Model-Based Design for 5G Development at Nokia

Sami Repo, Nokia

Nokia is using Model-Based Design with MATLAB® and Simulink® to accelerate development of the digital front end (DFE) for 5G base stations. The 5G standard specifies flexible operation across a wide range of frequencies to support faster data rates, greater reliability, and many connected IoT devices. The DFE provides the high-speed digital processing to and from massive, multichannel base station antenna and RF transceiver components. The 5G requirements bring new complexity to the design of the DFE.

Working with the MathWorks technical team, Nokia has adopted Model-Based Design with MATLAB and Simulink. This approach brings flexibility, visibility, and capability to react through the entire 5G DFE design flow. Nokia now has faster execution, greater understanding of options, and quality improvements. Nokia has found the approach to be especially beneficial for the design of DFE functions such as channel filtering, up/down conversion, digital pre-distortion, gain control, and carrier combining/demultiplexing that compensate for impairments in the signal chain through the radio channel.

Advantages of using Model-Based Design with MATLAB and Simulink:

- Analyze and explore before building a new system design or changing and existing one
- Understand and dimension performance to optimize the system and eliminate unforeseen bottlenecks
- Use models as a common language for communication and automation

---

"
Working with MathWorks has enabled Nokia to **establish Model-Based Design,** which has brought flexibility, visibility, and capability to react through **entire 5G DFE design flow** by providing greater understanding of options, **faster execution,** and **quality improvements.**
"

» **View presentation**