

BRAHMS

Adaptive, Intelligent Resource Orchestration for Multifunction CEMA and Communications Platforms at the Tactical Edge

MULTI-FUNCTION AND MULTI-PLATFORM ORCHESTRATION TO SUPPORT CYBER ELECTROMAGNETIC ACTIVITIES (CEMA) FOR MULTI-DOMAIN OPERATIONS (MDO)

Multi-domain operations (MDO) combine and coordinate combat across air, land, sea, space, and cyber domains. MDO requires sophisticated, real-time capability to orchestrate diverse cyber electromagnetic activities (CEMA), manage shared platform resources, and determine optimal actions—while also incorporating situation awareness at the tactical edge and adapting to changes automatically.

Peraton Labs' BRAHMS (Balanced Resource Allocator for Heterogeneous Multi-objective Systems) solution meets Army needs for intelligent CEMA orchestration both on and across multi-function platforms. BRAHMS leverages open standards to process tactical node sensor data in real-time and dynamically plan and reprogram disparate CEMA activities to meet complex mission objectives.

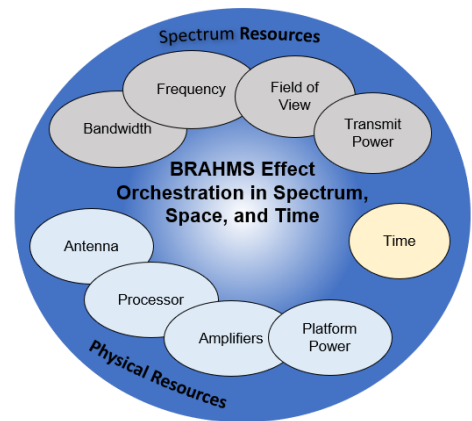
KEY BRAHMS FUNCTIONALITY

- Supports multiple concurrent CEMA skills
- Automatically balances simultaneous objectives
- Orchestrates spectrum and physical resources
- Performs conflict discovery and resolution
- Dynamically adapts to changing conditions
- Enables autonomous resource allocation
- Supports missions of varying lengths and goals
- Applies to modular platform configurations
- Scales for multi-platform battlefield orchestration
- Enables rapid deployment of new capability

SUPPORT FOR ARMY MDO MISSION

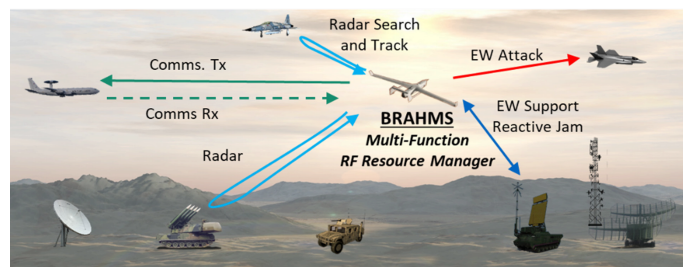
- Dynamic operations in contested environments
- Real-time automated mission planning and execution of CEMA on multi-function Army platforms
- Sophisticated machine learning (ML) techniques optimize resource allocations and dynamically adjust to changing objectives and conditions
- Contextual reasoning across multiple time scales improves skill performance while achieving a greater number of simultaneous objectives

- Platform-agnostic algorithms enable transition to support multiple programs of record
- Scalable technology to autonomous multi-platform, multi-objective scenarios



BRAHMS: BALANCED RESOURCE ALLOCATOR FOR HETEROGENEOUS MULTI-OBJECTIVE SYSTEMS

- Deployed as a multi-function platform manager, BRAHMS coordinates radio frequency (RF) mission goals in spectrum, space, and time
- Leverages sophisticated artificial intelligence (AI) and ML to:
 - Optimize resource allocations
 - Dynamically adjust to changes in environment and unexpected conditions
- Delivers superior performance for real-time resource management on modular RF systems supporting communications, electronic warfare (EW), and radar

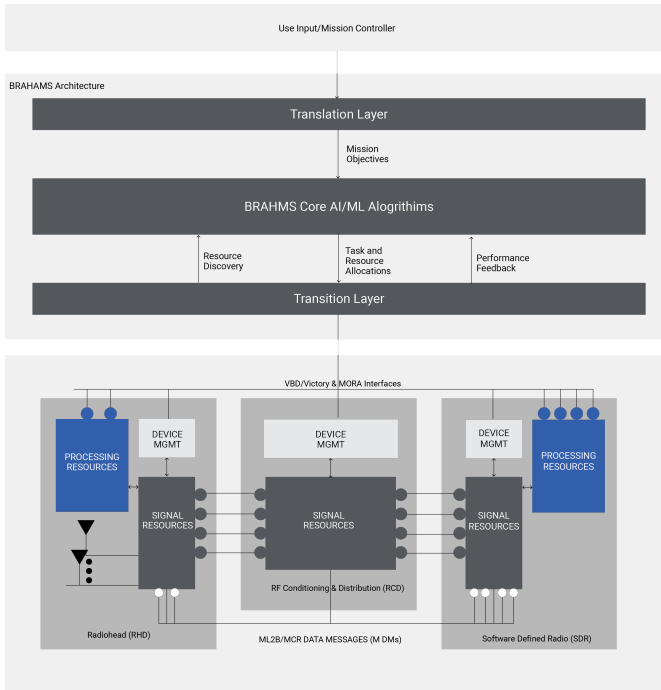


BRAHMS OPEN STANDARD INTERFACES

BRAHMS facilitates seamless integration with third party platforms and systems through an extensible translation layer.

BRAHMS supports multiple open standards including the Modular Open Systems Approach (MOSA) and C5ISR/ Electronic Warfare Modular Open Suite of Standards (CMOSS).

BRAHMS processing can manage resources across different Modular Open Radio Frequency Architecture (MORA) devices, signal resources, and processing resources.



BRAHMS ADVANTAGES

Performance Optimization

- Leverages dynamic performance feedback for real-time resource allocation and platform orchestration
- Delivers significant payload and platform performance improvement
- Optimizes execution of simultaneous objectives

Scalability

- Supports individual multi-function systems and scales to multi-platform battlefield orchestration
- Flexible to centralized or distributed architectures

Unexpected Event Handling

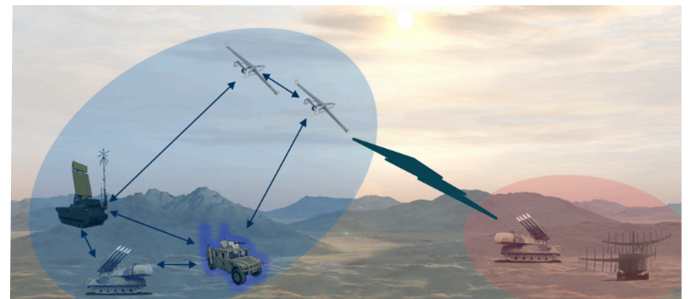
- Contextual learning engines autonomously adapt to changes in objectives, environment, and conditions
- Utilizes commander's intent by accommodating task prioritization

Ease of Integration

- Proven portability through integration with products from multiple external organizations
- Broad compatibility with third-party systems through the use of open standards and interfaces

BRAHMS FOR MULTI-PLATFORM ORCHESTRATION, DISTRIBUTED BATTLEFIELD MANAGEMENT, AND MDO

- BRAHMS architecture supports distributed resource management, enabling optimization of resource use and allocation across multiple platforms of varying capabilities
- Scales to autonomous and multi-platform battlefield orchestration
- Enables rapid, efficient, and context-based decision-making by harnessing multi-platform collaboration techniques
- Distributed approach obviates need for central decision making and prevents overburdening of communications networks
- Incorporates platform position, capability, and maneuverability into resource allocations
- Provides a common solution for multiple platform types



LEARN MORE

For more information contact info@peratonlabs.com or see [Multi-function RF Platform Management - Peraton Labs](#).

