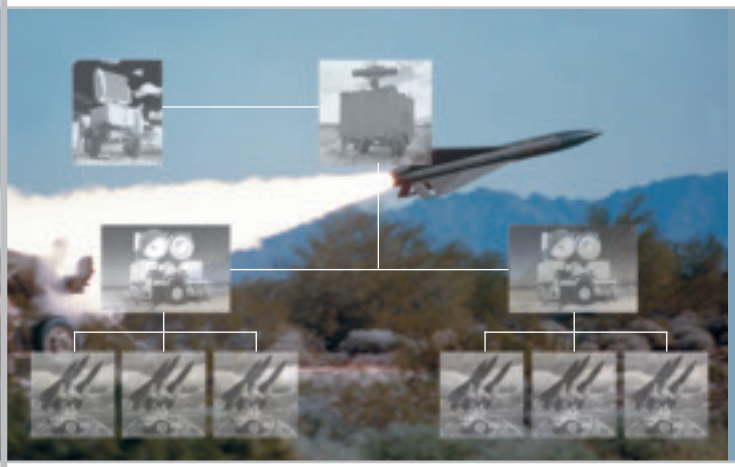
Raytheon | KONGSBERG

Hawk XXI



Hawk XXI provides the warfighter with a high-lethality, NATO-interoperable system and a user-selected path for future capabilities upgrades.

Benefits

- Modified Hawk Platoon or Battery Command Post (PCP or BCP)
- Battle management for Hawk, Surface Launched AMRAAM (SL-AMRAAM) and SHORAD units
- Fully integrates two- and three-dimensional surveillance radars
- In production with active technology insertion program to maintain state-of-the-art capability
- Commercial-off-the-shelf UltraSparc computers
- 20" flat panel, color, touch screen displays and state-of-the-art man-machine interface
- Real-time fire unit, battery and battalion data links
- Built-in modularity for easy transition to SL-AMRAAM

The Hawk XXI system combines combat-proven air defense credentials with advanced fire control and battle management. It provides unparalleled Hawk system performance today and a customer-selected path to more robust, flexible and lethal combat capability tomorrow.

Upgrading the system with state-of-the-art technology, Hawk XXI maintains Hawk as an effective and highly lethal air defense system against the ever improving low- to medium-altitude air threats. Offered by the world-class air defense team of Raytheon and Kongsberg, Hawk XXI is currently in production and available for current and future Hawk users.

Hawk XXI introduces the modern AN/MPQ-64 Sentinel three-dimensional (3D) surveillance radar and the advanced Fire Distribution Center (FDC) into the Hawk system. With an open system architecture, advanced fire control and battle management, the FDC provides full control over all system functions including automated defense planning, simplified engagement operations, integration and cueing of attached or adjacent Short Range Air Defense (SHORAD) units.

Hawk XXI offers extensive flexibility in providing the customer with a variety of tactical data links for fully interoperable operations.

The FDC open system architecture allows the customer to tailor the system to specific technical and operational requirements and other government factors unique to existing geopolitical, logistics and economic situations.

The system is simple, modern and up to date. Component hardware is standard, making it easier to maintain, reducing manpower and overall cost.

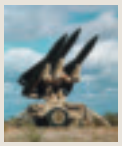
The Raytheon/Kongsberg team will work with each customer to tailor the near-term system design and establish a long-term partnership that enables transition to enhanced future capabilities.

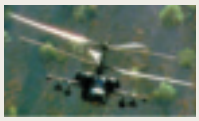
Mission Systems Integration

Capability Transition — Tailored to Customer Needs

Mission and threat analysis

Review of existing AMD assets





Identify capability gaps

Develop tailored AMD system architecture

Generate total system solution

Assist in fielding, training and support activities

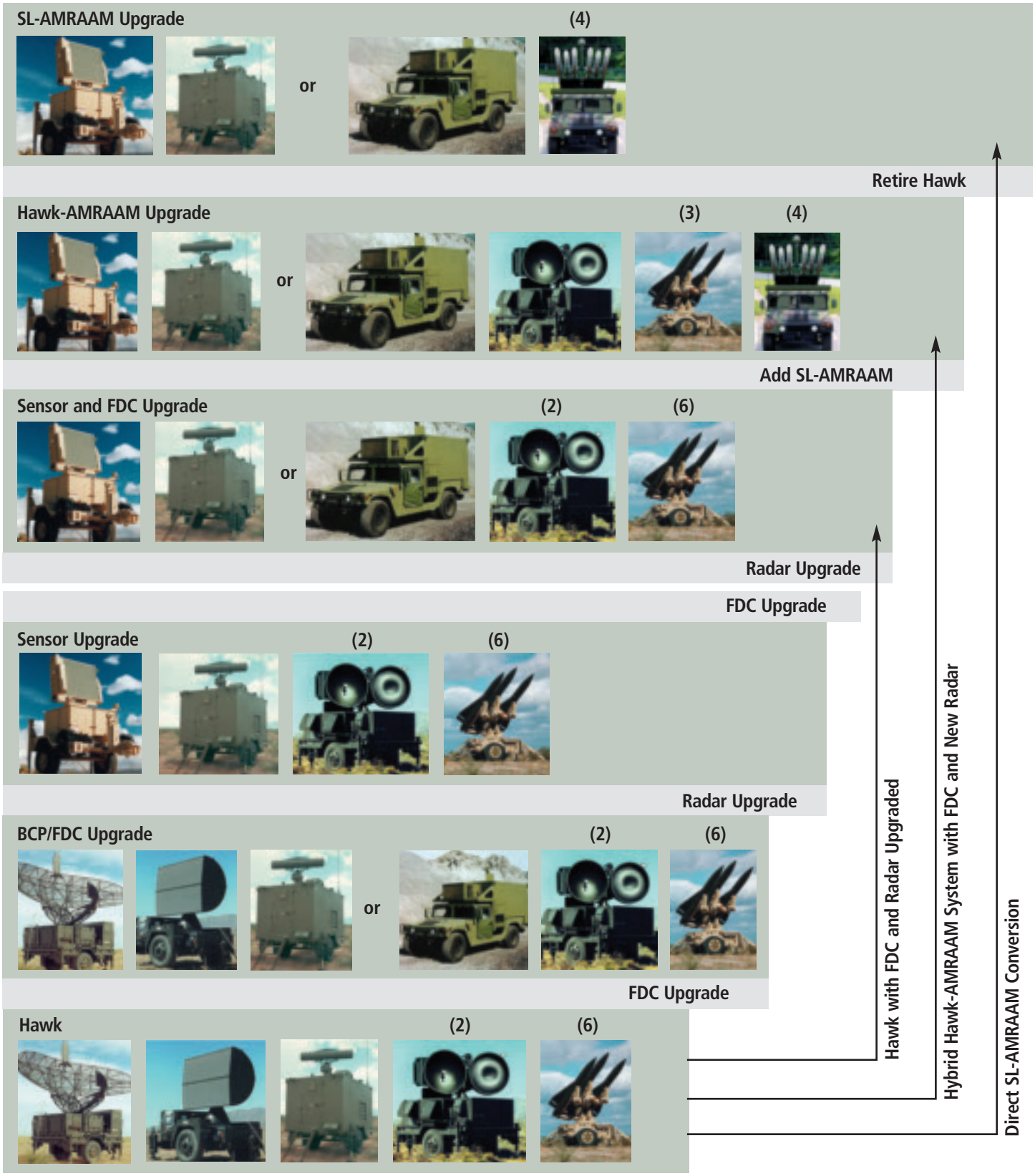
Transition planning supported by Raytheon/Kongsberg air defense operational and technical experts. Our technical and tactical system tailoring process includes the customer at every stage.

Hawk XXI Battery Fire Distribution Center (BFDC)

Features

- Extends and maintains Hawk operational effectiveness
- High lethality, combat-proven system
- Introduces fully open system architecture
- Improved, high reliability
- Simplified maintenance
- Single AN/MPQ-64 Sentinel 3D pencil beam air surveillance radar
- Multiple growth options to SL-AMRAAM
- Provides immediate, proven NATO interoperability

Capability increase can be made in small block upgrades or large system transitions. Transition is tailored to operational needs, budgetary and manpower considerations



Sentinel Radar

NASAMS HMMWV-based FDC
IOC – 1998

AMRAAM Missile

SHORAD Systems

NASAMS Launcher

HMMWV Launcher

AN/MPQ-64 Sentinel Radar

Multi-target search and tracking is performed by the U.S. Army's AN/MPQ-64 Sentinel radar. A modern, three-dimensional, pencil beam radar features a large surveillance and track volume, a phase-frequency electronic scanning antenna, X-band range-gated pulse Doppler operation and high survivability. It has a high scan rate (30 RPM), 75 km range and is ECM resistant. This highly mobile system has been selected as the U.S. Army's premier forward-area air defense radar.

Integrated Fire Control

The FDC was selected by the U.S. Army as the baseline for its SLAMRAAM Integrated Fire Control Station (IFCS) and next generation common AMD BMC4I. SL-AMRAAM integrated fire control, in both the FDC and IFCS, employs a common set of complex weapon system Engagement Operations (EO) software and comprehensive Force Operations (FO) software in multiple hardware configurations. The open system architecture, combined with modular and scalable designs, enables netted and distributed operations and maximum flexibility for future hardware and software growth.

AIM-120 AMRAAM Missile

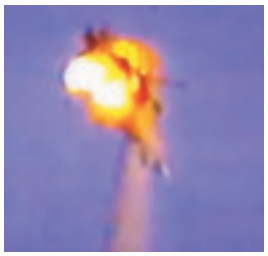
The Advanced Medium Range Air-to-Air Missile (AMRAAM) has scored combat victories over the skies of Iraq, Bosnia and Kosovo. AMRAAM is employed daily by the armed forces of 18 nations. The same missile is employed in the air-to-air and the surface-launched roles. The all-weather, day or night AMRAAM provides operational flexibility and the ability to engage multiple, simultaneous targets. AMRAAM lethality has been demonstrated in over 1,200 flight tests and combat launches against multiple targets in complex ECM. The missile has demonstrated intercepts of high-flying, low-flying and maneuvering targets.

SL-AMRAAM Family of Launchers

With multiple launcher options, SL-AMRAAM is adaptable to any operational requirement. The NASAMS launcher is already operational within NATO defense forces. Six missiles per launcher are available in protected containers. The High Mobility, Multi-purpose Wheeled Vehicle (HMMWV)-based launcher has been selected by both the U.S. Marine Corps CLAWS and the U.S. Army SL-AMRAAM programs as a joint, common launcher. Using the same electronics employed in the NASAMS launcher, the HMMWV- based launcher is designed for highly mobile operations and can carry up to six AMRAAM missiles. The modular launch platform is also designed for adaptation to multiple vehicle types, shipboard, rooftop or ground installation.

SHORAD Integration

The Hawk XXI FDC provides full interoperability with numerous SHORAD systems. Regardless of missile or gun type, the FDC provides all the necessary planning functions and data links to support early warning, target identification, cuing and engagement.



Proven cruise missile lethality

Guy Shields
978.858.5246 phone
978.858.9414 fax
guy_shields@raytheon.com

Raytheon Company
Integrated Defense Systems
50 Apple Hill Drive
Tewksbury, Massachusetts
01876 USA

www.raytheon.com

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Customer Success Is Our Mission