Addressing the Platform Challenges of Next Generation Electronic Warfare Systems

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Electronic Warfare

Electronic Attack

Electronic Protect

Electronic Warfare Support
Typical Electronic Attack Mission
Traditional Electronic Warfare System

![Diagram of a traditional electronic warfare system](image)

- **SBC**: SBC347D Intel Xeon D 32 GB DDR4
- **GPU**: GRA113 NVIDIA GM107 640-core GPU
- **FPGA**: FMC170 5GSPS Low Latency DAC
- **DAC**: FMC170 5GSPS Low Latency ADC
- **ADC**: VP780 FPGA w/FMC
- **RF**: Low Latency ADC
- **Memory**: FMC170 5GSPS Low Latency DAC

Highspeed data bus
EW Platform Challenge: Latency

End to End Latency Must be Minimized

- SBC
- GPU
- RF
- ADC
- FPGA
- DAC
- RF

- FMC170 5GSPS Low Latency ADC
- JESD204B LVDS
- VITA 57.1
- VITA 57.4
- FMC170 5GSPS Low Latency DAC
EW Platform Challenge: Resources & IP Security

Diagram showing the connections between SBC, GPU, highspeed data bus, RF, ADC, FPGA, DAC, RF, Memory, DAC, Memory, and an FPGA with FMC. The diagram also includes images of a FPGA and a security monitor IP core.
EW Platform Challenge: ‘Use the Right Tool’

Ideal for Cognitive EW, Complex Branching Execution

Ideal for deep learning neural net processing
Challenges of Next Generation EW Systems

- Large FPGA Fabric
- Required I/O Count
- IP Security
- Anti-Tamper
- Latency Optimized
- Synchronous
- Multi-Channel
- Wide Bandwidth
- GPUDirect RDMA
- C/C++ Languages
- High Performance DSP Functions

- High Performance
- Data Connection
- VITA 65
- Open VPX
- Fiber Connect
- Noise Performance
- SNR
- Dynamic Range
- Spectral Purity and Distortion
- High Power Output
- (GaS / GaN)

- System
- Ruggedization
- Conduction Cooled
- Modular Design

- Reduced Size
- Reduced Weight
- Reduced Power
- Reduced Cost

- Processor Architecture
- Cognitive EW Algorithms
- C/C++ Languages

- Latency Optimized
- Synchronous
- Multi-Channel
- Wide Bandwidth

- Large FPGA Fabric
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VPX167 COTS Airborne Pod Platform

- FlexVPX Backplane 7 Slots
- SBC347D Intel Xeon D 32 GB DDR4
- FMC170 5GSPS Low Latency ADC
- VP780 FPGA w/FMC
- FMC170 5GSPS Low Latency DAC
- GRA113 NVIDIA GM107 640-core GPU
- Power Supply
- Local Oscillator
- 10MHz Reference Power Supply
WE INNOVATE. WE DELIVER. YOU SUCCEED.