Signal/Data Processor Implementation and Algorithms for Real-Time Wide-Angle Ultra-Wideband SAR Image Formation

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Tactical Reconnaissance and Counter-Concealment Enabled Radar (TRACER)

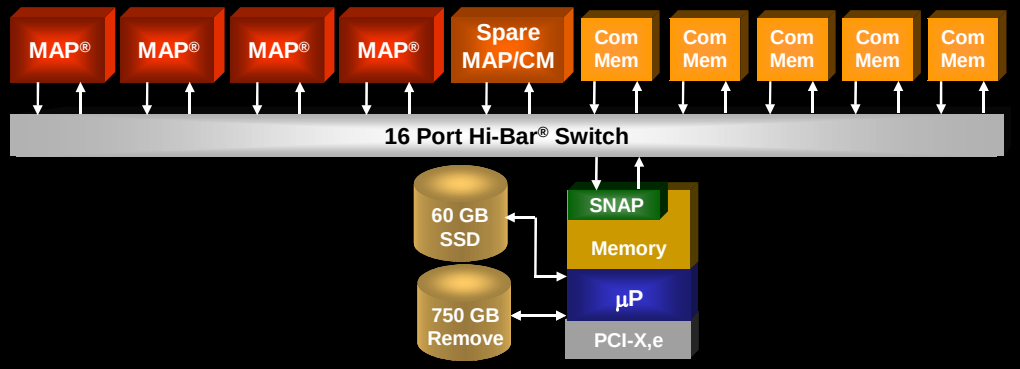
- Evolution of FOPEN Program
- VHF/UHF SAR image formation
  - VHF ~7m resolution and HH polarization
  - UHF ~0.75m resolution and up to four polarizations
- Processes data in near real time
- Processing package must fit in Predator-class UAVs

"TRACER holds promise to not only address traditional intelligence, surveillance and reconnaissance missions, but other current and emerging threats. … The system reliability has vastly improved and power consumption has been cut by two-thirds, with the system's size and weight cut by 50 percent, thanks to advances in computing technology provided by SRC." *

* Robert Robinson
TRACER PM, Lockheed Martin

System Implementation

- **System size**
  - 21”W x 17”D x 10.5”H
  - 80 pounds
  - Consumes less than 600 watts
  - Operates to 25,000 feet in unpressurized environment



Application Porting

Application

- Six major stages
  - Stage 0, Matched Filter, Stolt Interpolation, Azimuth Compression, Autofocus and Change Detection
- C Code of more than 250,000 lines

Porting Effort

- Initial port took 3 programmers about 3 months
- Utilized a wide range of Carte™ optimization features and SRC® hardware features