

Products Used:

- Commercial off-the-shelf (COTS) software
- Microsoft® Access/SQL Server database
- Microsoft Windows NT® Server and Internet Information Server

Key Benefits:

- Significant cost savings resulting from reduced on-site repair visits
- Significant productivity increases for repair technicians due to constant access to regularly refreshed technical data
- Increased aircraft reliability and mission readiness times due to decrease in repair times

Profile:

Name – United States Navy Naval Air Systems Command (NAVAIR)

Web site – www.navair.navy.mil/

NAVAIR, headquartered in Patuxent River, Maryland, exists to provide cost-wise readiness and dominant maritime combat power to make a great Navy and Marine Corps team better.

Size – NAVAIR headquarters covers an area of more than 13,800 acres and employs a workforce of more than 10,700 personnel, including 7,600 civilian employees and 3,100 active-duty military personnel.

Aircraft Maintenance Requires Fast Access to Current Technical Data

Flight safety and mission success depend on accurate and timely maintenance. However, the U.S. Navy Naval Air Systems Command (NAVAIR) was challenged to provide up-to-date information to worldwide fleet- and shore-based resources on a frequent basis. Hardcopy technical manuals (TMs) are updated only every six months, but squadrons require access to all relevant technical publications at all times, regardless of the available communications infrastructure. NAVAIR needed to develop an automated logistics and maintenance system that provides daily access to the most recent TMs while addressing mission-critical backup and data redundancy requirements.

**The Project Objectives:**

- Improve technical data system
- Create an information portal to house and display always-current data
- Enable virtual maintenance to increase productivity and reduce costs

The Solution:

NAVAIR deployed the JATDI Program in 2001, complying with a Department of Defense mandate to become fully digital by 2002. JATDI is an engineering and logistics data Environment that integrates and delivers a seamless flow of accurate technical data and maintenance expertise as knowledge for the warfighter. NAVAIR tasked Intergraph with providing on-site and off-site hardware and software services to define, configure, and install hardware for integration into the H-60 and EA-6B Navy and fleet environments. Intergraph conducted a fleet configuration study, made recommendations on process improvements and hardware configurations, developed a process for exchanging real-time multimedia between shore and fleet sites, and supported installation.

JATDI supports H-60 and EA-6B maintenance through three data levels: a TM Server operated by the Naval Air Technical Data and Engineering Service Command (NATEC), Mid-Tier servers at major Naval installations, and JATDI workstations and portables at the squadron level. NATEC is responsible for distributing aeronautical technical and maintenance information, including TMs. Their Web-based system uses an Intel® platform running Microsoft Windows NT Server and Internet Information Server (IIS) with a Microsoft Access/SQL Server database storing document metadata, including publication number, title, revision date, weapon system applicability, etc. An Active Server Pages (ASP) interface allows querying and viewing of all online technical publications, as well as database administration. JATDI retrieves digital TMs from the NATEC Server and distributes them to squadron technicians.

Security, Government & Infrastructure

When the NATEC server indicates that new or updated TMs are available, the Mid-Tier server at Naval installations such as Cherry Point, North Carolina, or Patuxent River, Maryland, pulls them in an encrypted transmission during off-peak times. JATDI sites then pull the TMs from a Mid-Tier server nightly. Throughout the process, firewall and strong data encryption prevent data compromise. Nightly, the squadron's Portable Electronic Display Devices (PEDDs), laptop computers, and wearable computers are stored on a rack connected to a high-speed network where they receive updates with the most current documentation from the NATEC server. The update procedure is automatic, guaranteeing technicians are using only current NATEC technical manuals for all checks and procedures. JATDI workstations can then use a Web-based interface to query, personnel to search and view configuration management data, engineering drawings, failure analysis, and other key aircraft data. The EAI architecture uses a message broker to pass data to one or more systems according to defined rules and establishes a scalable architecture for eventual integration with other data, such as location, component information, maintenance records, and configuration summary.

Portable computers provide users access to all required technical publications at all required locations, even remote aircraft sites. Wearable computers configured with the JATDI environment allow access to electronic documents on the flight line in a "hands-free" mode. Mobility is enhanced through the use of wireless networks, which allow technicians to communicate with other key personnel directly from the PEDD or notebook computers beyond a cable's reach. Prior to implementation, Intergraph conducted significant research on wireless technology and its application in a military environment, including transmitting live video between portable computing devices using wireless networks. Technical support staff, engineers, contractors, and others need immediate and simultaneous access to the site for effective aircraft inspection and repair. In the past, problem resolution required an on-site visit. Today, the concept of "virtual site visits" using advanced communications technology provides real-time site observation.

JATDI offers significant productivity increases for H-60 and EA-6B technicians. Now technicians on a flight deck can use JATDI-equipped PEDDs, laptops, or wearable computers to find and view electronic TMs in mere seconds. If they require additional help, a videoconference with a service representative is a click away. Equipped with a wearable computer, video camera, and wireless communications, technicians film problem areas, and the service representative makes recommendations, saving the cost of an on-site visit. With JATDI's immediate access to TMs or other technical data, maintenance is accomplished faster and more accurately, with less expense. Ultimately, this keeps aircraft reliable and mission-ready.

U.S. Naval Air Systems Command (NAVAIR)

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Intergraph Security, Government & Infrastructure

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