Radar Signal Processing System
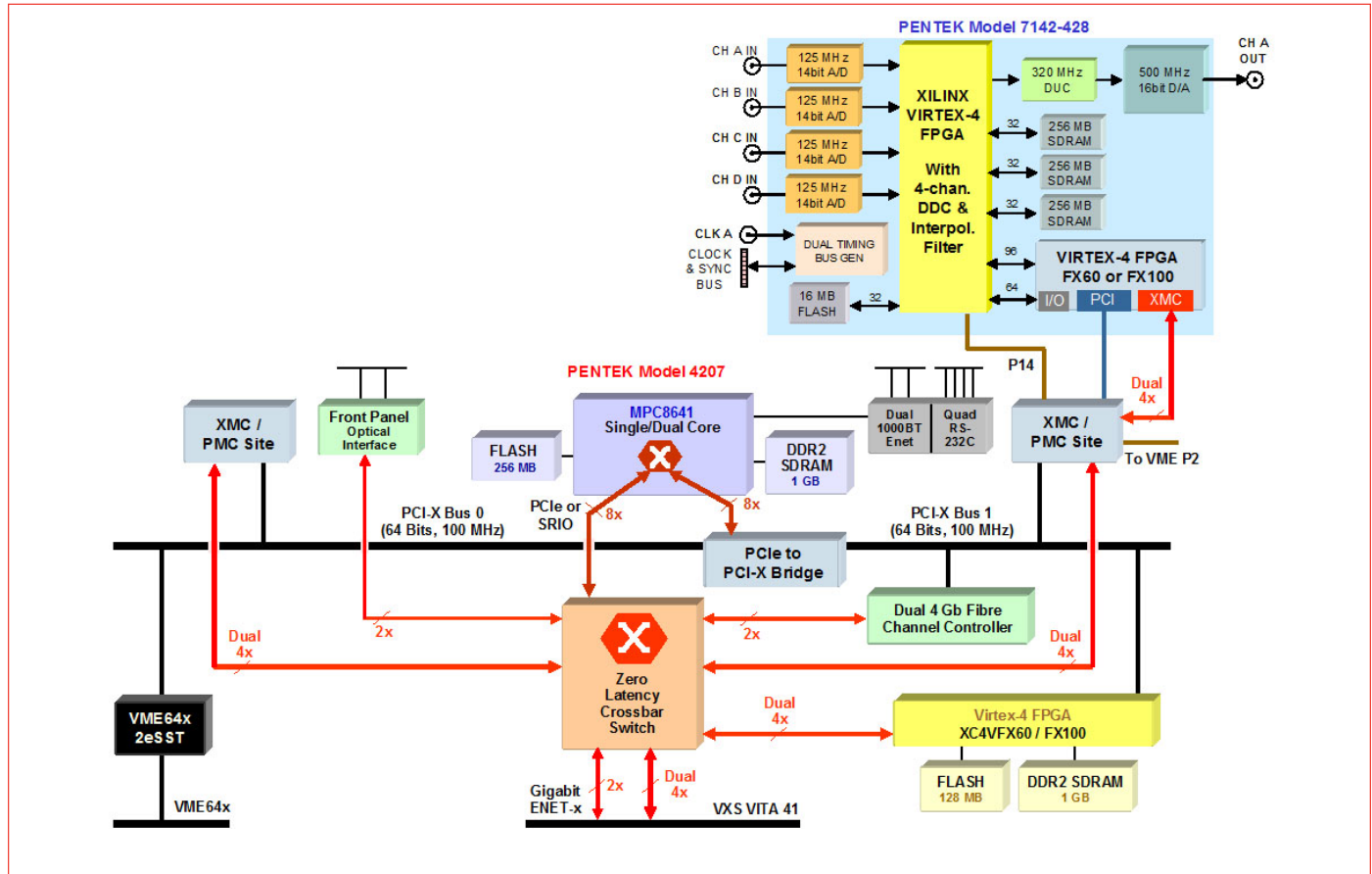

Radar is well served by high-speed A/D converters and wideband digital downconverters. The channelized system shown above, takes advantage of a Model 7142-428 multichannel transceiver with an installed FPGA core that includes four wideband DDCs and an interpolation filter.

Operating at sampling rates up to 125 MHz, the A/D converters can digitize baseband signals with bandwidths up to 50 MHz. After frequency translation and filtering, the DDCs deliver complex (I & Q) data to the Model 4207 processor board. Here, data may be processed by custom user-defined algorithms before it is sent across the VXS interface for recording and off-line processing.

The optional GateFlow FPGA Design Kit can be used to install custom algorithms in the Model 4207

FPGA. Factory installed IP cores such as pulse compression and FFT are available and can be factory-installed in this FPGA.

The upconverter with the interpolation filter can be used to generate arbitrary radar pulse waveforms that can be used to calibrate the system. The D/A output can also be used for countermeasures, such as jamming or spoofing.

Jamming blasts energy that disables radars, and spoofing deceives radars by making it seem that the target is a different shape, speed, direction or distance by using DSP techniques. This is especially useful for a jet or UAV to prevent it from getting shot down.

Note that one more PMC/XMC site is available for installation of an additional module.