www.bubbleran.com contact@bubbleran.com BubbleRAN

MX-PDK: 5G+ O-RAN

Product Name
MX-PDK

Version
1.2

Usecases
R&D, Tests and Measurement

OVERVIEW

BubbleRAN **MX-PDK** is a **production-grade cloud-native** environment allowing users to **seamlessly design, operate, automate and experiment** an emulated end-to-end 3GPP and O-RAN **standard-compliant network** with edge services, at scale.

User Equipment and radio channels in **MX-PDK** are **emulated**, making it **ideal** for rapid prototyping, validation, measurement, and what-if analysis in a realistic controlled environment with **guaranteed reproducibility.**

MX-PDK works out the challenge of **multiple parallel 5G network digital twins at scale** required by the public operators to:

- Realize a **predictive maintenance** and planning
- **Gain powerful insights** from a 5G-powered digital twin
- **Automate and optimize** 5G networks

ADVANTAGES

TAILOR DESIGN TO YOUR USE-CASE
Design end-to-end multi-vendor 5G+ network blueprints

MINIMIZE
The time and effort required to go from idea to PoC

ENABLE ADVANCED RESEARCH
Advanced 5G/6G research thanks to state-of the art features:

- Cloud-native 5G
- Intent-based networking (IBN)
- Artificial intelligence (AI)
- Generative AI (GenAI) techniques including Large Language Models (LLMs)

INCLUDED IN THE SOFTWARE PACKAGE:

Telco Cloud	5G Network	O-RAN SMO/OAM	O-RAN NEAR-RT RIC and NON-RT-RIC
• Telco-Optimized Kubernetes • Hybrid public and private clouds	• OpenAirInterface 5G gNB/CU/DU • srsRAN 5G gNB/CU/DU • Simulated O-RU and Channel Model	• Resource detection and discovery (day 0) • Deploy (day 1) • Test (day 2) • Release (day 2) • Upgrade (day 2)	• E2AP v2/v3 • A1AP v2
• Synchronization • Auto-device discovery, • Optimized data plane • eBPF observability	• OpenAirInterface 5G Core • Open5Gs core	• Provisioning (day 0) • Configuration (day 1) • Reconfiguration (day 2)	• O-RAN KPM E2SM • O-RAN RC E2SM • O-RAN CCC E2SM • BubbleRAN Slice Control E2SM • BubbleRAN Trafic Control E2SM • BubbleRAN Sensing E2SM
	• OpenAirInterface 5G soft UE • srsRAN soft UE	• Fault management • Deep insights with full observability including monitoring, log processing, metrics, and alarms	• Data collections xApps • Status monitoring xApp • RAN slicing xApp • RAN Traffic Control xApp • RAN reconfiguration xApp • QoS xApp • Handover Control xApp
		• Zero touch operations • Auto-pilot • GenAI/AI optimization	• FlexPolicy rApp • FlexMon rApp • FlexData rApp
			• Portfolio of xApps in source code • Portfolio of rApps in source code

FROM EDUCATION TO LAB ENVIRONMENT

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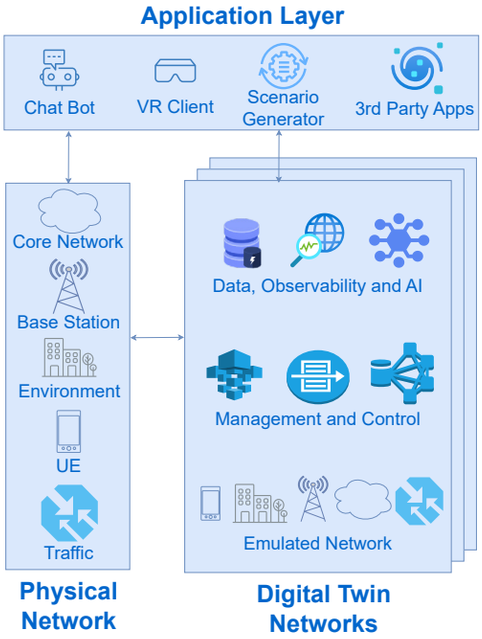
MX-ORS FOR PUBLIC OPERATORS Multiple parallel large networks

- Easy large scale deployment of Public Digital Twin
- Possibility to deploy multiple parallel Digital Twin networks for the same physical network enabling investigation of several possible scenarios boosting performance
- Easy Observation and Management of both Digital Twin (DT) and Physical Network (PN)
- Hybrid Model-Driven-Data-Driven (MD-DD) Approach offering flexibility as well as proactive and generative capabilities
- Improvement of future networks by our unique **Time travel** capability allowing recreation of network states from the past to perform root case analysis and explore what-if scenarios



MX-ORS FOR EDUCATION Large number of small networks

- Facilitate lab-based learning with realistic network setups
- Enabling highly accurate realistic simulations/emulations
- Comprehensive lecture notes and lab courses available
- Allowing users to perform full lifecycle operations from “Day 0 to Day n”
- Make operations on an end to end 3GPP and O-RAN compliant network
- Users and applications tailored to concerned use case