



RARE: Reconfigurable Advanced Rapid-prototyping Environment

Applications

- Digital Radar Receivers
- Digital Exciter/Waveform Generation or Stimulator
- Electronic Warfare
- Signal Intelligence
- Electronic Intelligence
- Communications

Key Features and Benefits

- Balances state-of-the-art general purpose processors with FPGAs to realize high performance computing
- Support of various I/O fabrics promotes flexibility, system scalability, and interoperability
- Contains A/D conversion capability to support multi-channel analog inputs
- Adherence to open systems architecture methods facilitates system-of-systems integration and lowers total cost of ownership
- Ability to program platform using familiar high level system engineering tools (i.e. MATLAB®, Simulink®, SystemC) enables rapid algorithm prototyping and deployment
- Application of RARE architecture increases range and Doppler resolution, improves target discrimination, and optimizes SWaP while minimizing LRU count, development time, and life cycle costs

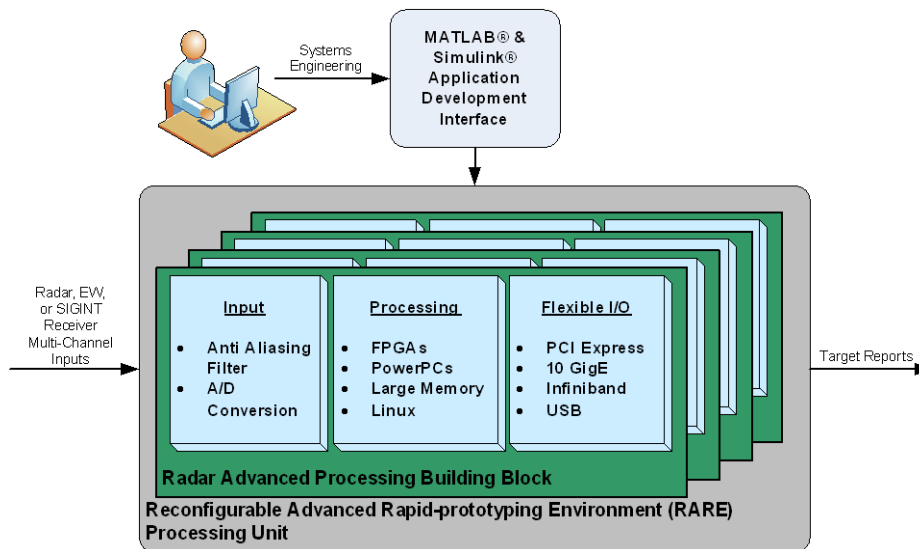
Description

RARE is a scalable signal processing architecture utilizing state-of-the-art general purpose processors, FPGAs, and flexible I/O fabrics to facilitate radar system design and implementation. RARE combines open architecture, high performance computing, ease of programmability, low cost, and I/O flexibility to realize receivers, stimulators, and related radar, and SIGINT signal processing functions for a variety of environments and ground, ship, and airborne platforms.

The RARE architecture supports high level system programmability. Firmware building blocks that engineers can leverage through MATLAB®, Simulink®, and SystemC enable quick implementation of algorithms and system level designs on RARE's embedded processing resources. RARE also supports low level programmability and allows users to add firmware building blocks unique to their application.

Homogeneous general purpose processing approaches offer programming flexibility but cannot provide the low latency performance afforded by more hardware-centric solutions. FPGA solutions can meet the latency requirements of high performance radars but can be difficult to program, thus limiting flexibility. RARE satisfies the need for high level programmability, flexible I/O configurations, and low-latency performance while optimizing SWaP and minimizing system implementation and life cycle costs. Support of graphical programming methodologies and SOA software facilitates fusion and rapid implementation of new algorithms.

RARE offers versatile signal processing building blocks for rapid realization of radar, EW, and SIGINT systems for ground, ship, and airborne platforms. The technology can benefit any application where high performance embedded processing is needed while meeting SWaP and implementation cost constraints.



RARE Scalable Signal Processing Architecture



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