

SDR in ORBIT: LTE-U OpenAir Interface

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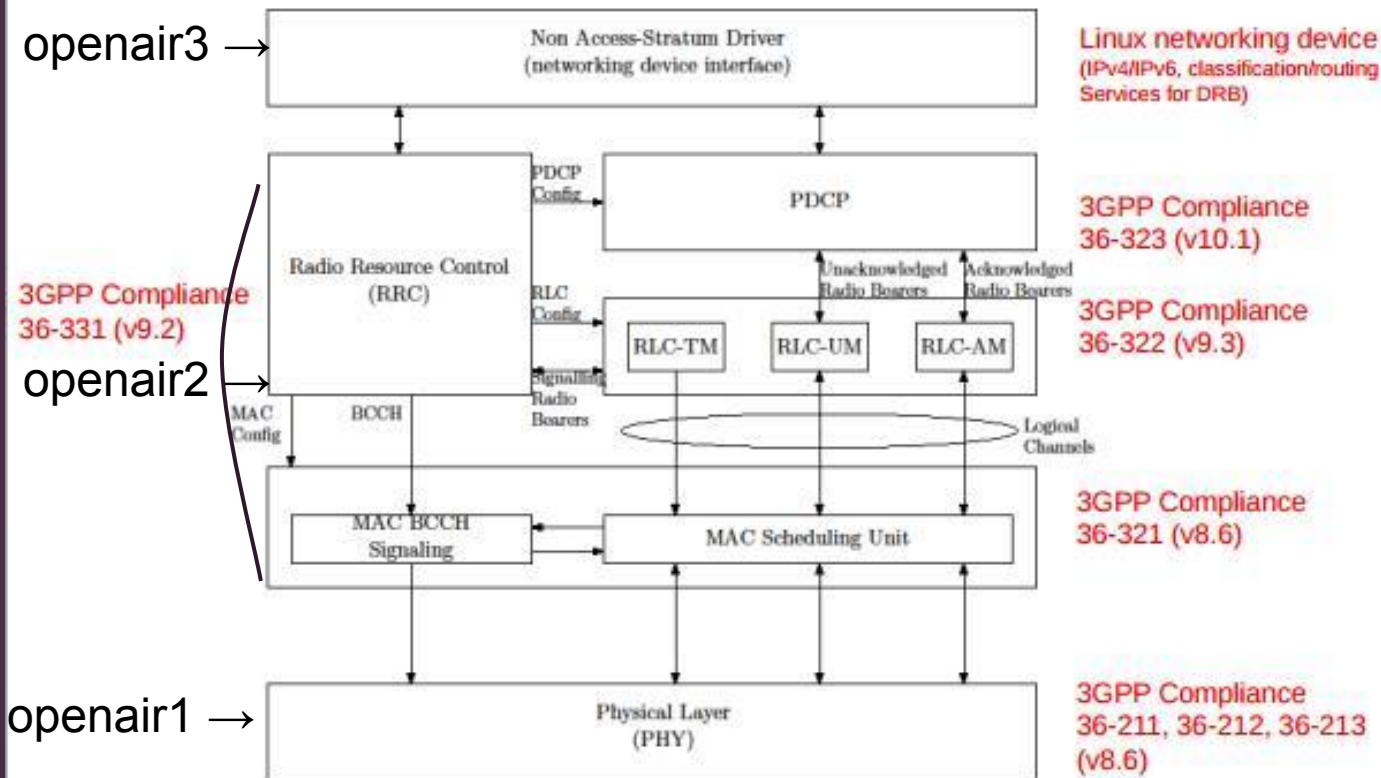
What is OpenAirInterface?

- OpenAirInterface is open-source based experimental research
- Allows to simulate the digital communication environments, such as LTE
 - Real-world testbed: OAI SW + OAI HW or USRP B210/X300
 - OAI EPC + OAI eNB <--> COTS UE
 - Commercial/3rd party EPC + OAI eNB <-->COTS UE
 - OAI EPC + Commercial/3rd party eNB <--> COTS UE
 - OAI eNB <-->OAI UE
 - OAI + Signal generator/spectrum analyzer

Source Code

- Organized into 6 main repositories for different use cases.
 - openair1, openair2, openair3, openairo, openair-cn, targets
- Each repository focuses on a different data communication layer or focus of 3GPP implementation
- Each containing its own detailed README file.

OpenAirLTE PHY/MAC Protocol Stack



Repositories

- **openair1- Open-source real-time and offline SW.**
 - Baseband DSP SIMD-x86 routines for implementing LTE UE's and eNB's.
 - Simulation testbenches for all LTE PHY/transport channels.
- **openair2- Open-source real-time and offline SW.**
 - Contains LTE MAC (36-213), RLC (36-322), PDCP (36-323).
 - S1 interfaces for user and control planes of the eNB.
- **openair3**
 - Open-source Linux SW suite for cellular and MESH networks.
 - Provides scripts and adaptations for the linux networking suite.

Repositories (cont.)

- **openairo**
 - Open-source real-time HW/SW for different Xilinx targets.
- **openair-cn**
 - 3GPP-EPC implementation
 - Small-scale 3GPP-EPC implementation
 - Includes MME, P and S-Gateway, and HSS components
- **targets**
 - Top-level target designs for use with and without HW in emulated or real-time modes.

Next Week

Research further into the [Openair1](#) repository

References

- <https://twiki.eurecom.fr/twiki/bin/view/OpenAirInterface/OpenAirDocumentation>