



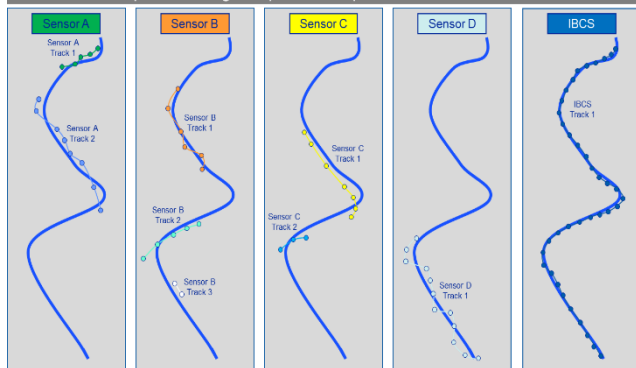
IBCS

Integrated Battle Command System

IBCS – Transforming Integrated Air and Missile Defense

The Integrated Battle Command System (IBCS) is a fielded, network-enabled, Modular Open System Approach (MOSA) Command and Control (C2) system developed by Northrop Grumman under contract to the U.S. Army. IBCS is the centerpiece of the U.S. Army’s Integrated Air and Missile Defense (AIAMD) modernization strategy that is transforming air and missile defense capabilities. IBCS will replace all current Army IAMD C2 systems (Patriot, THAAD, FAAD) over the next decade. In April 2023, IBCS achieved Initial Operational Capability (IOC) and was authorized for Full Rate Production. The IOC milestone marks the completion of Patriot integration and the U.S. Army is proceeding with plans to field IBCS to all U.S. Patriot Battalions.

IBCS Maintains A Single, Accurate, Continuous Track On Airborne Objects Despite Coverage Gaps and Drops of Networked Sensors



IBCS’s game-changing “plug-and-fight” technology scales to adapt and integrate multi-domain sensors and weapons onto an Integrated Fire Control Network (IFCN). This allows advanced battle management, planning and decision aids to achieve “Any Sensor, Best Shooter” effects. Truly integrated air and missile defense is realized through IBCS’ application of

distributed sensor fusion and modern networking technologies to connect sensors, weapons and C2 nodes. Fusion of data from the networked sensors creates fire control quality tracks that enable rapid combat identification, weapon optimization and defense in depth using a variety of networked weapons.

The Threat

Today’s battlespace is asymmetrical, highly contested and congested. It is full of a complex array of active and passive sensors; rockets, artillery, and mortars low in the atmosphere; cruise, ballistic and hypersonic missiles and attack aircraft flying inside and outside the atmosphere; electronic counter measures, electronic attack, directed energy; and all of this operating across the Land, Air, Maritime, Space, and Cyber domains. These threats target friendly forces with simultaneous, multi-axis attacks intended to overwhelm current defenses. Countering this threat requires an unprecedented degree of multi-domain integration that leverages all friendly sensors, weapons, and effects. IBCS provides this degree of integration and enables affordable growth to outpace the threat with its adaptable MOSA designed architecture.

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Operational Benefits

- High Confidence, Fused, 360° Single Integrated Air Picture (SIAP) at all echelons
- Multi-domain sensor integration
- Integrated Fire Control Networking
 - Increases threat defeat probability
 - Defends more assets without an increase in force size
 - Expands battlespace for longer range intercepts and defense depth
 - Improves Combat Identification to mitigate fratricide risk and speed decisions
 - Conserves munitions
- Electronic and Cyber attack resilience
- C2 node redundancy at echelons of command
- Integrated Defense Planning enabling optimal emplacement of sensors and weapons
- AMD Task Force tailoring to support flexible employment and operations

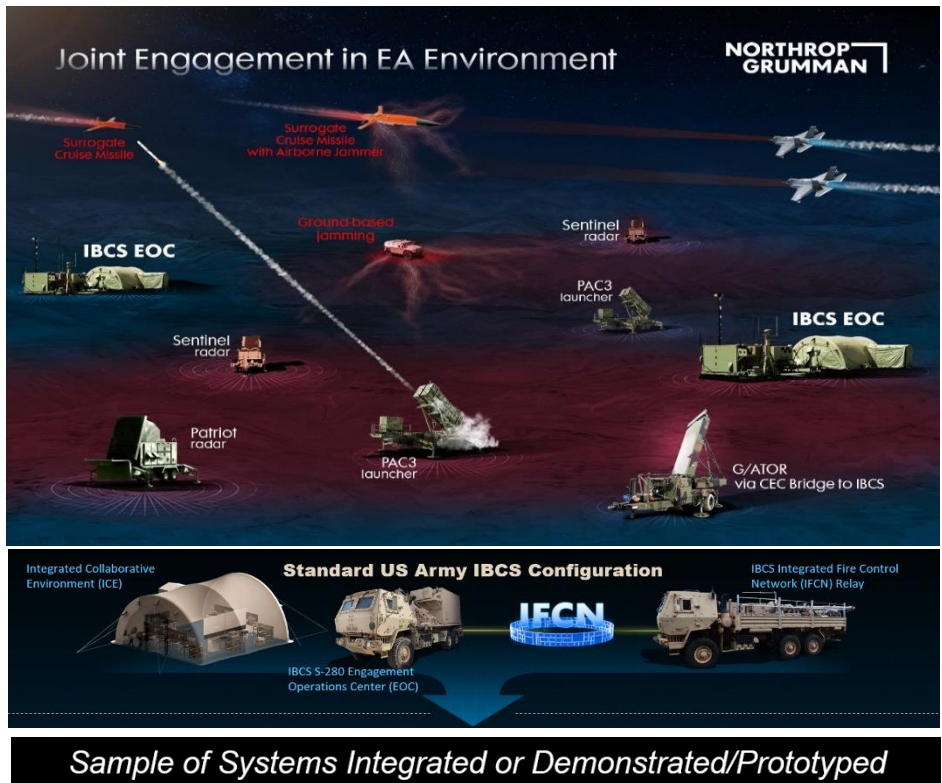


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Enabling Joint and Multi-Domain Integration

IBCS revolutionizes how Joint and Coalition Forces interoperate and integrate across all domains to deliver advanced warfighter capabilities. The IBCS MOSA architecture design is extensible and capable of enabling the level of network integration required to integrate joint service and Coalition force sensors, effectors, and C2 to achieve the vision of Joint All Domain Command and Control (JADC2) and Allied Multi-Domain Integration.

Through numerous successful development and operational tests and demonstrations, IBCS has proven its capability to connect and fuse multi-service sensor data to multi-service weapons, demonstrating JADC2 capabilities. From an international perspective, the prototype integration of the United Kingdom's CAMM missile and Sweden's GIRAFFE radar are both illustrative of the flexibility of the IBCS architecture to integrate IAMD weapons and sensors from across domains.



Improving IAMD Warfighting

- **Resilience:** Eliminates single points of failure from current systems
- **Deployment:** Enables dispersion of sensors, launchers and C2 nodes for greater survivability and effectiveness
- **Capacity:** Can defend 40% more assets with same size force
- **Decision Speed:** Increases time available for decisions from seconds to minutes
- **Efficiency:** Reduces types of Patriot ground support equipment by more than 50%
- **Commonality:** Provides same C2 software at every echelon to increase operator effectiveness and reduce training costs

Sample of Systems Integrated or Demonstrated/Prototyped



IBCS Configuration

IBCS comprises three major end items: the Engagement Operations Center (EOC) S-280 Shelter, Integrated Collaborative Environment (ICE), and the Integrated Fire Control Network (IFCN) Relay. The IBCS EOC is a mobile command and control center in which AMD battle management functions and operations are performed. Together in a typical US Army setup, the S-280 Shelter and ICE provide the facilities and hardware for 12 to 24 operators.

The IFCN Relay is unmanned and serves two purposes. First, it forms the IFCN that runs over terrestrial (radio, fiber) and satellite bearers to carry both data and voice traffic. Second, the IFCN Relay contains the "plug-and-fight" kit that adapts sensors and weapons to the IFCN. The IFCN transports fire control quality data between sensors, weapons and the EOCs to support execution of engagement operations by the IBCS operators.

Summary

IBCS is a transformational command and control capability for IAMD and an enabler for Multi-Domain operations. IBCS achieved IOC and was authorized for Full Rate Production in 2023. IBCS acquisition by the U.S. Army and by U.S. Allies will enable Coalition Force interoperability and true network integration required to defeat an ever evolving and complex threat.