GOMACTech Tutorial on Software Defined Radio

Programming the spectrum using next generation Software Defined Radios

Organized by Tom Rondeau, David Kirkwood, and Christal Gordon
Monday, March 25, 2019
Albuquerque, NM

Software Defined Radios (SDRs) allow us to directly modify the electromagnetic spectrum through an easy-to-use interface. This day-long tutorial is an excellent opportunity to learn more about the latest SDR tools and techniques. All users, from beginners to experts, can gain a better understanding of the state-of-the-art in SDR technology from this tutorial.

For the beginners, an introduction to the field will be presented so that they can be comfortable with the material. Experienced and expert users will be able to gain knowledge into the latest in reconfigurable RF hardware. All participants will learn about the next-generation melding of DARPA technology from the RF-FPGA, Hedgehog, and Radio Frequency Machine Learning Systems (RFMLS) programs. A discussion on how participants can use SDRs will close the tutorial and serve as a beginning point for future collaborations.

By the end of this tutorial, we expect that participants will have an improved understanding of the field of SDRs, be confident with their ability to use tools like GNU Radio, and learn how to use hardware such as the Hedgehog SDR. We look forward to this tutorial being one component to augment the growth of cutting-edge SDRs among Government partners. The tutorial schedule and speaker biographies will be provided at a later date.

TOPICS

1. Introduction to the Spectrum / Software Interface
2. Overview of open source software radio tools for programming spectrum
3. Overview and outlook of National Instruments UHD and RFNoC tools
4. Overview of emerging reconfigurable RF hardware
5. Overview of and outlook of Xilinx RFSoC
6. Deep-Dive and demonstration of the next generation of SDR Hedgehog
7. Demonstration of UHD/RFNoC using NI/Ettus USRPs
8. Demonstration of Xilinx RFSoC configuration and performance
9. Discussion and demonstration of SDR use cases/applications