



Skoltech Selects Xilinx Zynq® UltraScale+™ RFSoc for 5G O-RAN Remote Radio Unit

Xilinx-Based Solution Serves as Data Converter and Signal Processor in RRU

AT A GLANCE:

The Skolkovo Institute of Science and Technology (Skoltech) is a private institute located in Moscow, Russia. Skoltech was established in 2011 as part of a multi-year partnership with the Massachusetts Institute of Technology.

Industry: Academic

Location: Moscow, Russia

Established: 2011

<https://www.skoltech.ru/en/>



Figure 1. Skoltech is using Xilinx's Zynq UltraScale+ RFSoc for 5G Radio Unit (Source: Skoltech)

SUMMARY:

Skoltech cultivates researchers and entrepreneurs, promotes advanced scientific knowledge, and fosters innovative technology to address critical issues facing Russia and the world. The institute serves as a center of excellence for 5G and much of its work is financed by government grants.

The institute was looking to create a 5G Open RAN solution for mobile operators and turned to Xilinx's Zynq® UltraScale+™ RFSoc platform to deliver the processing power it needed to take on proprietary solutions from traditional vendors.

CHALLENGE:

The Radio Access Network (RAN) market has been largely served by a handful of vendors that provide complete solutions to network operators. But the shift to 5G has introduced greater demands on network performance and increased complexity of underlying hardware and software. This market dynamic has created an opportunity for operators to consider O-RAN solutions based on open standards and avoid constraints of single-vendor solutions.

Skoltech was looking to create an O-RAN product that would meet the needs of mobile operators that wanted to deploy 5G networks from scratch or as an extension of an existing network in small-cell or wide-area scenarios. It needed a silicon solution that could manage 5G NR L1 processing, provide LDPC acceleration, and generate RF signals.

SOLUTION:

Xilinx's Zynq UltraScale+ RFSoc platform serves as the foundation for Skoltech's 5G O-RAN remote radio unit (RRU) solution. The device is used for its integrated data converter and to deliver high compute power for the signal processing unit inside the RRU.

The FPGA-based Zynq device was selected over an ASSP alternative, in part, because it offered enough flexibility to adapt to local standards and pass certification. Zynq RFSocs offer the highest level of development to comply with local standards and the flexibility (driven by high levels of integration that optimize power and performance) to meet mobile operators' requirements.

"Other reasons we chose Xilinx is because of the short time-to-market and broad set of available IP, including an O-RAN radio interface and DPD (digital pre-distortion), a feature that increases the efficiency of power amplifiers," said Serafim Novichkov, head of 5G development at Skoltech.

Novichkov added that the flexibility and adaptability of Xilinx products was also a consideration. "With Xilinx, we can accommodate the design to meet the needs of different customers, without a significant architecture modification," he said.

RESULT:

Leveraging Xilinx technology, Skoltech has been able to achieve the required system parameters for 5G NR L1 solutions and it plans to launch its new product to customers in 2022.

ADDITIONAL RESOURCES:

[Learn More about Xilinx's Zynq UltraScale+ RFSoc](#)

[Learn More About Skoltech](#)

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