

Key research and technology related to C-RAN/O-RAN network

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1	Introduction
2	Subproject 1: Radio Access Network use case
3	Subproject 2: RAN accelerator research
4	Subproject 3: MEC, vCU and vDU deployment scenario analyze
5	O-RAN : Open and Smart RAN

- **OPNFV C-RAN project Working Scope**
Subproject 1: Radio Access Network (RAN) use case
Subproject 2: RAN accelerator research
Subproject 3: MEC, vCU and vDU deployment scenario analyze

C-RAN wiki page

<https://wiki.opnfv.org/display/CRAN/C-RAN+Home>

Current Partners:

China Mobile, Lenovo, Wind River



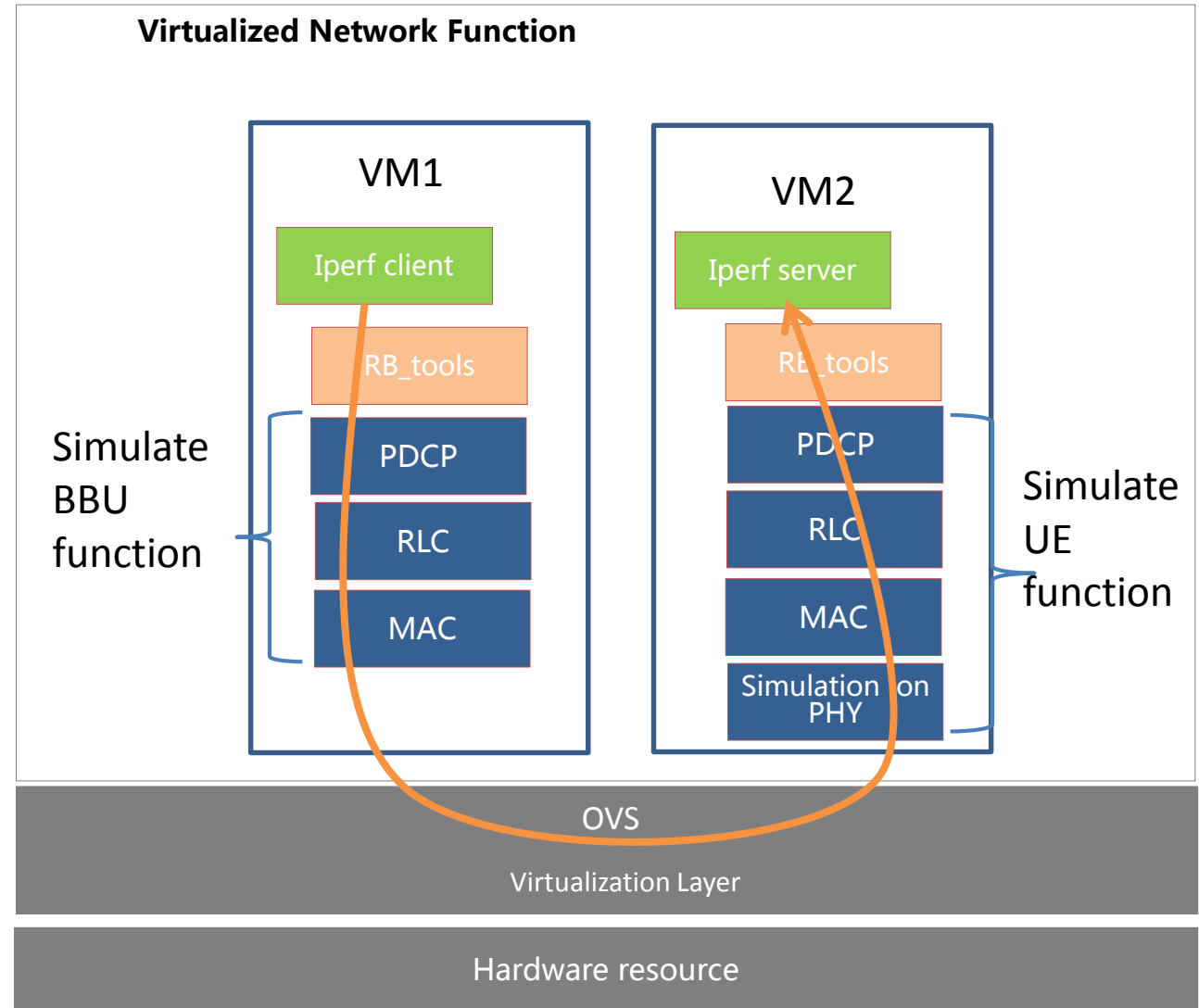
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Introduction:

This subproject is a Open Air Interface Community based RAN protocol stack implementation, providing LTE FDD-based RAN-VNF, and User Equipment (UE) function emulator. Each VM can generate protocol based packets and transmits between each other. It can test NFVI platform by running RAN VNF.

How to run it?

git clone <https://gerrit.opnfv.org/gerrit/cran>



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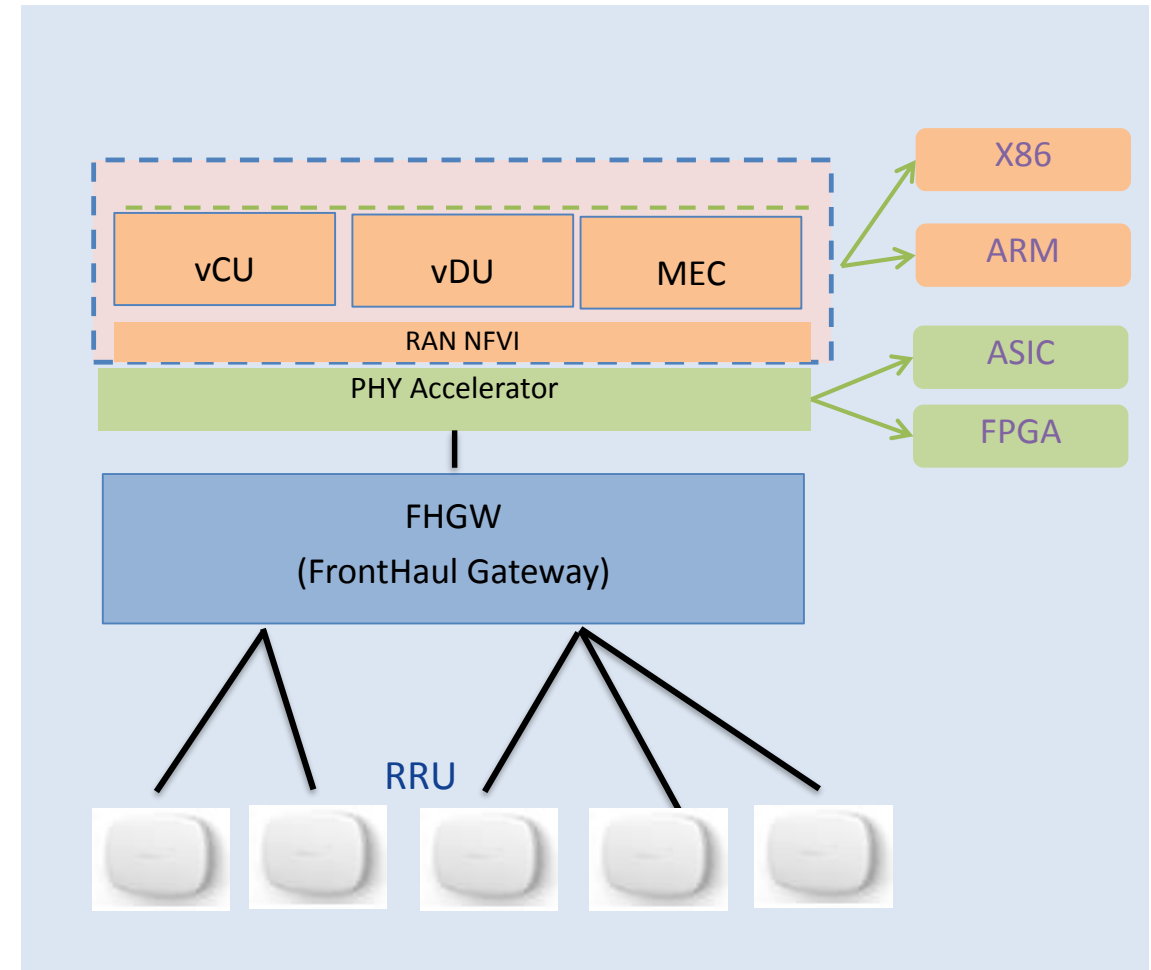
Define RAN accelerated functions and accelerator selection.

Accelerated Radio Access Network function:

- **fast Fourier transform**
- **inverse fast Fourier transform**
- **Forward Error Correction**
- **PDCP ciphering and deciphering**

Potentially accelerator selection:

ASIC, FPGA, others in research



Goal of the field trial

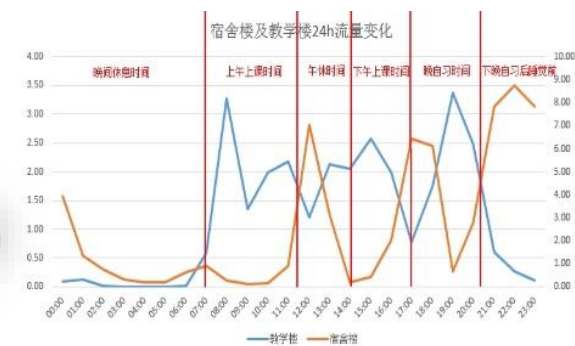
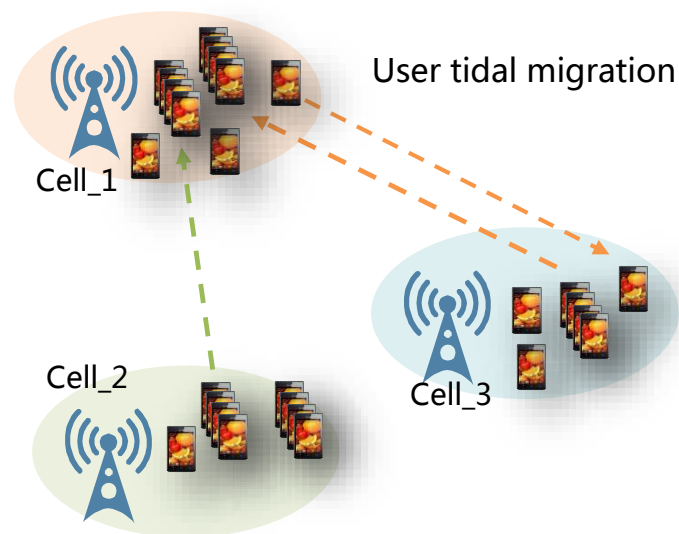
- Verify the baseband processing pool gain, multi cell splitting and merging characteristics.
- Evaluation of integrated deployment cost (CAPEX/OPEX)
- Verify system reliability (general platform with HA/ dedicated platform)

Technical solution

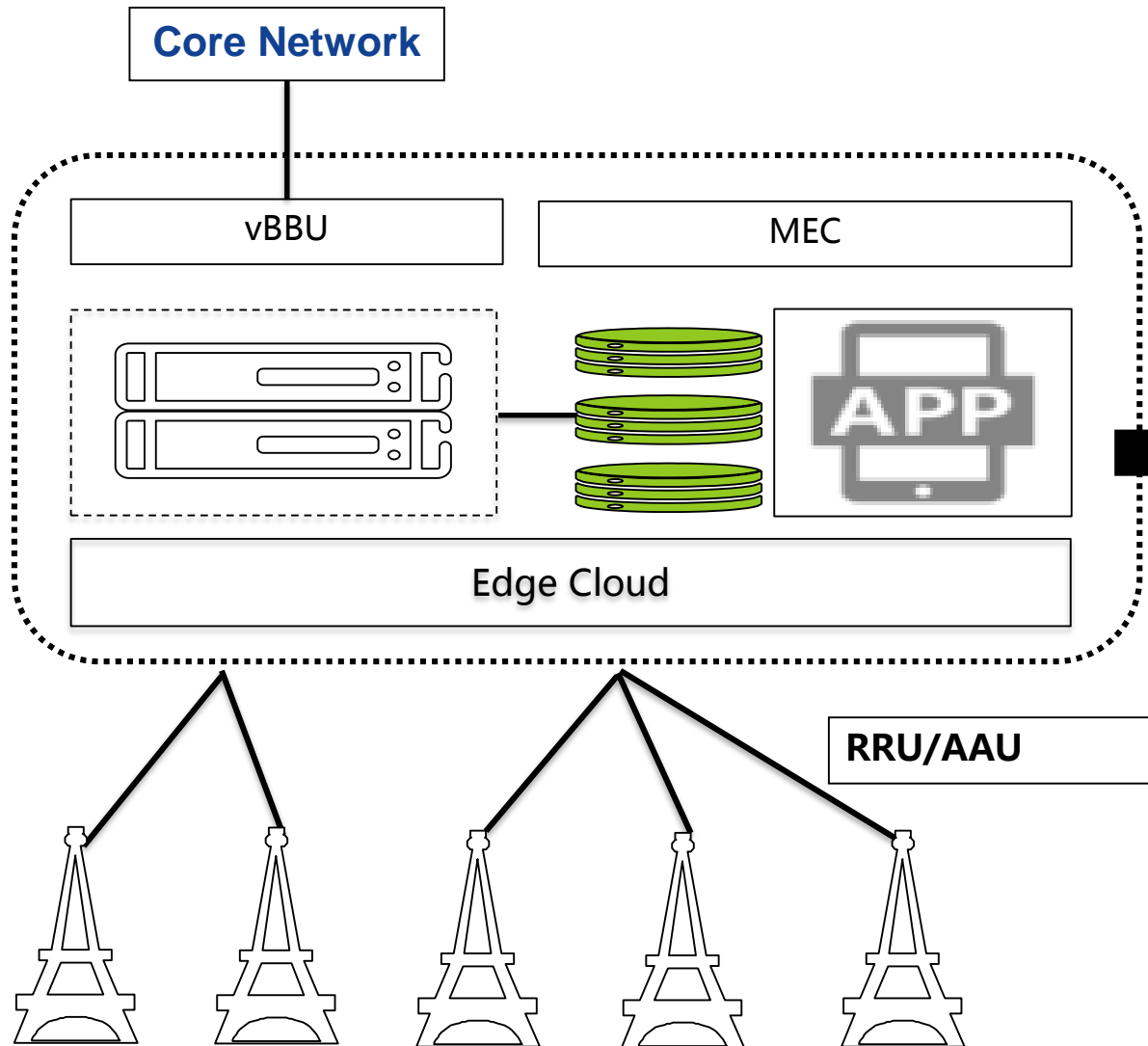
- BBU: pool of universal platform (server with accelerator)
- RRU: multi band multi format, LTE software smoothly upgraded to NR
- Extension unit: support POE or optoelectronic hybrid cable

Current progress

- LTE standard field trial (base on virtualized BBU with cloud platform) has been launched



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Intelligence
manufacturing



Smart City



Local break out in
Campus



Entertainment

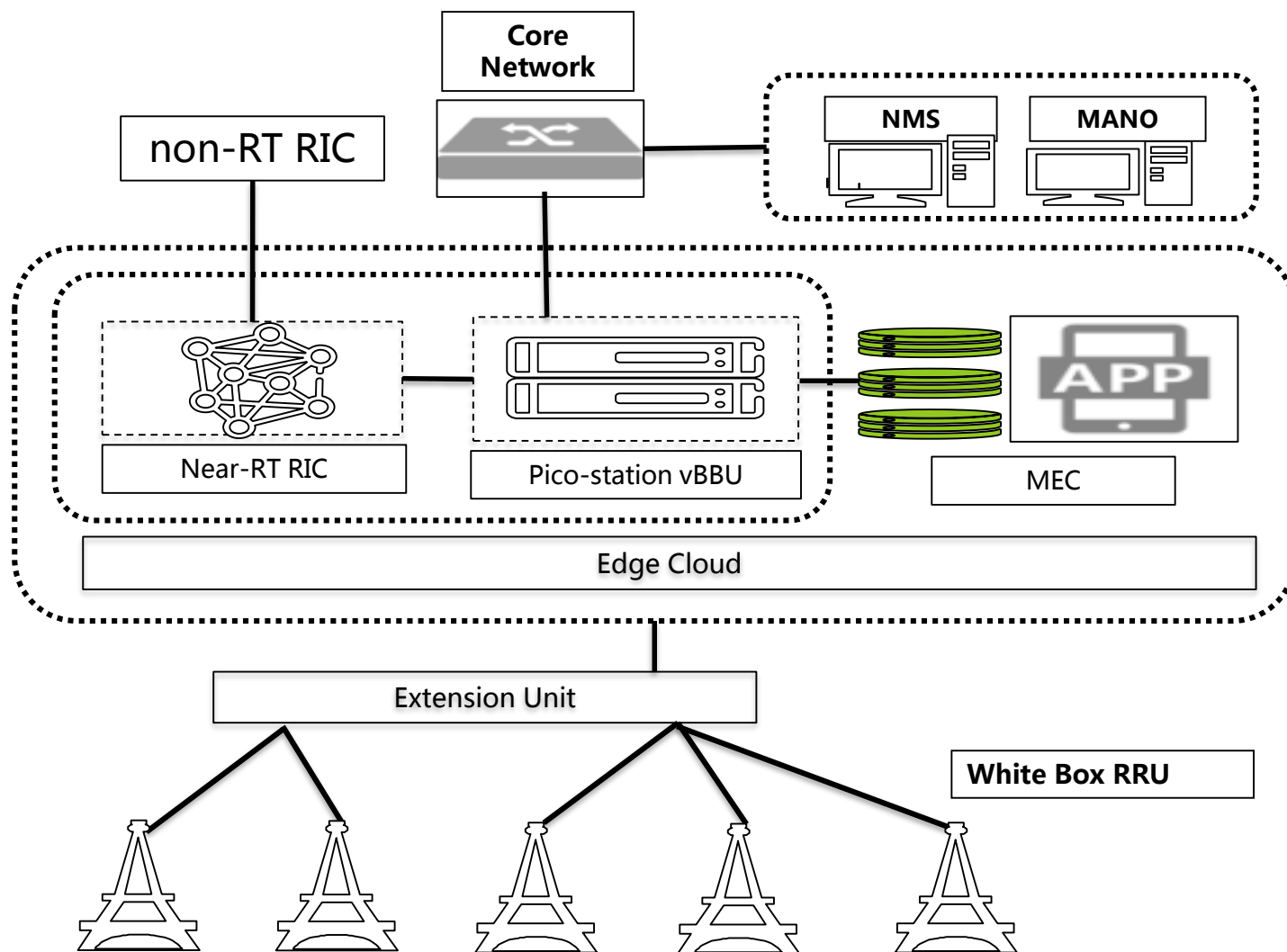


Virtualized base station collaborate with MEC APP to support vertical industry services. Jointly verify the vBBU base station function and performance. Field trials on planning in China.

- **VM vs Container**
 - **OpenStack based solution and Kubernetes based solution**
 - **VNF and CNF**
 - **MANO perspective**
- **Cloud Architecture**
 - **Regional Cloud, Edge Cloud, and Cell site**
 - **Hierarchical Cloud**
- **Open Source reference for edge**
 - **Edge Cloud in OPNFV**
 - **StarlingX with containerized OpenStack and Distributed Cloud**
 - **Etc.**

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O-RAN alliance was found at 2018 MWC, and O-RAN community was found with Linux Foundation in April.



Open Interface:
Eliminate single-factory, facilitate collaboration, improve service and lower costs

Open-source Software:
Share the open source code and reduce development costs

Open Reference Design (ORD)
Share the hardware reference designs, promote competition and encourage innovation

Intelligent Management and Control:
Automate operations, reduce operational hardship and improve network efficiency