What the Hell is an Operator doing with RAN and Core Network open-source Code?

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orange™

Standards and Open Source are Complementary

Standards:

- ✓ Ensure interoperability
- ✓ Intellectual property clarity
- ✓ Long development cycle

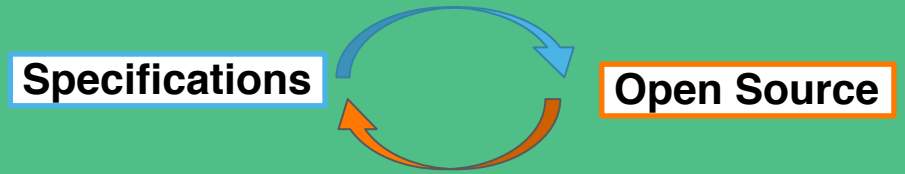
Open Source:

- ✓ Co-development
- ✓ Faster innovation
- ✓ Faster development cycles

Open Source enable fast paced feedback and iterative development of standards

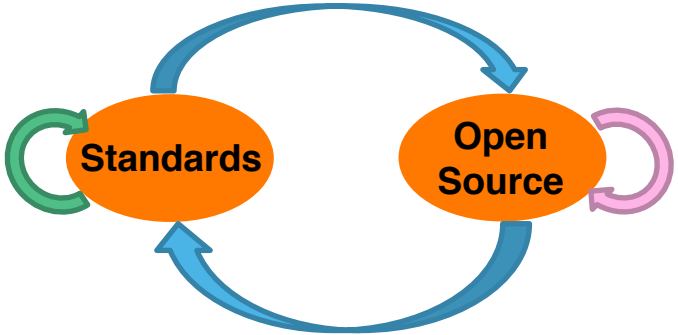
A mutually beneficial relationship

Open Source – the key to unlocking the networks of the future



Specs taken as a reference & implemented

- **Base specs** (Architecture, requirements, IM, DM, APIs)
- **Test specs**



- **White papers**
- **Feedback** (IM, DM, APIs)
- **Recommendations**

Feedback provided to enhance the specs

Why Open Source?

1. Solution tailored to our needs
2. Cash-out savings
3. Limit vendor dependency
4. Structure ecosystems
5. Develop skills & attract new skills
6. Sovereignty, Security (GDPR)

ORANGE key priorities

Open Interfaces

Truly open and interoperable interfaces

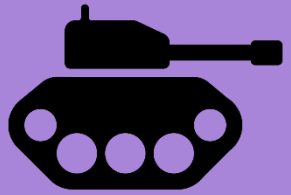
(e.g. Open RAN, OSS, Cloud, etc.)

Test & integration

Mutualize efforts and improve DevSecOps model/tools, as a win-win strategy

(e.g. Anuket, CNF test suite, OTIC, etc.)

Robustness solutions



Build carrier-grade networks by leveraging experiences acquired together

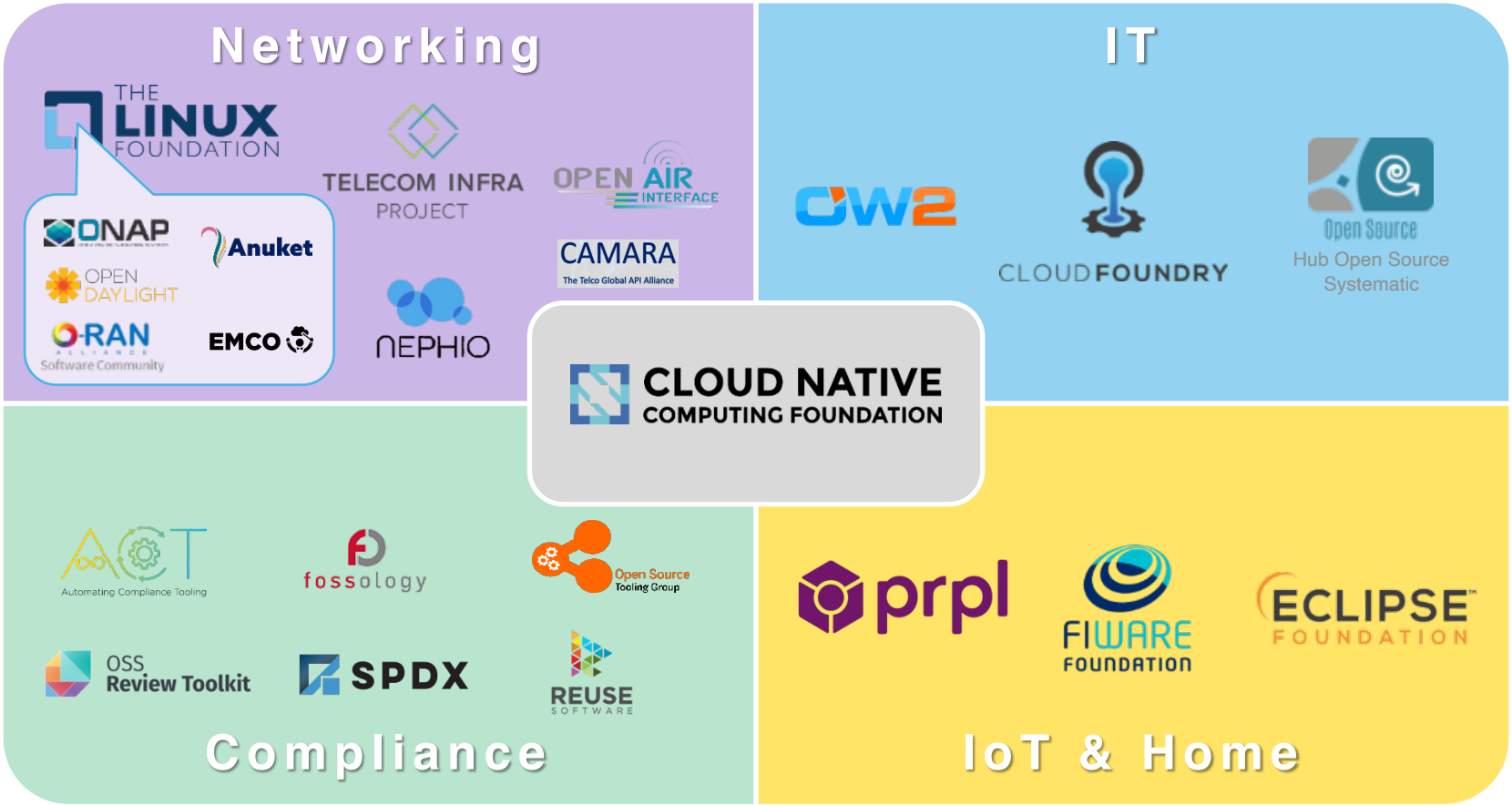
(e.g. ONAP, Anuket, etc.)

Support model

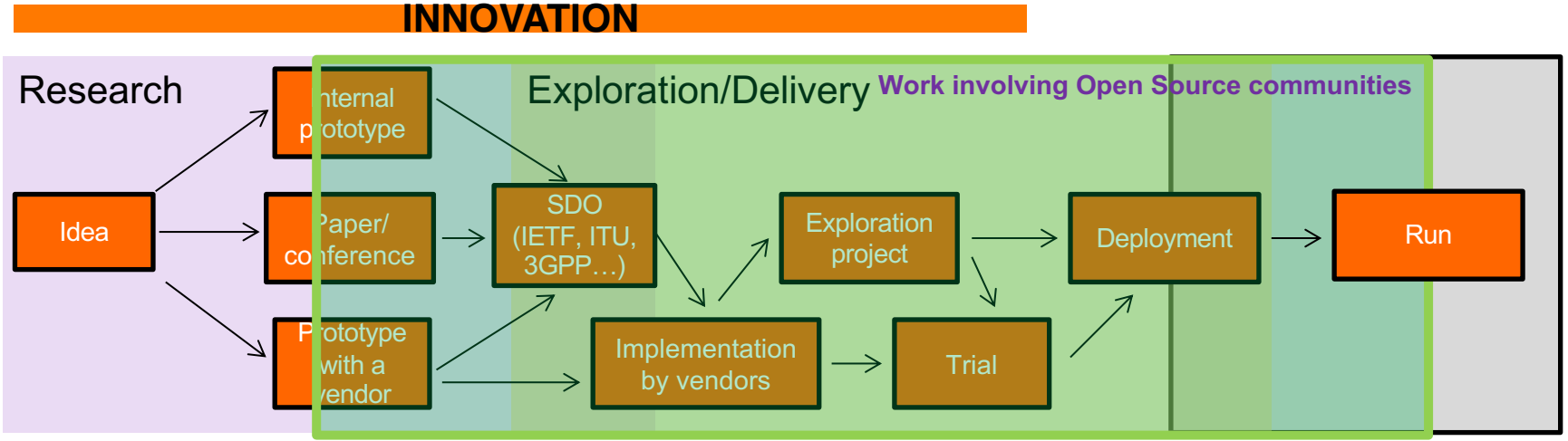
Adapt support models for future telecom network needs

(e.g. Open RAN, Cloud, etc.)

ORANGE participation to Open Source communities



Global impact on ORANGE activities



- **Open Source communities integrated at an early stage of our activities, inc. Research activities**
- **This involvement will continue up to operational deployments, and even later on, during the RUN**

Open Source in Research European Projects

5G Infrastructure Public Private Partnership (5G PPP)

Open Source solutions used in 5G PPP projects

OpenAirInterface as the foundation for the connectivity of the open source platforms

5G EVE

5G-TOURS

5G VICTORI

OPEN AIR 5G INTERFACE

ONAP
OPEN NETWORK AUTOMATION PLATFORM

O-RAN ALLIANCE

5G EVE 5G European Validation platform for Extensive trials

- **July 2018 => June 2021; Implement and test 5G; Interconnect European sites**

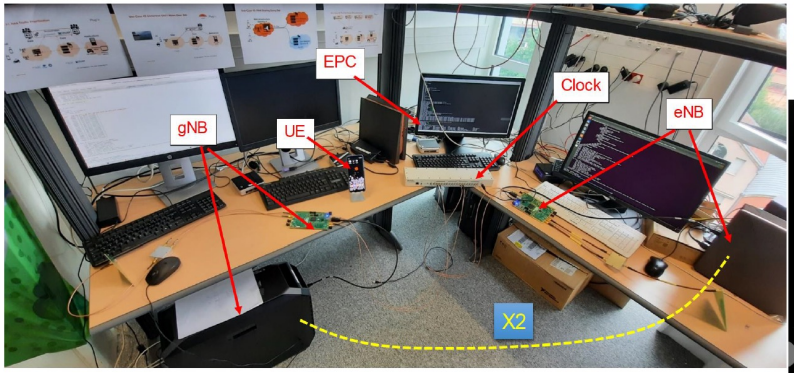
Follow-up with 5G-TOURS and 5G-VICTORI projects

5G and Beyond project

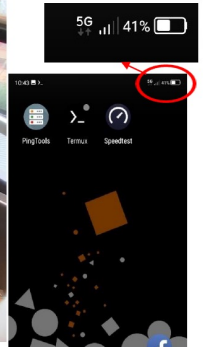
Smart Networks and Services Joint Undertaking project proposal in a 6G perspective

OAI based Proof of Concept & use cases

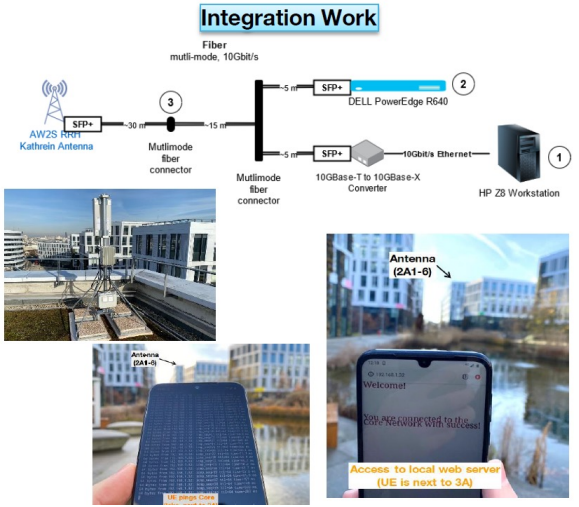
- OAI Open source chain evolution towards 5G NSA then 5G SA
- Outdoor Air transmission with commercial RRH @ Orange Gardens



Plug'in

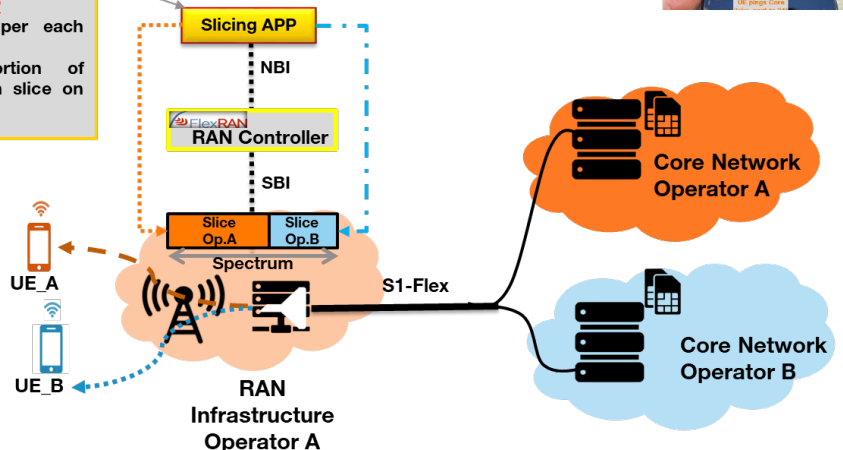


Source: M. Yassin, S. Costanzo



- Tested OAI use cases
  - RAN traffic Prioritization,
  - Immersive (360) video
  - RAN sharing → Flexibile RAN sharing with RAN Controller+ Slicing

Slicing APP
- Creates a slice per each operator
- Allocates a portion of spectrum to each slice on the fly



- Flexibility in RAN operation
- Evaluate new use cases thanks to OS then push such innovations in the ecosystem

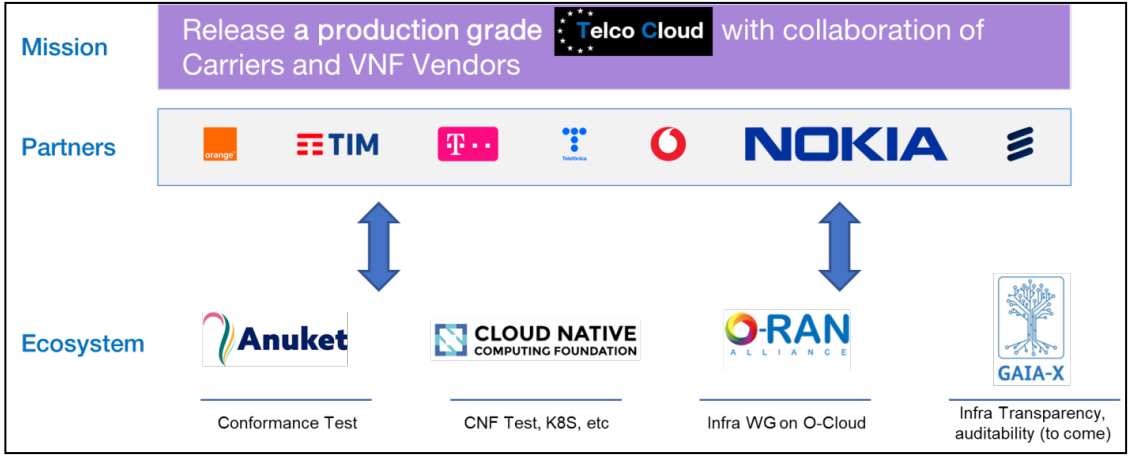
An Open-source Telco Cloud stack to accelerate the adoption of cloud-native operator model

Context

- **Historical Model doesn't fit with multivendor approach**
- **Operators are increasingly threatened by hackers**
- **New Network Functions require Cloud native infra and distributed Cloud Continuous Innovation & Service Automation**

Five pillars

1. **Network Performance to answer to CNF requirements**
2. **Distributed Cloud**
3. **Best in Class Security Design**
4. **Energy Efficiency**
5. **Open Source and Standardized APIs**



First demo in Feb at the virtual booth at the O-RAN alliance @MWC2022

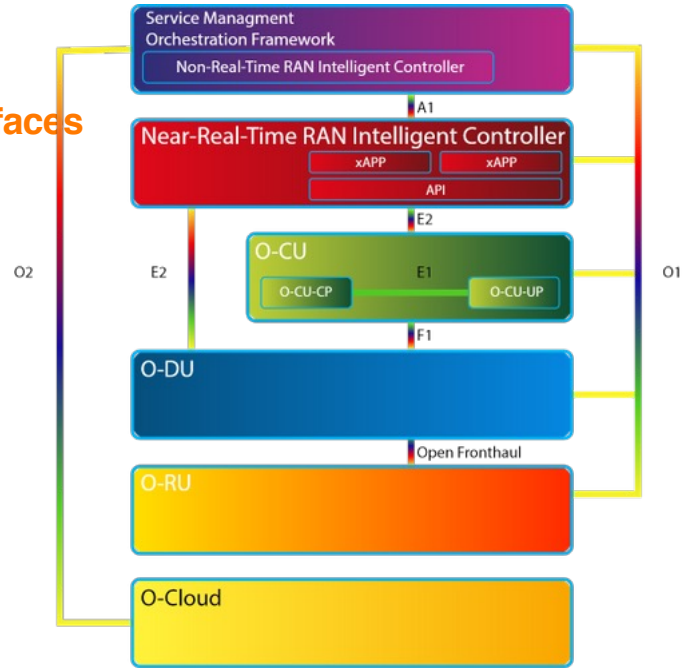
Open RAN/O-RAN ALLIANCE

ORANGE is committed to the success of the open RAN approach, as one of the founding members of the O-RAN ALLIANCE, involved in TIP Open RAN related activities and is actively participating with EU operators to open RAN MoU Group.

Disaggregation of the RAN is based on specification of open interfaces

Test and Integration become critical activities !

ORANGE Open RAN Integration Centre in ORANGE GARDENS.



OpenAirInterface and Open RAN/O-RAN ALLIANCE

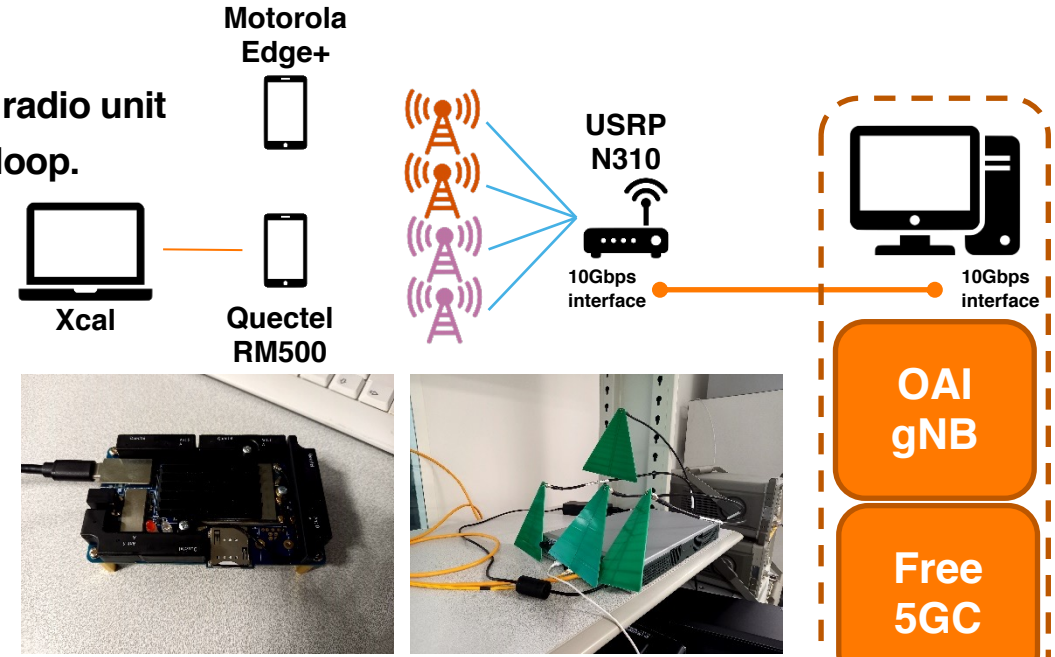
OAI can be seen (or may be at some point in time) as an O-RAN open source reference implementation.

Could be part of ORANGE OTIC to test open RAN commercial products in an E2E environment.

2022 activity planned

OAI 5G RAN SA connected to an indoor 7.2x radio unit

Further step is to add RIC component in the loop.



Highlights

Complementarity of standards and open source.

Open source at each and every stage of Innovation chain… and beyond

OAI and open RAN/O-RAN ALLIANCE/OSC: right time for a collaboration

OAI / EURECOM as a host for the next 2022 O-RAN plugfest? (Fall session)

Merci