wireless systems with respect to following requirements
 - Low Cost Solution
 - Reduced Energy Consumption
 - Low Mobility scenarios
 - Usage of non-conventional energy sources
 - Usage of affordable Wireless middle-mile network to connect the core network to IEEE 802.11 based access network
 - Dynamic spectrum sharing for multi-operator co-existence
 - Scalable control and management of access and middle mile network