

NORTHROP GRUMMAN

DEFINING THE FUTURE™

Global On-Demand Daily Combat Training for the Warfighter

Combat Air Forces Distributed Mission Operations



Combat Air Forces Distributed Mission Operations (CAF DMO) is revolutionizing training for the U.S. Air Force.

Its architecture supports inter- and intrateam composite force training for warfighters in diverse locations. The focus is on tactical proficiency training.

As operations and integration contractor for CAF DMO, Northrop Grumman is responsible for systems management, interoperability and training federation management. The company provides a complete, distributed, interoperable capability for CAF DMO training systems.

This solution is achieved through the global CAF DMO Network (DMON) and systems interface (portal), new interoperability standards and processes and procedures governing daily network operations.

The distributed, standards-based architecture facilitates on-demand training for more than 1,500 missions a year, resulting in more than 7,500 hours.

Reality Meets Vision

CAF DMO training over the DMON is expanding widely as warfighters discover how it enhances their warfighting skills; and as they use capabilities and tactics that live training cannot provide because of lack of aircrew platforms, weapons, ranges, or airspace or because of safety considerations. The number of sites, missions and hours per site is growing rapidly.

MTCs worldwide use the CAF DMON for distributed tactical missions with warfighting partners to enhance combat skills in air superiority, interdiction, global strike, command and control, intelligence, surveillance, reconnaissance, close-air support, time-sensitive targeting and combat search and rescue. On any given day, the DMON has missions that team a variety, distributed warfighter platforms:

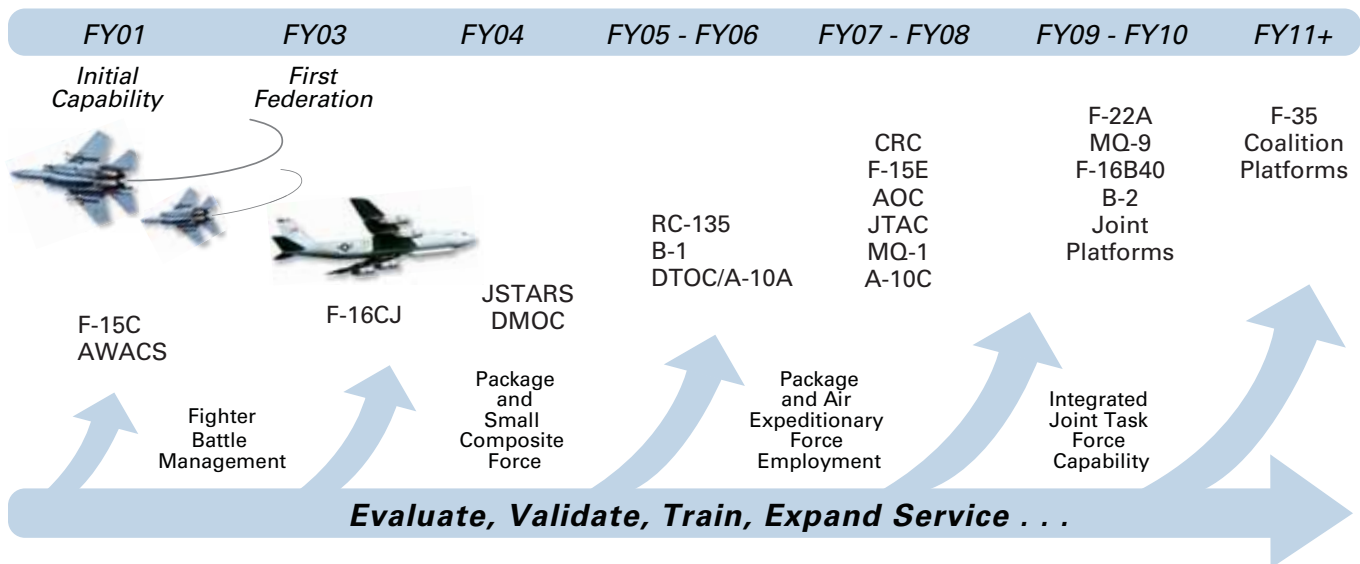
- F-15Cs, F-16CJs and E-3 AWACS
- E-8 JSTARS, RC-135 Rivet Joint and E-3 AWACS
- A-10C, B1 and joint tactical air controllers
- B-1s, F-15C, E-3 AWACS and RC-135 Rivet Joint
- E-8 JSTARS and A-10s
- F-15C, F-16CJ and control and reporting centers

Warfighters participate in virtual operational military service, inter-agency and joint exercises, such as Virtual Flag, Terminal Fury, Northern Edge and DoHMA using the CAF DMON.

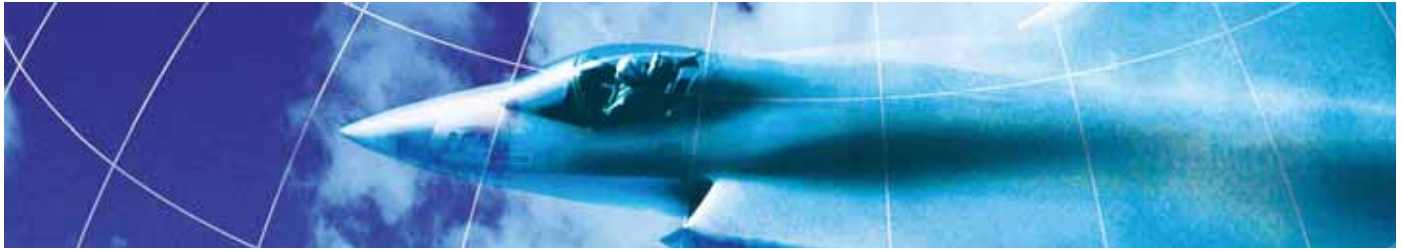
As demonstrated with Army Apache, Navy F/A-18 and live-range integration, Northrop Grumman's proven, standards-based live, virtual, constructive architecture can deliver solutions for any and all modeling and simulation training domains. The company's cost effective solutions leverage connectivity to existing, distributed training capabilities and allow rapid expansion of mission training breadth and scope.

Year	Hours	Missions	Sites
2003	112	30	3
2004	2349	349	5
2005	2868	392	18
2006	3142	679	23
2007	8038	1363	27
2008 (to date)	7472	1646	29

CAF DMO training through the DMO Network continues to grow



The CAF DMO vision is expanding capabilities for warfighters



Mission Training Centers

CAF DMO Mission Training Centers feature high-fidelity, man-in-the-loop, virtual cockpits and crew stations for pilots, weapon system officers and C2ISR crews. The centers are equipped with training aids, such as manned threat stations, instructor-operator stations, environment generators and brief/de-brief systems.

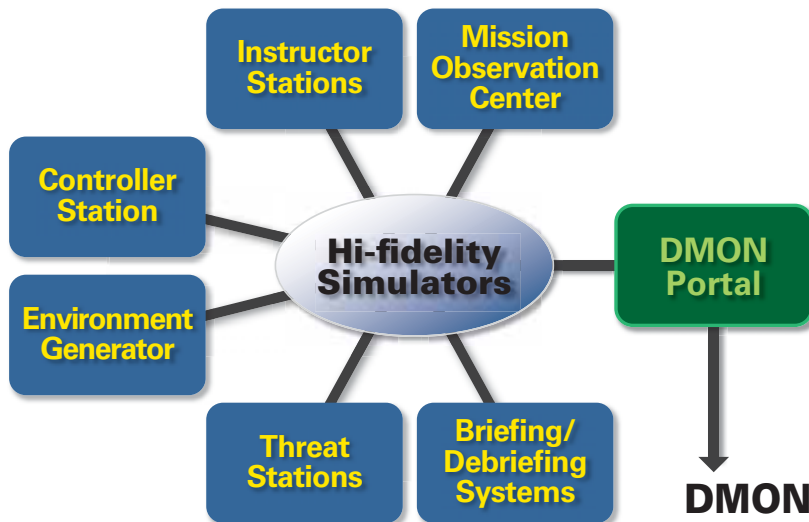
All MTCs interface to the DMON through a portal interface. The interfaces, processes, procedures, simulation protocols and distributed system performance specifications of federate systems comply with CAF DMO standards.

CAF DMO Architecture Provides Reliable, On-Demand Training

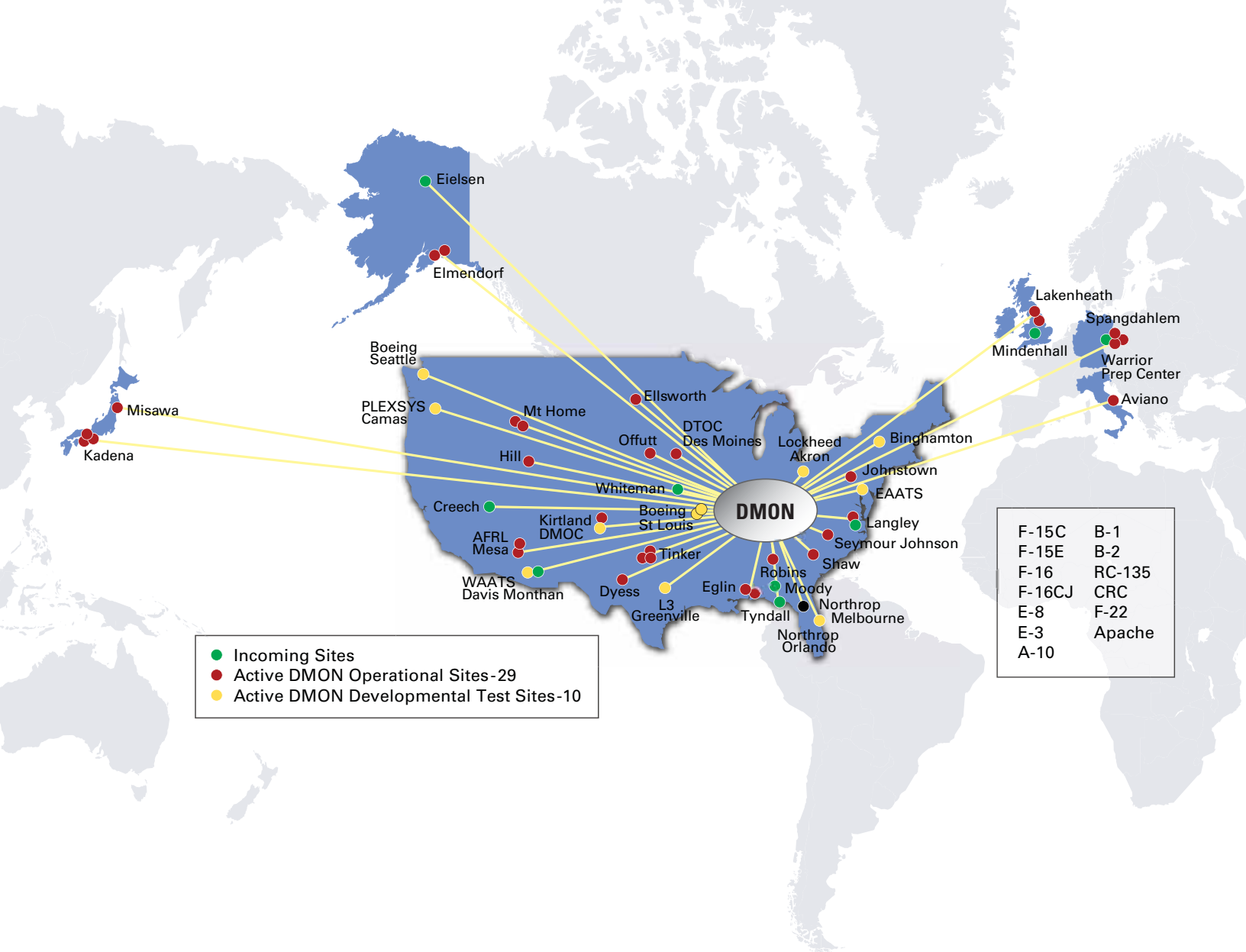
- High fidelity, man-in-the-loop virtual training systems
- 24/7/365 training
- Daily, distributed training capability for aircrews
- Comprehensive set of interoperability standards
- Network availability is more than 99 percent
- Scheduling system for training and mission rehearsal
- One-hour lead-time for archived scenarios
- Support for multiple and simultaneous events
- Mission training centers at aircrews' home bases

Combat Air Forces Distributed Mission Operations Highlights

- DMON protocol standards ensure compatibility and interoperability
- The DMON portal allows interface between a variety of federate simulation protocols (e.g., DIS, HLA, TENA)
- Development and test network enables rapid integration
- Interactive scheduling of missions and exercises
- Network administration is managed and mission planning and monitoring are conducted in a dedicated operations center in Orlando, Fla.
- Aircrews have 24/7/365 access to scheduling, planning and conducting missions
- CAF-DMO is adaptable for joint and coalition forces
- DMON provides secure inter-site communications at multiple levels of security
- Multiple simultaneous training missions, briefs and debriefs are supported
- Standards and federation test process enable on-demand training with just one hour's notice
- Cross domain solution capabilities support multiple compartments



Mission training centers are equipped with virtual cockpits and training tools to support distributed training events



The CAF DMO Network supports training operations and on-going development

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