Strengthen Your Radar Innovation with RFSoC

By DornerWorks

Radio frequency communications have long provided products in aerospace and defense, the automotive and industrial sectors, and even healthcare with a means of data transmission, but they have also required stand-alone subsystems to translate those streams.

There's never been an all-in-one solution for enabling radar robust systems. *Until now*.

All-Programmable, all connected

The **Zynq UltraScale+ RFSoC** from Xilinx eliminates the limitations of antennae bandwidth and the need for cumbersome external devices altogether by connecting data from the RF signal chain to FPGA accelerated hardware and software logic.

It enables direct conversion RF data without an intermediary.

As one of the first design houses in the world with access to this technology, DornerWorks can help you integrate that capability into your own system.

RFSoC technology is ideal for:

- 5G baseband wireless communications
- Millimeter wave mobile backhaul
- Cable Remote-PHY
- Milcom / airborne radio
- High performance RF applications requiring minimal ramp-up time and strict security

Innovation potential of the RFSoC

The Zynq UltraScale+ RFSoC has tremendous potential for applications in aerospace and the military, as well as consumer-focused wireless networks.

It leverages FPGA programmable logic to enable powerful and portable, low power RF signal processing. DornerWorks engineers are already experimenting with tools like Matlab, Simulink, and C/C++ to create HDL and VHDL models.

RFSoC design capabilities

- Programmable sine generator
  - 6 Gs/s to DAC
- Mix
- Capture 500 ms/s raw data
- Port VxWorks 7 to RFSoC
- ADC data to Digital Signal Processing
  - FIR filter
  - 2D FFT

Start developing your project with us!

www.DornerWorks.com
sales@DornerWorks.com
616.245.8369

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Product Development   Hardware   Software   FPGA   IoT   Security   Virtualization   Test Systems

Case studies

Radar solutions

DornerWorks successfully facilitated a size, weight, and power reduction of an existing radar system on an AVNET MicroZed with a Zynq-7000 device, and integrated the customers' existing ADC capture logic to receive ADC samples. The ADC samples were processed using a Range FFT followed by a Doppler FFT to produce a Range-Doppler map. Existing customer software was split into functionality implemented as FPGA IP blocks and functionality run on the Zynq-7000 dual Cortex-A9 processor to balance performance and development schedule.

Technologies: Xilinx Zynq-7000, ARM Cortex-A9, CW Radar, FFT, DMA, AXI

Advanced Real-Time Defense System

A defense contractor's advanced radar system needed to integrate precision guidance capabilities with parallelization. DornerWorks assisted in miniaturizing the hardware associated with the program by developing the radar signal processing algorithm, standard AXI interfaces for their system, and offering exclusive technical support from Xilinx, as an Alliance Premier Partner.

During advanced development, DornerWorks was able to adapt to the client's needs, even bringing in a hardware team to complete mission-critical steps of the project, and delivering a solution that lowered power demands and increased performance.

Technologies: Xilinx Zynq UltraScale+ RFSoC, AXI, VxWorks, BSP, Matlab, Simulink

Proven experience, on your side

We understand how challenging it is to design FPGA-based systems.
The RFSoC is even more complex.

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ALLIANCE PROGRAM
MEMBER

As one of just a few Premier Members of Xilinx's Alliance Program, we have created
FPGA and SoC designs for numerous companies, and are proud to further the RFSoC innovation landscape.

**DornerWorks was the only Xilinx partner supporting the first three RFSoC Alpha customers.
Leverage our software, FPGA, and hardware team to accelerate your product development.**

Get started today!

Our simple 3-step plan will determine a technology development course of action that best fits your needs.

Start — **Develop** — **Deliver**