5GO.pt

Mobilizador 5G
2nd Project Workshop

A 5G ecosystem powered by Portuguese technology

Designing a 5G RU – from concept to prototype

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Partners

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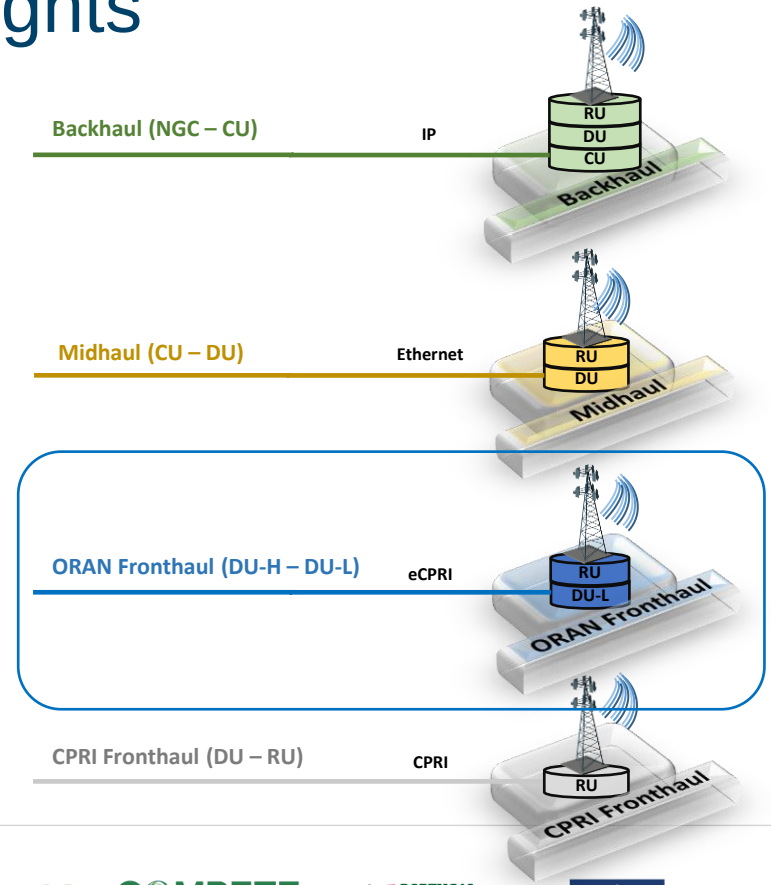
RU Concept and Highlights

- Develop 5G RU with O-RAN fronthaul
  - Cat. A split 7.2 O-RAN compliant (default, adaptable to other functional splits)
  - Support FR1 bands (sub 6GHz)
  - Up to 100 MHz channel bandwidth
  - Up to 4x4 MIMO
- FPGA/MPSoC-based (field upgradable)
- Software Defined Radio frontend
- Optical 10 GbE SFP+ interface
- Flexible output power
  - Plugable amplification modules and DPD enabled



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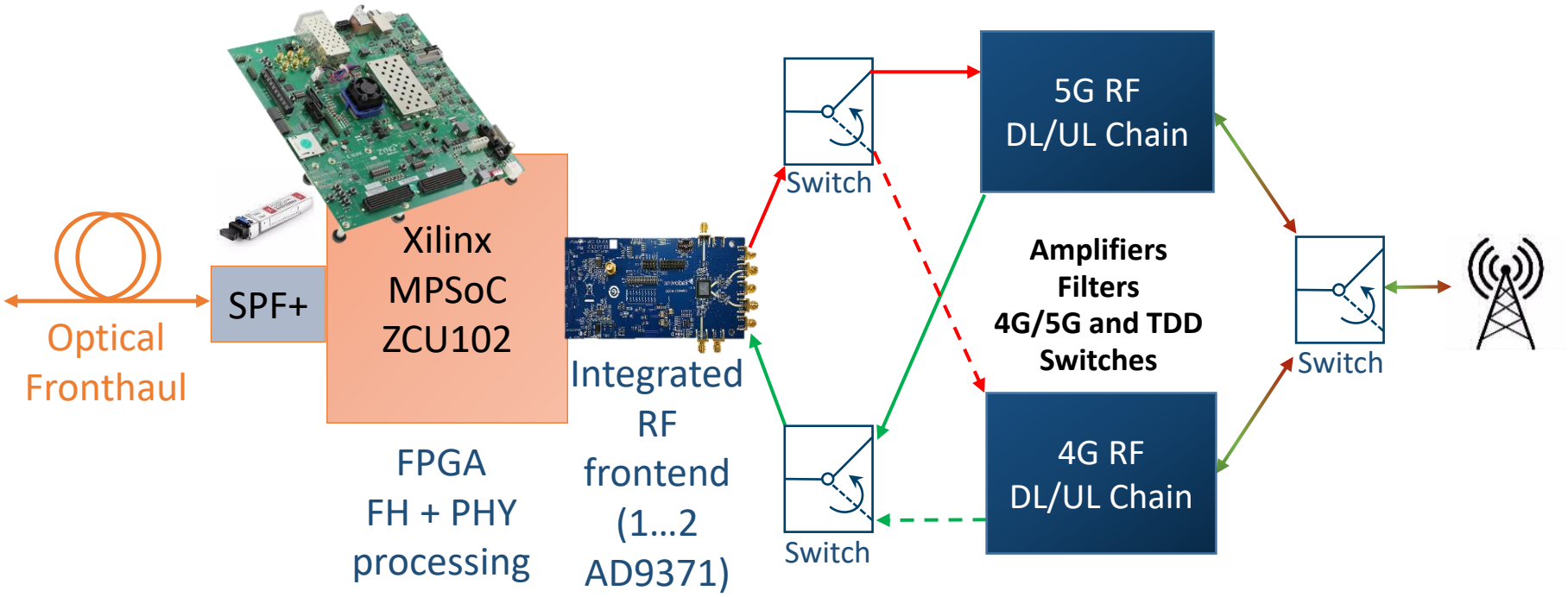
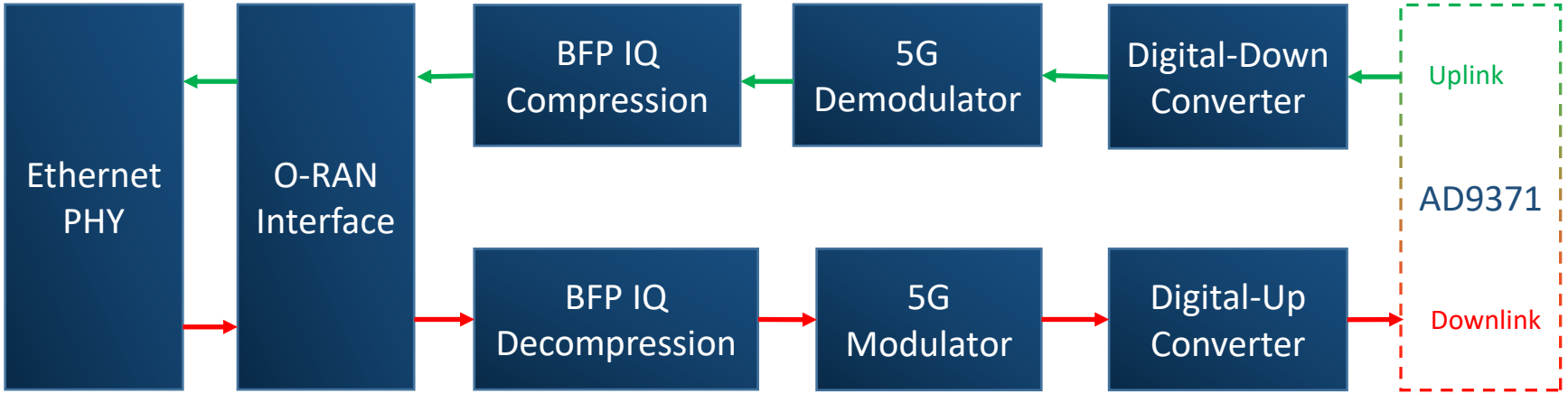
RU Overall Architecture



MPSoC Internal Architecture



- From/to fronthaul packets to/from baseband IQ samples
- Block floating point to save fronthaul bandwidth
- Baseband modem and interface with external RF frontend

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Lab Prototype

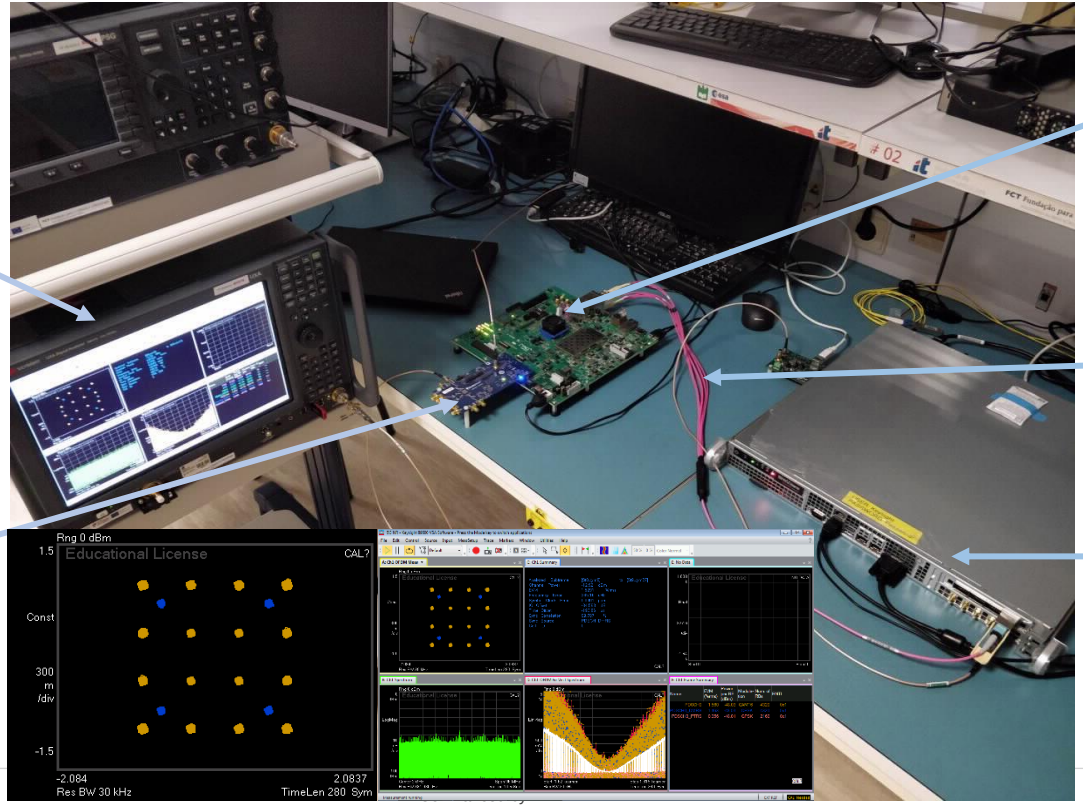
Signal analyzer

ADRV9371

Xilinx MPSoC ZCU102 kit

Optical Fronthaul Link

O-RAN DU emulator



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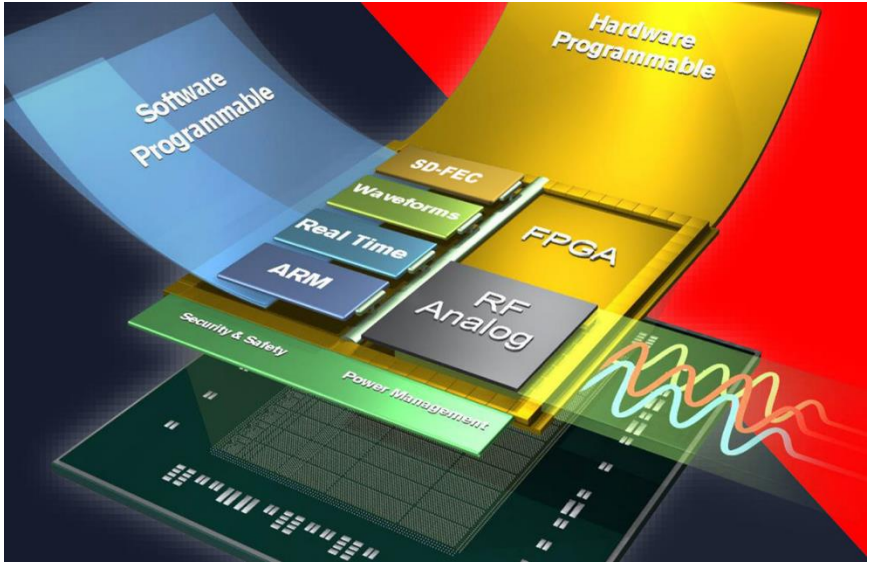
Current Status and Further Steps

- Ongoing interoperability tests of the RU lab prototype
  - O-RAN fronthaul with 3rd party equipment
    - DU emulators
    - Commercial DUs, CUs and CN
  - RF signal integrity measurements
- Next steps
  - Migrate from MPSoC do RFSoC-based fully integrated implementation
  - Upgrade from MIMO 2x2 to 4x4
  - Extend the bandwidths, numerologies, etc. supported by the baseband modem
  - Integration of Digital Predistortion and Crest Factor Reduction for improved PA efficiency



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