

MPAR National Symposium

Latest Innovations in Phased Array Radar: An Industry Perspective

Norman, OK
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MPAR Challenges

- The ultimate solution requires much more than MPARs, it requires a visionary architecture that evolves in steps
 - Based on prioritized needs/capabilities and affordability that plans for modularity, scalability & growth
 - Leverages the existing infrastructure, sensors, networks, etc.
 - Fills the gaps of the present system by providing complete surveillance of the CONUS+ hemispherical bubble as necessary, including low altitudes
 - Improves observation and advanced warning for weather, natural and induced hazardous phenomena (CBRNE), etc.
 - Provides a back-up for ADS-B
 - Enables new commercial markets
- Needs a cross government organization champion for acquisition success, owns responsibility for the system development, deployment and operation
- Affordability will be a function of the acquisition plan and time phased capabilities
 - Is there a business case for privatization?
- Capabilities based requirements must avoid pushing the envelope of the technologies, e.g. consistent with best commercial manufacturing practices
- Must meet the needs of a broad customer base well into the future, e.g. pro-active on needs for multiple users, quality of service based, timely and accurate

State of Key “MPAR” Technologies

- Most, if not all of the technologies, HW and SW exist, many in the commercial base that would enable an affordable and capable architecture
- Defense and commercial industries provide much technology leverage
 - Lower cost silicon for most if not all the electronics, including RF devices/circuits
 - Existing technologies in networking, multi-level security, data management/distribution, resource management technologies have all been demonstrated in similar commercial and/or defense applications
- The visionary architecture will leverage the key technologies of today via good engineering design/implementation, minimizing inventions, and evolve with the technologies of tomorrow

A Few Key Enabling Technology Trends

- CMOS and Silicon Germanium
- Surface mount electronics, plastic package electronics
- Modular and open HW and SW architectures, standards
- Sensor netting and multi-statics, multi-spectral
- Digital beamforming/waveform generation and signal/data processing
- Knowledge/resource management, information assurance

Industry and Government Roles for a Successful MPAR Acquisition/Deployment

■ Government roles

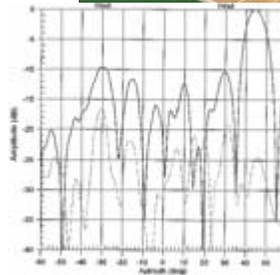
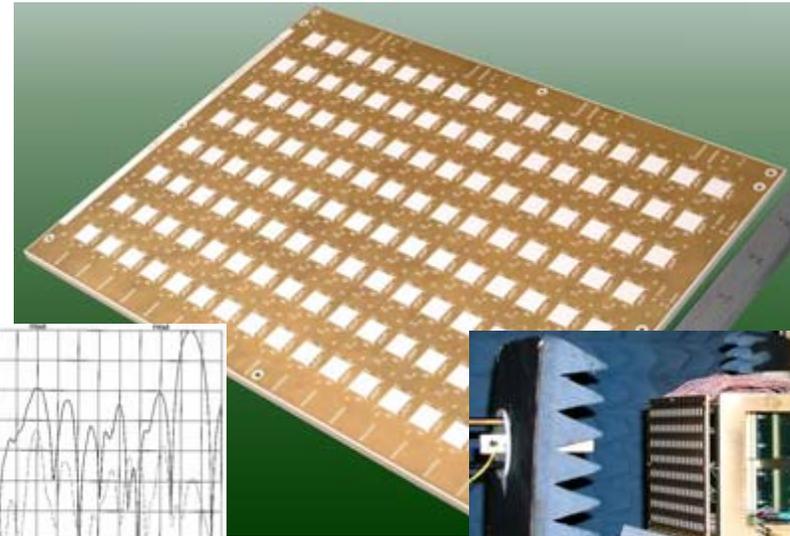
- Needs a cross government organization champion for acquisition, deployment and operational success
- Develop prioritized requirements focused on near term and long term needs based upon partnership with private, academic and potentially international users

■ Industry roles

- Partner with the government to establish affordability and capabilities models
- Together, architect for affordability and growth
- Leverage commercial industrial base

What's Raytheon Doing to Enable MPAR?

- Demonstrated an X-band air cooled Array Panel build much like a “Computer-Board”
 - Significant reduction in fabrication/assembly steps and components
 - No leading edge technology
 - Built in a commercial factory
 - Concept is applicable to any microwave frequency



- Demonstrated sensor netting/fusion, resource & track management products
- Industry partner for the NSF Collaborative and Adaptive Sensing of the Atmosphere (CASA) Program

