5th OAI General Workshop
Status and Objectives for 2018-2019
21st June 2018, BUPT, Beijing, China
Overview

- Status and objectives for openairinterface5g
- Status and objectives for openairCN
Key Development Activities Today

- **5G NR**
  - Driven by TCL 5G Labs (UE) and EURECOM (gNodeB)
  - Growing interest, demo at MWC 2018

- **IoT**
  - LTE-M, EURECOM/Orange Labs/Nokia Bell Labs (soon)
  - NB-IoT, B-COM/EURECOM/NTUST/Nokia Bell Labs

- **Functional Splitting / Data-Center Deployments**
  - Many partner institutions and projects and traffic on mailing list
  - OAI architecture driven by EURECOM/Nokia Bell Labs
  - CU/DU split (Eurecom, China Mobile, BUPT)
  - NFAPI (Initially Cisco, others lately)
  - Fronthaul component (EURECOM, Nokia, many others)

- **5G Core**
  - Architecture exploration EURECOM/BUPT/B-COM/Blackned/U. Edinburgh
  - Evolution of openairCN components
  - Some interest in USA in M-Cord ecosystem

- **Stabilization of RAN/CN components**
  - openairCN: driven by Facebook for OpenCellular, git/jenkins CI @ Facebook, EURECOM, B-COM
  - openairinterface5g: driven by Fujitsu, CI being setup at EURECOM, Fujitsu and Nokia Bell Labs
  - eNodeB MAC layer redesign

- **D2D for ProSE and LTE-V2X**
  - Driven by Vencore Labs and EURECOM (NIST PSIAP)
  - Orange/EURECOM (LTE-V2X)

- **FeMBMS**
  - Driven by IRT (Munich) and EURECOM for now
openair5G RAN

Main achievements since last workshop

- Technical Board in place
- CI Framework in place (full operation Summer 2018)
- New RAN architecture in place
- FAPI/open-nFAPI imerged
- NR: Initial demo, Rel15 implementation (public) underway
- New Simulators merged
- LTE-M: merge to come (Summer 2018), public branch tested in community
- NB-IoT: merge to come
- Multi-core support for eNB
- Sidelink (ProSe): merge to come
- STTI (HRLLC):

Buggy/Missing/Incomplete Essential Features

- RLC AM mode: buggy
- Multi-UE/RA scheduling: buggy
- TM3/4/8/9/10: incomplete
- PUCCH2: incomplete
- TDD configurations:
- Measurement gap handling: missing
- DRX handling: missing
- Carrier Aggregation: incomplete
- X2-handover: assessment of status (Summer 2018)
Regular Meetings

- **Strategic Board Webex**
  - Every 2 weeks
  - Overview of recent activity
  - Discussion on
    - strategic objectives
    - Legal matters
    - Links with other organizations (e.g. standardization)

- **Technical Board Webex**
  - Tbd (see next slide)

- **Weekly developer Webex**
  - Tuesday Mornings (general)
  - Friday Mornings (NR, every two weeks with Europe/Asia)
  - Friday Afternoons (NR, every two weeks with Europe/Americas)
Technical board

- **Creation of technical board to oversee**
  - Roadmap implementation
  - Architecture evolution
  - Review merge requests
    - Code quality
    - Adherence to architecture

- **Members:** OSA, Orange, Nokia, Fujitsu, TCL, EURECOM, BCOM, Fraunhofer IIS, OpenCells

- **Meetings**
  - Slack channel currently setup for Technical Board day-to-day interactions
  - Regular Meetings to be setup
openair5G RAN: Objectives for next period

- **MAC Architecture revision**
  - Modularization of scheduling (preprocessor) entity
  - Configuration/management interfaces

- **MAC implementation**
  - Debugging to allow 10s to 100s of connected UEs

- **PHY documentation**
  - Developer manual: Real-time Threading architecture and MODEM procedures

- **Architectural revision for**
  - Higher-layer Functional split (3GPP CU-DU)
    - Integration + VCO OPNFV Demo
  - Management interfaces and configuration in RAN

- **CI Testing framework**
  - EURECOM testbed online for community (Summer 2018)
  - 16 Cat-6 UEs (TDD/FDD), 1 Cat-M1 UE, 1 Cat-NB UE
openair5G RAN: Objectives in next period

- **PHY Implementation**
  - Multi RU/eNB EURECOM test network
  - NR NS procedures
    - PDCCH, PDSCH, PRACH, PUSCH (more in NR presentation tomorrow)
    - Real-time demo by Fall 2018
  - Sidelink
    - on-network/relaying
    - Integration of V2X signaling modes
  - Basic L1/L2
    - TM3/4/8: Finish testing of TM3 and start TM4 in CI
    - 256 QAM: integration of community development
    - 2 DL Carrier Aggregation (TDD Band 38/42-43 on Eurecom test network)
    - PUCCH2 CSI: add L1 component + test procedures
  - NB-IoT L1/L2
    - Interoperability testing and integration in develop
  - eMTC
    - More realistic scheduling procedures (integration of higher-order repetition modes)
    - Testing with more modules
  - eMBMS/FeMBMS
    - Integration of Fraunhofer IIS eMBMS UE procedures
    - Development of Rel14 eMBMS waveforms (1.5/7.5 SCS numerologies)
  - STTI (HRLLC)
    - Integration of Fraunhofer IIS developments
OPENAIRCN STATUS
openairCN status

- **Done since last workshop**
  - CI Framework for openairCN ongoing
    - Automatic generation of tests from merge requests
      - S1AP tester (FB + EURECOM)
      - Commercial eNB + TM500 (FB)
  - HSS
    - Rel14 contribution from Sprint (USA) : integrated
  - MME
    - Integration of Blackned contributions
      - Handover procedures
      - Paging
      - Multiple PDN
    - Integrations of BCOM contributions
      - X2 handover support
  - SPGW
    - Paging + OVS support
openairCN Objectives for the period

- **Basic features 4G EPC**
  - Many basic bugfixes to MME from FB still to come
    - Reintegration of dedicated bearer support (Blackned)
  - Support of Release 14 IEs (e.g. for NB-IoT)
  - Additional test cases / tools for S1AP testing / NG4T integration

- **5G Core**
  - Evolution towards new network entities (AMF, SMF, UPF, UDM, AUSF)
    - Split of OAI MME in to AMF/SMF
    - HSS to inherit Rel14 version from openairCN
  - CI framework from the beginning (like S1AP tester for 4G)
  - Presentations in sessions