

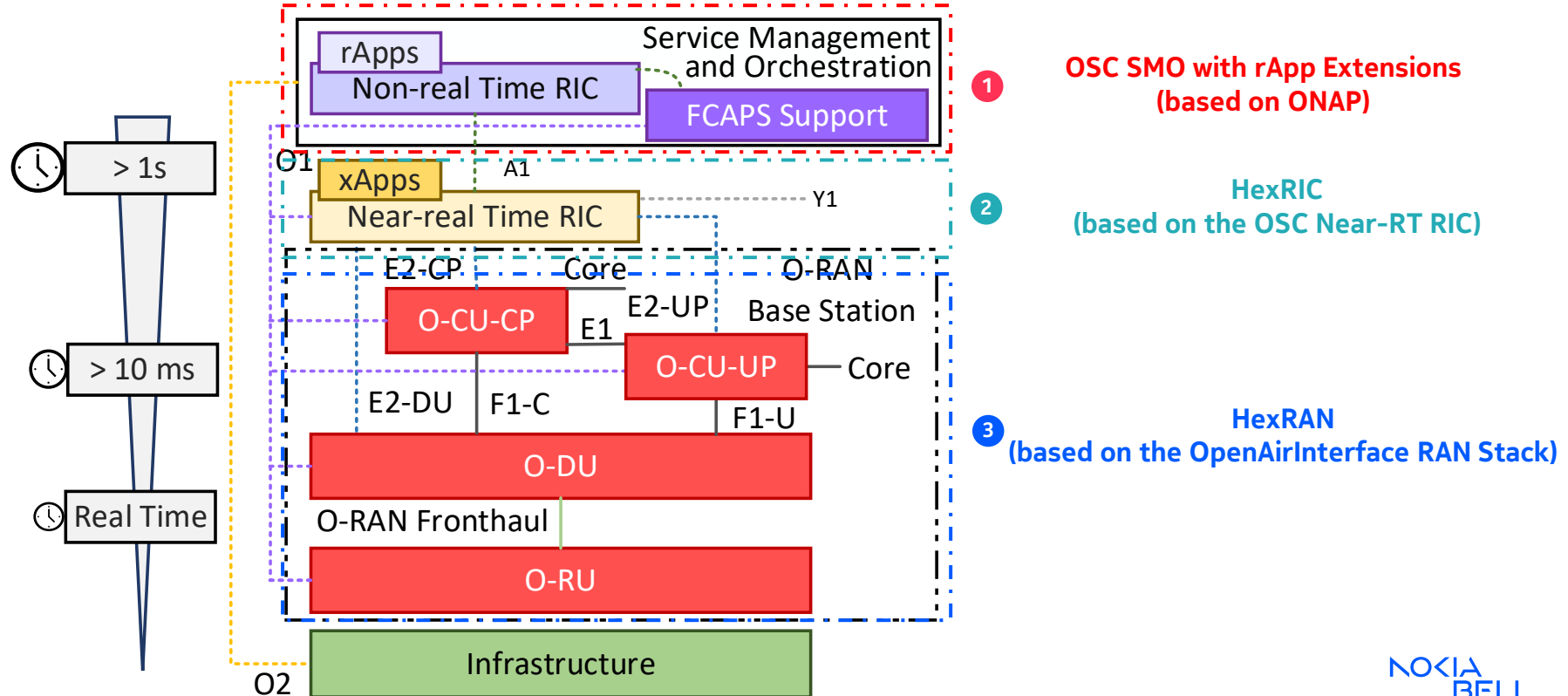
A1 Policy-driven RAN Slicing with the OSC RICs and OpenAirInterface

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Network Systems and Security Research
Nokia Bell Labs, Murray Hill, NJ
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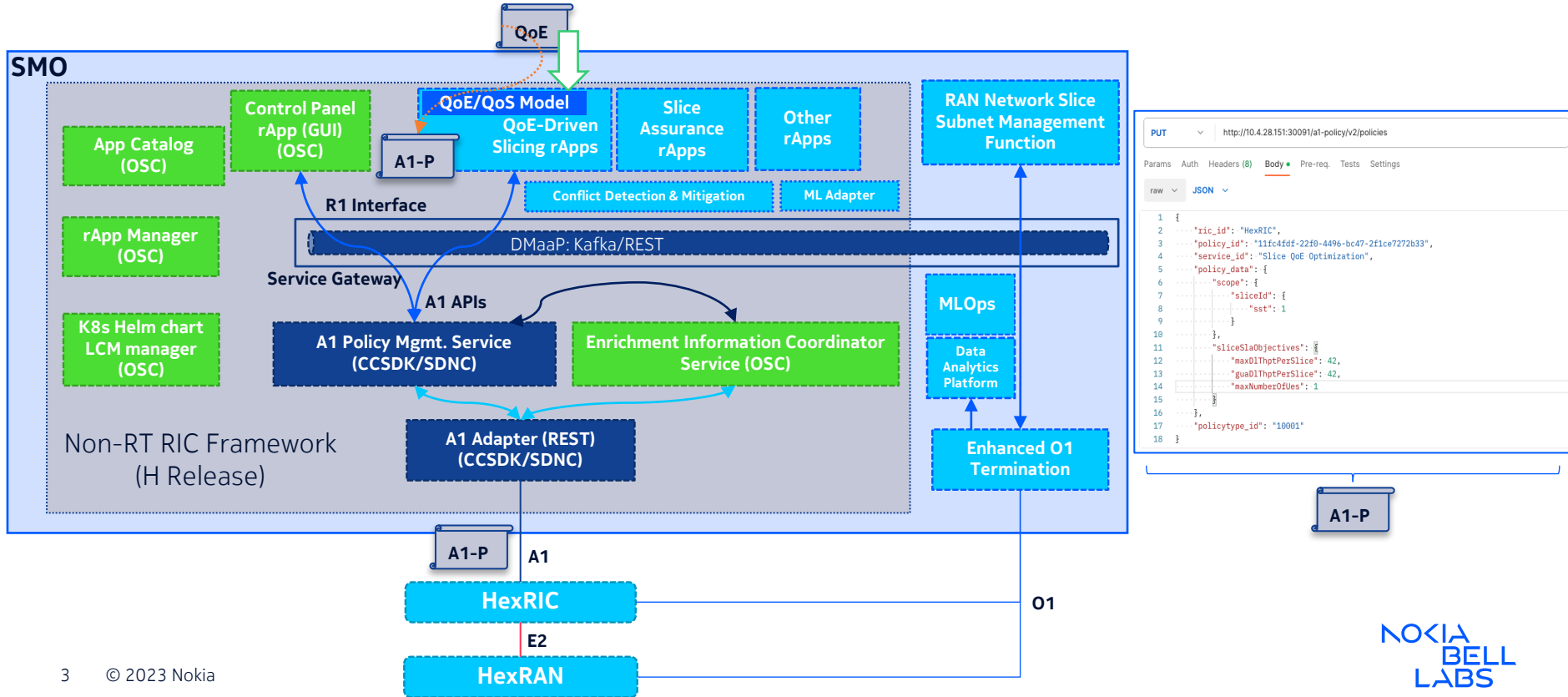
O-RAN Architecture and Control Loops

Overview



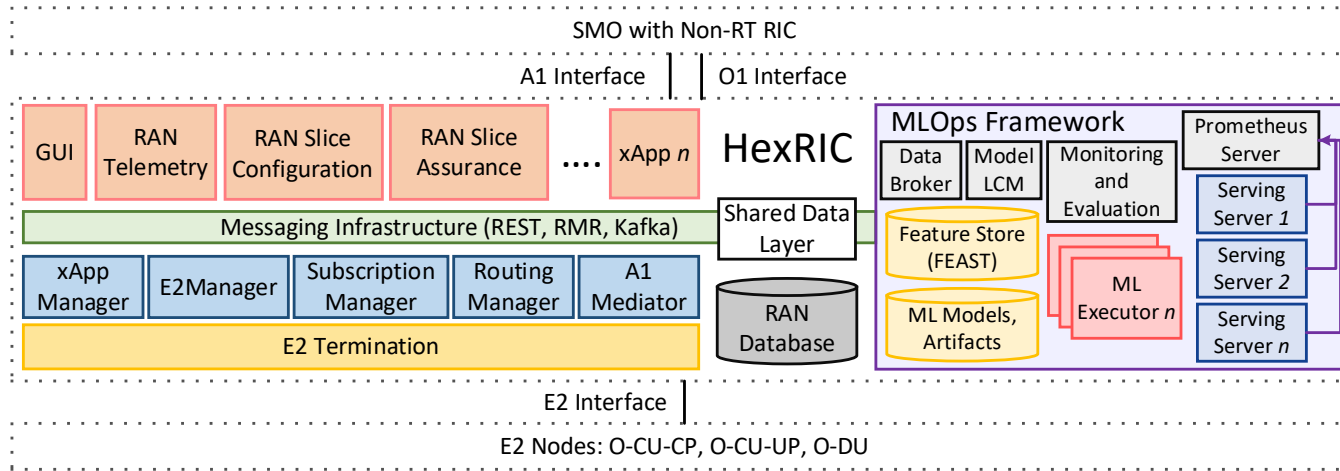
SMO: ONAP-based OSC SMO

Custom rApps to Support QoE-driven RAN Slicing



Near-RT RIC: The HexRIC Platform

Featuring RAN Slicing, Programmable Telemetry, and the MLOps Framework



HexRIC Highlights

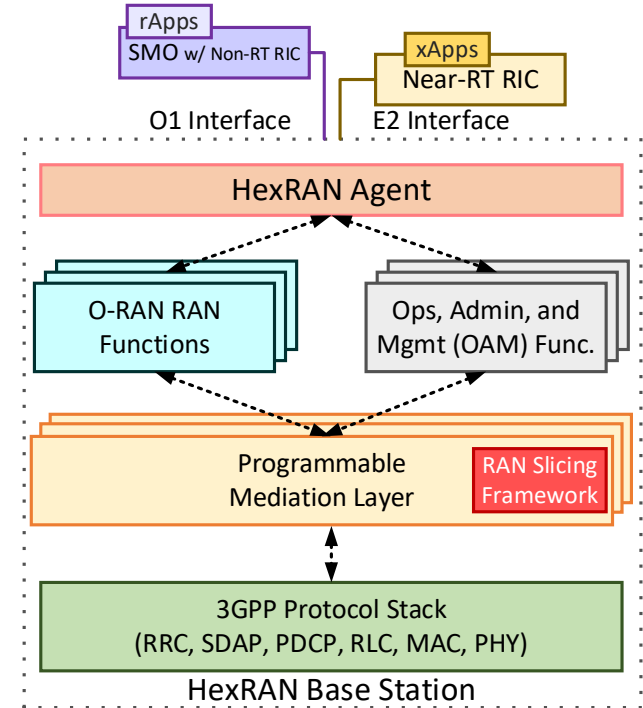
- Full suite of xApps and Service Models for **RAN Slice CLA**: (a) **RAN Telemetry** for monitoring slice performance, (b) **RAN Slice Configuration** for issuing slice configuration commands, and (c) **RAN Slice Assurance** for enforcing SLA requirements
- **Meta Messaging Infrastructure** with plug-in-based transports: RMR, Native ZMQ, Kafka, and other custom transports
- **MLOps framework** for automated ML model lifecycle management and onboarding of ML-driven use cases
- Emphasis on **simplified development and deployment of new use case-driven xApps**, i.e., RAN+RIC as a black box approach

RAN: The HexRAN Base Station

Enhancing RAN Programmability within the BTS

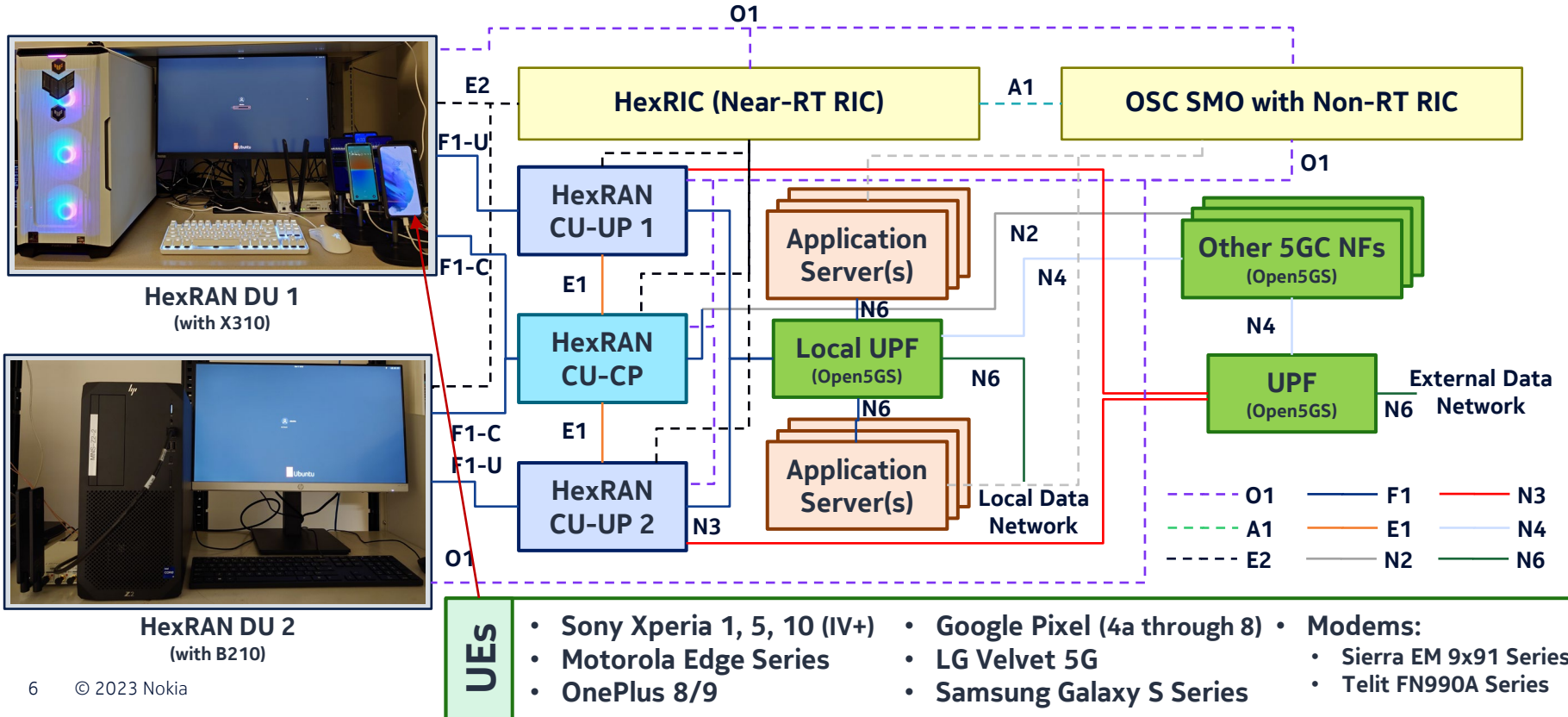
HexRAN Highlights

- Programmable RAN platform that leverages the 3GPP **protocol stack from OpenAirInterface**
- Flexible deployment options with **dynamic UP selection** and **logical traffic-centric cells**
- **Programmable Mediation Layer** for 3GPP protocol abstraction and interactions with O-RAN RAN Functions and other OAM Functions
- **Multi-RAT RAN Slicing Framework** augmented with a RAN slice state machine for efficient resource utilization and integrated within the **Mediation Layer**
- **Modular HexRAN Agent** for non-3GPP interfaces, e.g., O1 and E2, along with support for **multiple Near-RT RICs** in RAN-sharing scenarios



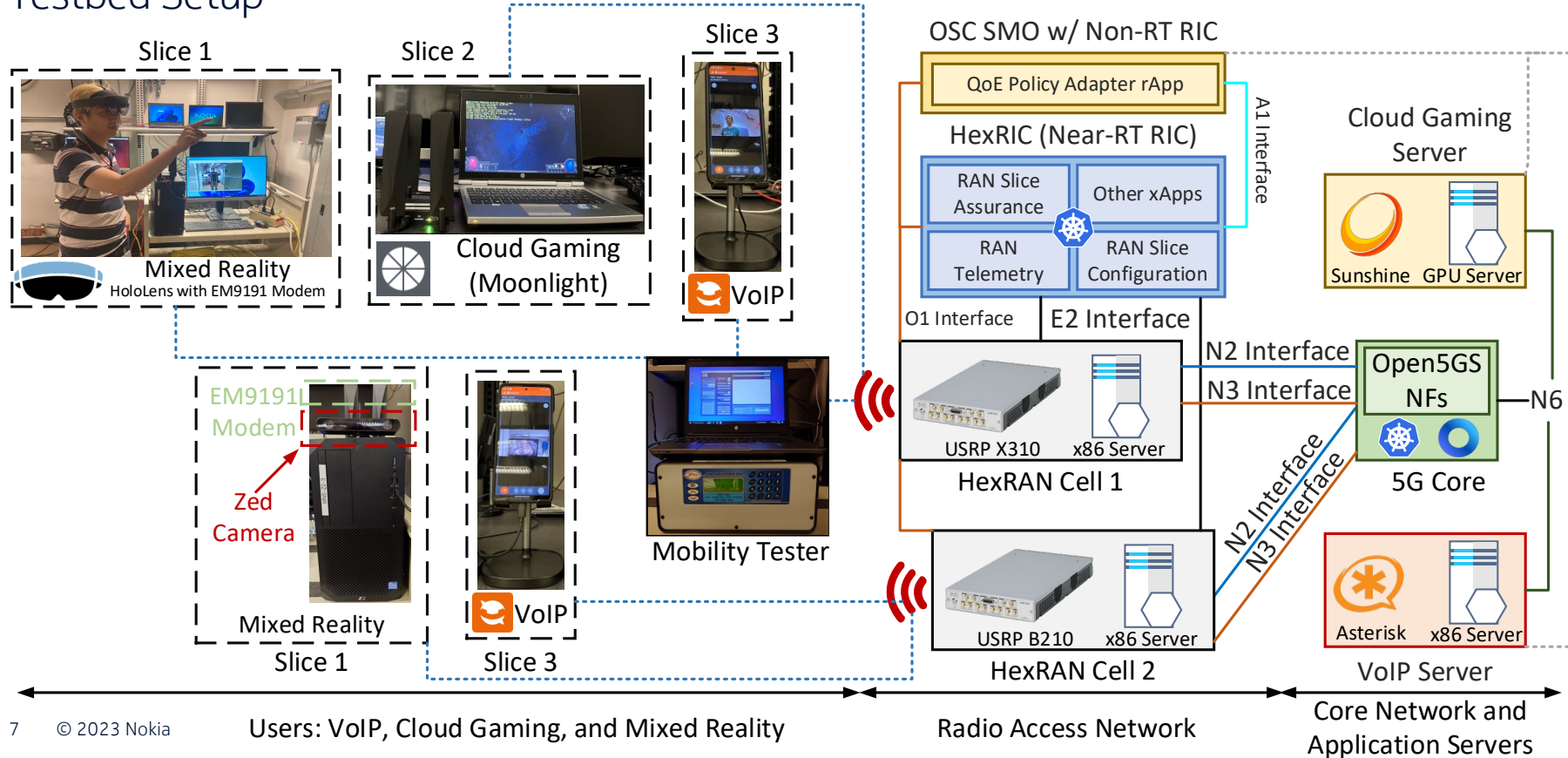
End-to-end 5G SA Testbed with O-RAN RICs

Over-the-air Validation Environment



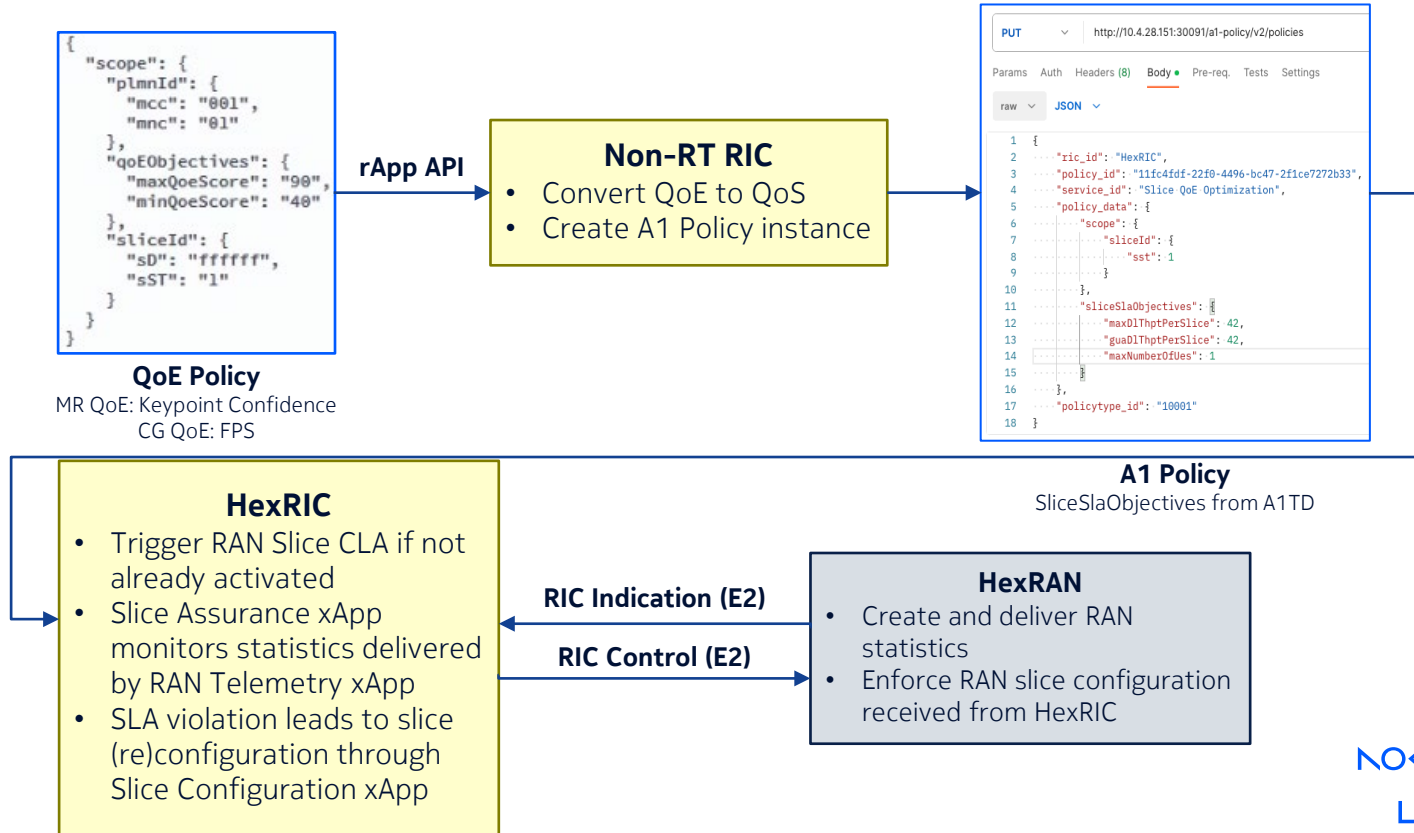
Demo Environment

Testbed Setup



Demo Overview

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Demo Video

A1 Policy-driven RAN Slicing with the OSC RICs and OpenAirInterface



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