



The Standards People

ETSI Research Conference 2023

Maximizing the Impact of European 6G
Research through Standardization

6G-BRICKS overview and standardization

Dr. Kostas Ramantas (IQU)

Prof. Christos Verikoukis (ISI/ATH)

6GSNS

08/2/2023



Project Overview

6G-BRICKS: Building Reusable testbed Infrastructures for validating Cloud-to-device breakthrough technologies

- ✓ **Coordinator:** Prof. Christos Verikoukis (Athena/ISI research center)
- ✓ **Project Officer:** Mr. Odysseas Pyrovolakis
- ✓ **URL:** www.6gbricks.eu



6G-BRICKS facts:

- Federation of 2 6G sites (KUL, EUR) and one experimentation site (ATHENA/ISI)
- Evolvability (ability to include more sites)
- Offering RAN technologies with B5G KPIs
- Bringing together 3 Beyond 5G projects (MARSAL, HEXA-X, REINDEER) and 1 ICT-41 (5GMediaHUB)
- Modular approach (reusable, “Lego bricks” concept), aligned with O-RAN
- Metaverse and Industry 4.0 / Digital twins use cases

Technical Information and objectives

Objective 1: To deliver an evolvable 6G experimentation facility that will integrate breakthrough 6G technologies

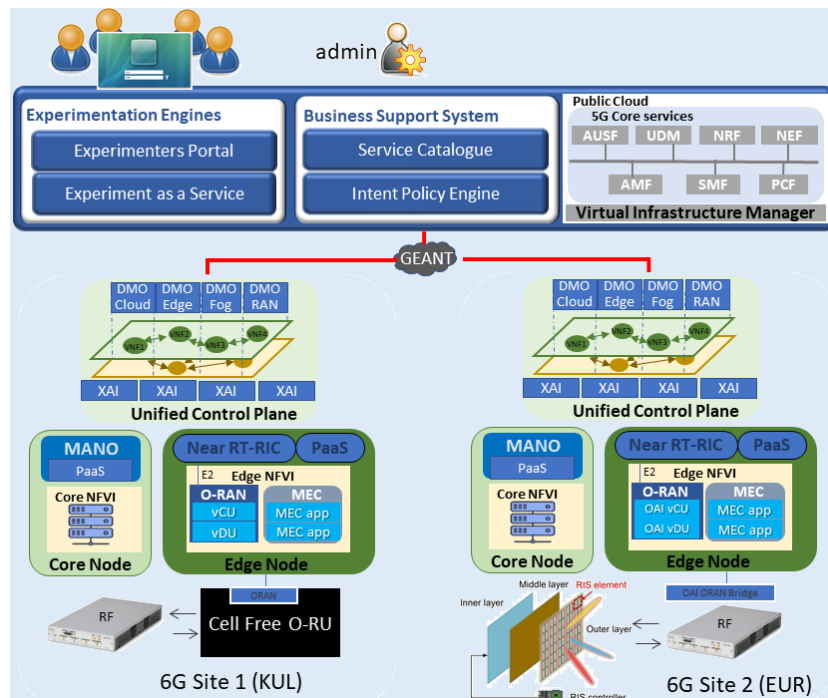
Objective 2: To validate and showcase advanced use cases in metaverse and digital twinning

Objective 3: Adopt virtualization, softwarization and O-RAN interfaces to promote modularity and reusability

Objective 4: Offer a decentralized management plane, supporting zero-touch orchestration based on Explainable AI

Objective 5: Offer a Compute Continuum abstraction framework supporting a disaggregated wireless X-Haul

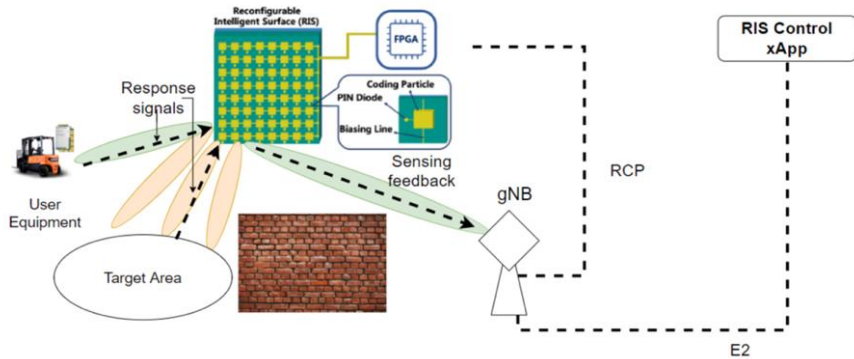
Objective 6: Deliver breakthrough 6G RAN technologies via distributed Cell-free and RIS enablers



6G-BRICKS key technologies:

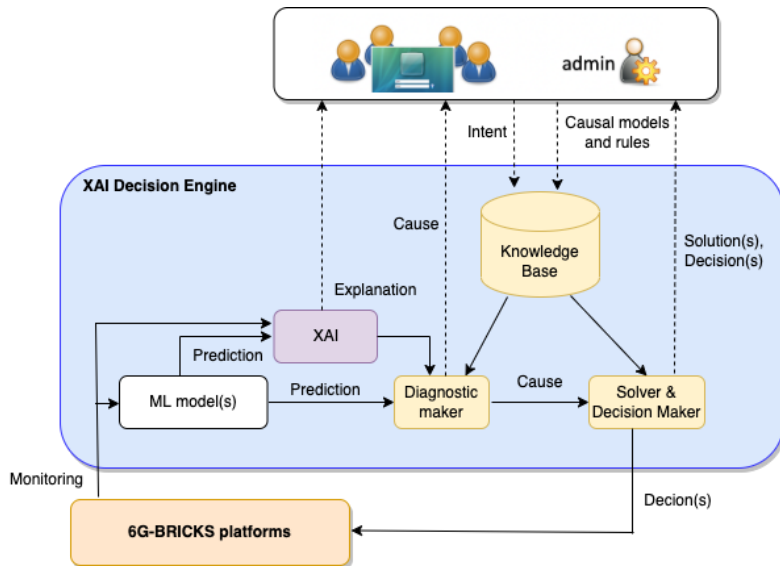
- Distributed multi-band cell-free
- RIS integration within OAI gNB
- Distributed OTA synchronization
- Joint Communication and Sensing
- Explainable AI and Machine Reasoning for Unified, Zero Touch Orchestration
- PaaS abstractions for Cloud-Edge-Device continuum infrastructures

Contribution to ETSI Standards



Contributions to the ETSI RIS WG

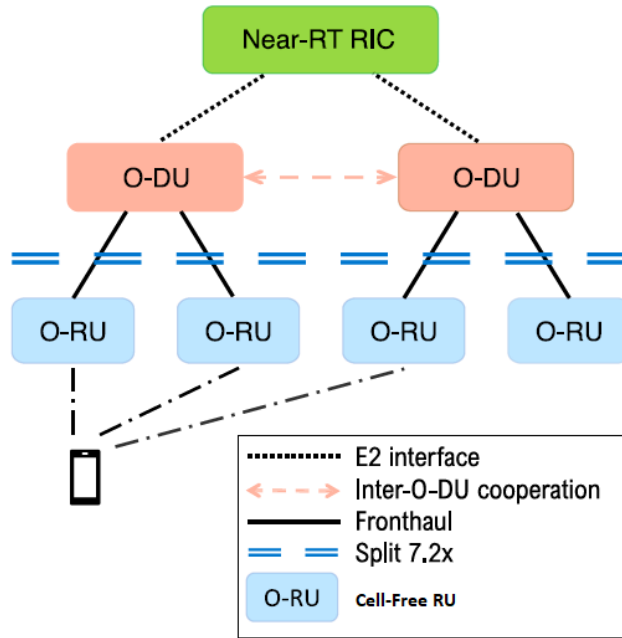
- ✓ Interdigital (WG chair) to contribute the RIS related technical outcomes (e.g., JCAS, OAI integration, etc.), potentially propose PoCs and work items
- ✓ **Impact: Energy efficiency, reducing blockage in the mmWave spectrum**



Contributions to the ETSI ENI WG

- ✓ ICOM to propose a PoC showcasing XAI and MR technologies in explainable automation and root-cause analysis scenarios
- ✓ **Impact: OPEX reduction for telcos, reduction in service creation and validation time**

O-RAN standardization



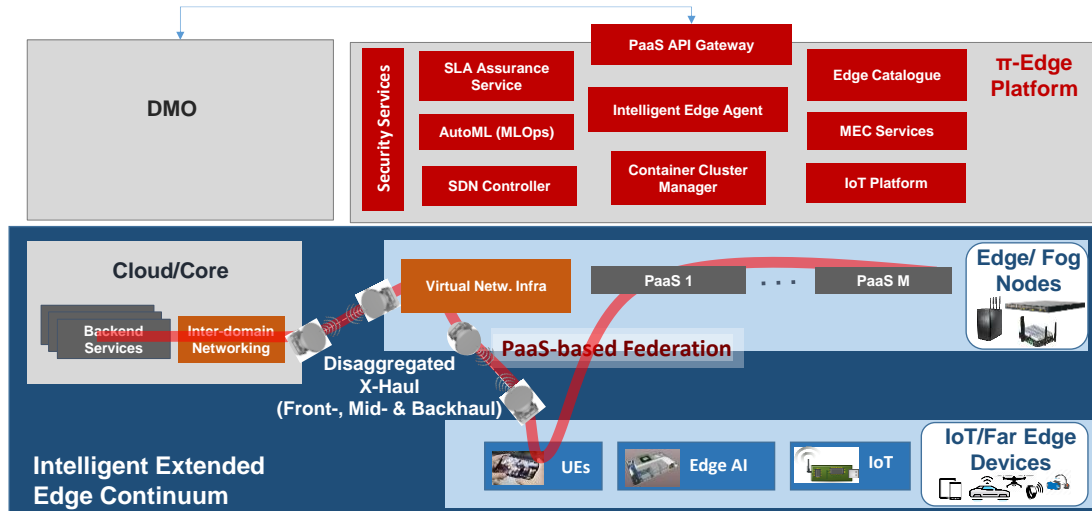
Contribution to O-RAN WGs:

- ✓ WG1: Pursue the integration of RIS, cell-free to the Overall Architecture and standardization of the new O-DU interface
- ✓ WG3: Pursue standardization of Near-RT RIC functions for distributed cell-free

Impact Creation via O-RAN standardization

- ✓ 6G-BIRCKS to deliver an O-RAN Radio Unit (OpenRU) for RAN prototyping based on an NI USRP platform
- ✓ O-RAN compliant bricks, reusable via open APIs, facilitate reusability and evolvability
- ✓ On-device experimentation, via xApps supplied by experimenters
- ✓ Opens the future 6G ecosystem to SMEs, allowing their involvement in the telco equipment value chain.

Contributions to AIOTI, 3GPP and ISO/IEC standards



Contribution to AIOTI WG1, WG2

- ✓ Contribute the 6G-BRICKS PaaS abstraction framework, facilitating the integration of IoT devices at the Cloud-Edge Continuum

Contribution to 3GPP WG1

- ✓ Monitor standardization activities in RAN1 and RAN4 and give input on monitoring interfaces and test requirements that can be utilized by experimenters. Potential active participation via liaison statements and white papers.

Contribution to ISO/IEC JTC1 SC29

- ✓ To monitor relevant activities of the MPEG group and contribute to the standardization of Metaverse related outcomes

Thank you!



Kostas Ramantas

Iquadrat Informatica

kramantas@iquadrat.com