

Joint Engineering Data Management and Information Control System (JEDMICS)

1.0 Purpose

JEDMICS is a DoD initiative for the management and control of engineering drawings and related text in a standard repository. JEDMICS has been designed as an open, client-server architecture conforming to applicable CALS standards which provides the user with the ability to locate and obtain approved engineering drawings and associated data that is the required revision in the preferred format. In addition to providing the repository functions for engineering drawings and associated technical data, JEDMICS will define the indexing elements and data relationships needed to store and locate that data; provide a standard repository interface to permit access by JCALS and other data requesting systems; and, provide necessary interfacing to configuration management systems that control the version and applicability of that data.

2.0 Functionality

The JEDMICS system is dissected functionally into six different subsystems: Input, Data Integrity, Index, Optical Storage, Remote Output (Workstation), and Output. The concept of operations of each subsystem is described below.

The **Input Subsystem** is the primary entry point for scanning drawings, aperture cards, and documents into JEDMICS.

The **Data Integrity Control Subsystem** provides for the processing of scanned images that temporarily reside on magnetic storage while awaiting quality assurance on Data Integrity Control Workstations (DICWs). The primary processing steps include quality assurance verification of image and hollerith index data, and the migration of images to permanent optical storage.

The **Index Subsystem** provides for the inquiry and access of image-related index information upon being scanned into the JEDMICS system. This takes place through the use of a COTS relational database.

The **Optical Storage Subsystem** provides for the storage of image data on both multiple disk autochangers, "jukeboxes," (14-inch platters) and stand-alone single-disk devices (14" and 5.25"). The jukebox is capable of handling the storage for up to 6 million JEDMICS images, and each system can have up to four jukeboxes, for a total of 24 million images. The stand-alone units provide backup for the jukebox and, in addition, are a means for exchanging data between sites.

The **Remote Output (Workstation) Subsystem** provides the capability to access image and index data that reside in the Data Integrity Control and Optical Storage Subsystems. The Multi-function Graphics Display Workstation provides the ability to view an image and direct output to a hardcopy output device. The multifunction capability of this workstation allows the site to access different systems from the same hardware platform. The Engineering Graphics Display Workstation (EGDW) provides a true raster editing capability.

The **Output Subsystem** provides for a variety of output devices and media types for JEDMICS engineering data. Output capabilities include aperture card production, high-resolution hardcopy plotting, large-format printing, and high-speed printing. The Aperture Card Plotters

collectively have the capability to produce 200 aperture cards per hour from images stored on JEDMICS.

The following are the highlighted capabilities of JEDMICS:

- Users can enter engineering data using different media, including aperture cards, hardcopy, magnetic tape, optical platters, and CAD stations.
- Flexible scanning options allow data to be extracted efficiently from the available media.
- A built-in quality assurance mechanism for validating data-input.
- Viewing/editing capability provided for stored images.
- Document Set (bid set) capabilities that enable management of numerous types of document lists and document top-down break downs.
- Engineering data management capabilities support the concept of multiple drawing revisions and their association to related information.
- User friendly retrieval capabilities, based on relational data model, support powerful query possibilities.
- Extensive tracking and reporting capabilities for managing system usage and reporting usage statistics.
- Support for standard backup and restore, data export, and continuity of operations (COOP).
- An Application Program Interface (API) permits communication with external systems.
- Users can output engineering data in different media types, including aperture cards, hardcopy, magnetic tape, optical platters, and other digital media products.
- Expandable architecture facilitates efficient technology refreshment.

3.0 System Description

The JEDMICS repository baseline supports RISC-based server, Windows based 486 workstations, RISC-based workstations, 486 based I/O controllers, ethernet transceivers, terminals, scanners, large amounts of disk storage, tape drives, optical and magnetic disk drives, printers, and plotters. Software requirements include VAX/VMS operating systems, TCP/IP software, programming languages, compilers, programming language conversion packages, management (file and report) packages, and security maintenance packages.. Depending on the installation date, sites have either a VMS or a UNIX based database server. In either case, both servers use a Relational Data Base Management System (RDBMS) for the inquiry and access of image related index information.

Most sites will not require installation of a JEDMICS repository, but rather access to the information stored in the repository. The key to this access will be connection to a network that is connected to a JEDMICS repository. The preferred network for this interchange is the new Defense Information Systems Network (DISN).

The API was designed to provide access to JEDMICS from non-JEDMICS workstations or Servers. With an API, the majority of functionality of JEDMICS can be realized. At the very high level these capabilities include index querying, engineering drawing retrieval, quality assurance operations, and output requests. The API is based on a "Client-Server" model and uses standard TCP/IP services to provide application support over any IEEE 802.x compliant ethernet or token ring local area network (LAN). Additionally, if the LAN is connected to either a Metropolitan Area Network (MAN) or Wide Area Network (WAN), any accessible JEDMICS

repository will have the capability of providing services to the client application. Any application whose host is able to use TCP/IP sockets is a potential JEDMICS repository client.

Each workstation desiring access to the JEDMICS repository will be required to have an IP address and have this address known by the repository (router and JEDMICS software) prior to being able to log on and establish communications. The JEDMICS system administrator will input the IP address on the host files of the VAX and MDS1. Each workstation requiring access will also need the JEDMICS software loaded to effect communications and data transfer. Note that the remote workstation and host repository must be running the same version of the JEDMICS software.

4.0 Future Upgrades

Future improvement opportunities include: expanding JEDMICS in the Integration Support Facility; coordinating emerging requirements through the Joint Logistics Integration Team (JLIT) through a common operating environment, object linking and embedding, product data management integration, data warehousing, and object oriented database/relational database integration; and optimizing use of the emerging DoD telecommunications infrastructure. Two baseline JEDMICS versions are currently in progress, with Baseline 2.5 due in early spring of 1996 and Baseline 3.0 due in summer 1997.

Additional planned improvements include:

- Improved API support for system-to-system bulk data exchange.
- Magnetic cache of optical juke box(es) providing substantial performance enhancements.
- Increased storage capacity of optical juke box(es); (14.4 GB/platter vs. current 10.2 GB/platter).
- System-level upgrades to support 512 to 1024 concurrent users (DoD Site Consolidation).
- Server based CDR production support (digital exchange of data).
- Expansion of IGES, SGML, and CGM support for Digital Import QA Operations.
- Raster-to-vector conversion alternatives (dedicated external system or integrated).

5.0 Deployment Schedule

The following list includes the current and planned JEDMICS installations as of November 8, 1996.

Installed Sites:

- Navy, Naval Ordnance Station, Louisville, KY March 1991
- Navy, Portsmouth Naval Shipyard, Portsmouth, NH January, 1992
- U.S Navy, Mare Island Naval Shipyard, Vallejo, CA (closed) March, 1992
- Defense Logistics Agency, Defense General Supply Center, Richmond, VA April, 1992
- Navy, Ships Parts Control Center, Mechanicsburg, PA July, 1992
- Defense Logistics Agency, Defense Construction Supply Center, Columbus, OH July, 1992
- Navy, SPAWAR Technical Data Center, Portsmouth, VA August, 1992
- Defense Logistics Agency, Defense Electronic Supply Center (DESC), Dayton, OH October, 1992
- Navy, Marine Corps Logistics Base, Albany, GA January, 1993

- Defense Logistics Agency, Defense Industry Supply Center, Philadelphia, PA February, 1993
- Navy, NAVAIR Technical Support Facility, Philadelphia, PA March, 1993
- Navy, Puget Sound Naval Shipyard, Bremerton, WA August, 1993
- Navy, Norfolk Naval Shipyard, Portsmouth, VA October, 1993
- Army, Missile Command, Redstone Arsenal, AL November, 1993
- Navy, Pearl Harbor Naval Shipyard, Pearl Harbor, HI February, 1994
- Navy, Naval Surface Warfare Center, Port Hueneme, CA March, 1994
- Navy, Navy Air Warfare Center-Training Systems Division, Orlando, FL May, 1994
- Navy, AEGIS Destroyer Planning Yard, Bath, ME June, 1994
- Army, Letterkenny Depot, Chambersburg, PA August, 1994
- Army, Anniston Depot, Anniston, AL October, 1994
- Army, Tobyhanna Depot, Tobyhanna, PA October, 1994
- Army, Corpus Christi Depot, Corpus Christi, TX October, 1994
- Army, Red River Depot, Red River, TX November, 1994
- Air Force, Robins AFB, Warner-Robins, GA November, 1994
- Navy AEGIS Cruiser Planning Yard, Pascagoula, MS January, 1995
- Navy, Naval Aviation Depot - North Island, San Diego, CA April, 1995
- Army, Armaments, Munitions, Chemicals Command, Rock Island, IL May, 1995
- Air Force, Oklahoma Air Logistics Center, Tinker AFB, Oklahoma City, OK June, 1995
- Air Force, Odgen Air Logistics Center, Hill AFB, Odgen, UT April, 1996
- Army, Communications and Electronics Command, Ft. Monmouth, NJ July, 1995
- Navy, Naval Aviation Depot - Jacksonville, Jacksonville, FL August, 1995
- Army, Aviation & Troops Support Command, St. Louis, MO March, 1996

Planned Sites

Note: This list may not reflect the most current schedules; check with the JEDMICS PMO for particular site information.

- Army, Tank-Automotive and Armament Command, Warren, MI July, 1996
- Navy, Ship Repair Facility, Yokosuka, Japan June, 1996
- Army, Picatinny Arsenal, Dover, NJ August, 1996
- Air Force, Sacramento Air Logistics Center, McClellan AFB, CA September, 1996
- Air Force, San Antonio Air Logistics Center, Kelly AFB, TX November, 1996
- Navy, Naval Aviation Depot - Cherry Point, Cherry Point, NC November, 1996
- Navy, Naval Air Warfare Center - Warfare Division, Pt. Mugu, CA January, 1997

6.0 Additional Information

JEDMICS Program Office

Contact: Mr. Bob Houts
Phone: (717) 790-5141
FAX: (717) 790-4199
e-mail: bob_houts@navsup.navy.mil
Home Page: <http://206.3.148.4> (JEDMICS Requirements Tracking System)
<http://wpafb1.wpafb.af.mil/jedmics.html> (AF)
<http://wwwedms.redstone.army.mil/index.html> (Army)
<http://www.is.prc.com/jedmics> (PRC)