Project Overview

• 5G COHERENT aims to research, develop and showcase a unified programmable control framework for 5G heterogeneous radio access networks
• Flexible spectrum management combined with efficient network coordination
• Network graph and low layer abstraction for scalability and reduced control overhead

• Challenges addressed
  • A single architecture to support services of different nature (eMBB, MTC, URLLC services)
  • Different radios, spectrum access modes, frequency bands, and network technologies need to be harmonized under 5G architecture
  • E2E slicing
  • 5G Control and Coordination
Programmable Control through C3

Service Slice
- App. 1
- App. 2
- App. 3

Central Controller & Coordinator (C3)
- C3 Instance

Real-Time Controller (RTC)

Radio Transceiver (RT)
- Func. A
- Func. B
- Func. C

Network-wide Control

Real-Time Control

Source: COHERENT System architecture and abstractions for mobile networks
COHERENT Architecture

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Requirements Pyramid

Source: COHERENT Draft report on technical validation
COHERENT Architecture and Testbed

COHERENT Architecture

Service Plane

Slice 1
App

Slice ...
App

Northbound API

C3 Internal Functions

CONTROL PLANE

C3
Non RTC

DATA/CONTROL PLANE

RTC
RT
vRP
R-TP
TN

COHERENT Testbed

Service Plane

Slice 1
App

Slice 2
App

Slice ...
App

Monitor (RAT, RSSI, Time, AP_id)

Northbound API

C3 Northbound API

Northbound Abstraction & SDK

C3 Northbound 5G-Empower Control Plane

OAI Control Plane

5G-Empower LTE Control Plane

5G-Empower Wi-Fi Control Plane

CMA Control Plane

CMA LTE MAC Scheduler

CMA LTE Data Plane

Legacy radio technologies

Source: COHERENT Draft report on technical validation
COHERENT in Practice (1/2)
COHERENT in Practice (2/2)
Open Source to Explore

http://www.openairinterface.org/

http://empower.create-net.org/

https://github.com/travelping/ergw
Thank You!

www.ict-coherent.eu