O-RAN Digital Twin Platform Co-Funded by O-RAN ALLIANCE Powers Research and Innovation in AI and Open RAN

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- Evolved O-RAN Digital Twin platform enables lab deployment of O-RAN-based networks in a few clicks
- The platform is designed for the research community to accelerate innovation at the intersection of AI, open RAN and network optimization

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The O-RAN ALLIANCE and the Institute for the Wireless Internet of Things at Northeastern University have successfully concluded the seed funding initiative, launched by O-RAN ALLIANCE in November 2023 to support research and development of next generation open Radio Access Network (RAN) infrastructure.

The funding initiative was led by O-RAN ALLIANCE's next Generation Research Group (nGRG). Its objective was to provide a forum to facilitate O-RAN related 6G research efforts and determine how O-RAN may evolve to support mobile wireless networks in the 6G timeframe and beyond, by leveraging industry and academic 6G research efforts worldwide. The purpose of the seed funding was to be a significant enabler for broader funding of research platforms for next generation infrastructure.

The Institute for the Wireless Internet of Things at Northeastern University, as the funding awardee, utilized the 200,000 USD sponsorship to evolve its Colosseum lab and research platform. The result is a comprehensive, automated O-RAN Digital Twin (O-DT) platform designed for the research community to accelerate innovation at the intersection of AI, open RAN and network optimization.

The evolved O-RAN Digital Twin platform enables researchers to deploy O-RAN-based networks—including base stations, user equipment, and Radio Intelligent Controllers (RIC)—in just a few clicks. The platform automatically initiates data collection, training, and testing pipelines for RIC-based xApps and rApps, and plays a key role in continuous validation of open-source protocol stacks. It is also ready to support future development of dApps for real-time network control and other cutting-edge use cases.

"The O-RAN ALLIANCE seed funding supported the efforts to advance Colosseum into a state-of-the-art platform that effectively enables the research community to develop innovations for the RAN," said Michele Polese, Research Assistant Professor at Northeastern University and PI of the O-RAN O-DT project. "This initiative has sparked the creation of new solutions to tackle the next fundamental challenge toward fully realizing the Open RAN vision, i.e., intelligent and dynamic network control and optimization. We look forward to further evolving the O-RAN Digital Twin to address future needs of modern RANs."

"It is exciting to see the outcomes of the O-RAN ALLIANCE seed funding initiative delivering tangible value to RAN researchers," said Ravi Sinha, VP Technology and Solution Development at Reliance Jio and co-chair of nGRG. "These research outcomes form basis for future specification development within the O-RAN ALLIANCE, enabling a global market of scaled, innovative and competitive solutions, advancing our mission towards an open, intelligent, virtualized and fully interoperable RAN."

About O-RAN ALLIANCE

The O-RAN ALLIANCE is a world-wide community of mobile operators, vendors, and research & academic institutions operating in the Radio Access Network (RAN) industry. As the RAN is an essential part of any mobile network, the O-RAN ALLIANCE's mission is to re-shape the industry towards more intelligent, open, virtualized and fully interoperable mobile networks. The new O-RAN specifications enable a more competitive and vibrant RAN supplier ecosystem with faster innovation to improve user experience. O-RAN based mobile networks at the same time improve the efficiency of RAN deployments as well as operations by mobile operators. To achieve this, the O-RAN ALLIANCE publishes new RAN specifications, releases open software for the RAN, and supports its members in integration and testing of their implementations.

For more information, please visit www.o-ran.org.

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About the Institute for the Wireless Internet of Things at Northeastern University

Researchers and students at the Institute for the Wireless Internet of Things (WIoT) envision a future in which people and their environment are wirelessly connected by a continuum of AI-powered devices and networks, from driverless cars and search-and-rescue drone swarms to implantable medical devices and smart cities. The institute is home to world-leading expertise, facilities, and technologies dedicated to making wireless communications exponentially faster, more energy efficient, and more secure. Within WIoT, Open6G is a one-stop shop for Open RAN innovation. Located at the Northeastern University Boston and Burlington, MA campuses, Open6G is a hub for research, development, and testing of advanced wireless networks using Open RAN and AI technologies, and hosts world-leading experimental facilities for 5G research.

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