

# Joint Engineering Data Management Information and Control System (JEDMICS)

## JEDMICS Functional Requirements Document

JEDMICS TAT 17-1659

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**Prepared by:**

Peraton Inc.  
12975 Worldgate Drive  
Herndon, VA 20170

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*Per Peraton's post-closing notification dated February 5, 2021, effective February 1, 2021, Peraton Inc. completed its previously announced acquisition of Northrop Grumman's federal IT and mission support services business. With this transaction, Northrop Grumman's federal IT and mission support services business is now part of Peraton, a trusted provider of highly differentiated space, intelligence, cyber, defense, homeland security and communications capabilities to select federal agencies and commercial entities. We will promptly submit a novation package to the responsible contracting officer seeking approval to novate the Contract(s) to Peraton. While this novation request is pending, the federal IT and mission support services business will continue to perform this contract under Peraton as a subcontractor to Northrop Grumman.*

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## **1.0 Scope**

### **1.1 System Overview**

JEDMICS is a digital repository for Department of Defense (DoD) unclassified engineering drawings. While JEDMICS initially was designed to store scanned data from hardcopy drawings and aperture cards, it has evolved to allow the storage and management of any digital form of engineering data, up to and including complex Computer-Aided Design / Computer-Aided Manufacturing (CAD/CAM) data.

The system provides input services via electronic file transfer, quality assurance review of the drawings prior to being made available to end users, filterable retrieval of data using a relational database with built-in business rules, and electronic output services.

JEDMICS implements a full discretionary access mechanism that can be used to control what functions a specific user has access to as well as restricting what data the user can access based on the data's security profile as compared to the user's security profile.

Data maintained within JEDMICS can be accessed from anywhere in the world through a web browser mediated user interface. Requests for data range from a single drawing to be used by a technician while making repairs, to thousands of drawings requested by an external configuration management system to be assembled into a bid set.

## **2.0 Reference Documents**

### **2.1 Government Documents**

DoD Instruction 8500.01, Cybersecurity

DoD Instruction 8510.01, Risk Management Framework (RMF) for DoD IT

Section 508 of the Rehabilitation Act (29 U.S.C. 794d), as amended by the Workforce Investment Act of 1998 (P.L.)

MIL-STD-31000B, Military Standard: Technical Data Package (TDP), 2018

SECNAV M-5239.2. Department of Navy Cyberspace Information Technology and Cybersecurity Workforce Management and Qualification Manual, June 30, 2016.

### **2.2 Other Documents**

Drawing Requirements Manual, Lieblih, Jerome H. and Fischer, Bryan R., 11<sup>th</sup> Edition and Section 26, IHS, Inc. Englewood Colorado, 2008

ASME Y14.100-2004, Engineering Drawing Practices

ASME Y14.1-2012, Drawing Sheet Size and Format

ASME Y14.24-2012, Types and Applications of Engineering Drawings

ASME Y14.34-2013, Associated Lists

ASME Y14.35-2014, Revision of Engineering Drawing – Associated Documents

ASME Y14.41-2012, Digital Product Definition

## **3.0 General Description**

This section describes the functions of JEDMICS.

### **3.1 Product Perspective**

JEDMICS provides the capability for DoD Program Offices to store engineering drawings in CAD and neutral formats, lists required for maintenance and procurement activities, vendor and part information, ASME Y14.34 Parts Lists, ASME Y14.34 Data Lists, and Assembly Lists.

### **3.2 System Functions**

Key functions are listed in section 4.0.

### 3.3 System Context View

The figure presents the JEDMICS system modules and components.

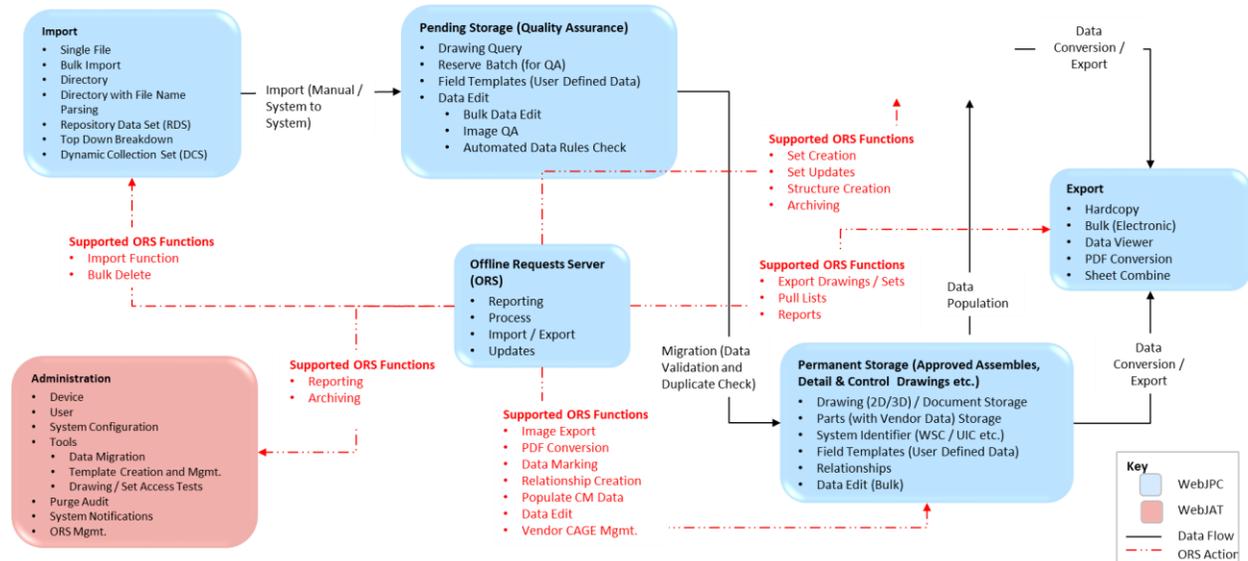


Figure 1 - JEDMICS System Modules and Components

### 3.4 System Configurations

The system is composed of two primary configurations:

#### Sun SPARC Configuration:

- Index Server running Solaris 11.4, Oracle Enterprise Edition RDBMS 19c, OpenJDK 11.0.13, and Apache Log4j version 2.17.0.
- WebLogic Server running Solaris 11.4, Apache Web Server 2.4, WebLogic Server 14c (14.1.1.0.0), OpenJDK 11.0.13, and Apache Log4j version 2.17

#### Linux Configuration

- Index Server running Red Hat Enterprise Linux 7 (x86, 64 bit) (latest version 7.9) and Red Hat Enterprise Linux 8 (x86, 64 bit) (latest version 8.5), Oracle Enterprise Edition for RHEL, RDBMS 19c, OpenJDK 11.0.13, and Apache Log4j version 2.17
- WebLogic Server running Red Hat Enterprise Linux 7 (x86, 64 bit) (latest version 7.9) and Red Hat Enterprise Linux 8 (x86, 64 bit) (latest version 8.5), Oracle WebLogic Server 14c (14.1.1.0.0), Oracle WebLogic Server Proxy Plugin (12.2.1.4), Apache Web Server (2.4), OpenJDK 11.0.13, and Apache Log4j version 2.17

Figure 2 below shows a diagram of the Solaris configuration.

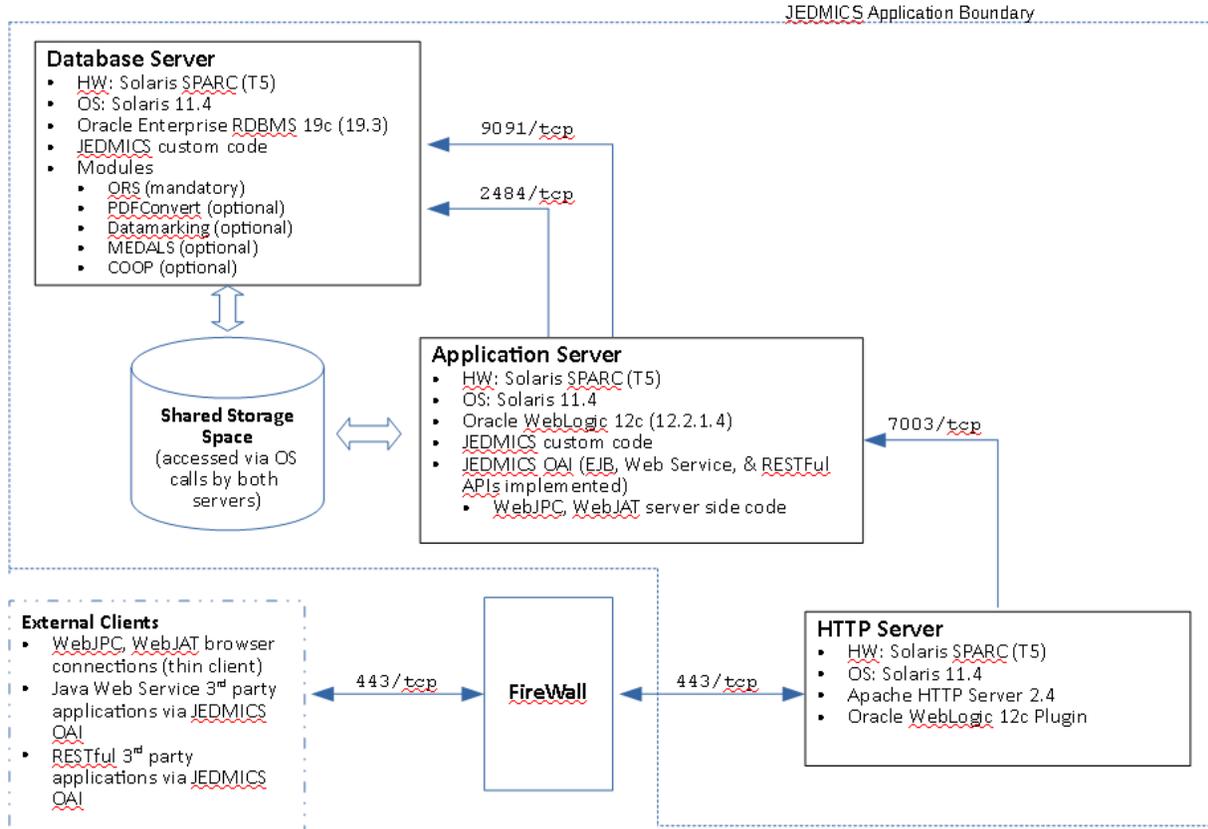


Figure 2 - JEDMICS System Modules and Components

### 3.5 User Characteristics

The table show the systems general user roles and the primary system use for each.

Table 1: User Characteristics

User Category	User Role	Primary Use
Data Owner/Custodian	Data Management Operators	Import drawings, Index input, Vendor and Part input, WSC input, Relationship creation, Data/Part List creation, drawing retrieval, distribution
Data Owner/Custodian	Quality Assurance (QA) staff	Drawing and Index quality assurance (pending and permanent)
Data Owner/Custodian	QA Manager	Review QA work, Approve data for migration
Data Consumer	Technician/Planner	Drawing retrieval, plotting, Data/Part List retrieval
Data Consumer	Bid Set Analyst/Screenner	Create/update RDS and DCS sets
System Administrator	Access Administrator	Adding updating user access, uploading access documentation
System Administrator	JEDMICS Administrator	Maintenance of user access tables, look up tables, monthly reporting

### 3.6 Assumptions

During the creation of this document, the following assumptions were made:

- The system will operate using Non-Secure Internet Protocol Router Network (NIPRNET) internet connectivity.

## 4.0 Functional Requirements

This section specifies Functional Requirements.

### 4.1 Drawing Input

The drawing input function enables users to import and store engineering drawings in native and neutral formats along with their associated metadata.

**Table 2: Drawing Input**

ID	Requirement
JEDMICS-ITFRD-1	The system shall provide the ability to import a single drawing image and its associated metadata.
JEDMICS-ITFRD-2	The system shall provide the ability to bulk import multiple drawing images and their metadata stored in a Microsoft Excel spreadsheet or formatted text file.
JEDMICS-ITFRD-3	The system shall provide the ability to import multiple drawing images when no metadata file is present.
JEDMICS-ITFRD-4	The system shall provide the ability to import a drawing image and its associated metadata as an accompanying document related to another drawing image (base drawing).
JEDMICS-ITFRD-5	The system shall provide the ability to import Top Down Breakdown structure.
JEDMICS-ITFRD-6	The system shall provide the ability to import drawing lists.
JEDMICS-ITFRD-7	The system shall provide the ability to import user-defined metadata.

### 4.2 Quality Assurance

The quality assurance function allows users to review drawings stored in the pending storage and their associated metadata for accuracy and completeness before they are approved and migrated to permanent storage for release to the consuming users.

**Table 3: Quality Assurance**

ID	Requirement
JEDMICS-ITFRD-8	The system shall provide the ability to query for imported images and their associated metadata.
JEDMICS-ITFRD-9	The system shall provide the ability to review drawing images and delete or overwrite them if necessary.
JEDMICS-ITFRD-10	The system shall provide the ability to review and edit the metadata associated with an image.
JEDMICS-ITFRD-11	The system shall provide the ability to query for imported accompanying document images and their associated metadata.

ID	Requirement
JEDMICS-ITFRD-12	The system shall provide the ability to review accompanying document drawing images and delete or overwrite them if necessary.
JEDMICS-ITFRD-13	The system shall provide the ability to review and edit the metadata associated with an accompanying document image.
JEDMICS-ITFRD-14	The system shall provide the ability to enforce site-specific data requirements.
JEDMICS-ITFRD-15	The system shall provide the ability to reserve a batch of data to a specific QA operator and restrict all others from edit capabilities.
JEDMICS-ITFRD-16	The system shall provide the ability to review and edit user-defined metadata.
JEDMICS-ITFRD-17	The system shall provide the ability to move/migrate approved images and their associated metadata from pending to permanent storage.
JEDMICS-ITFRD-18	The system shall provide the ability to delete unapproved images and their associated metadata.
JEDMICS-ITFRD-19	The system shall provide the ability to edit the metadata associated with permanent images.
JEDMICS-ITFRD-20	The system shall provide the ability to move images and their associated metadata from permanent to pending for further QA and to mark the existing permanent image as unavailable during this process.

### 4.3 Vendor and Part Input

The vendor and part input function allows users to input and edit vendor information and part revision information.

**Table 4: Vendor and Part Input**

ID	Requirement
JEDMICS-ITFRD-21	The system shall provide the ability to query for parts and part revisions.
JEDMICS-ITFRD-22	The system shall provide the ability to query for vendors.
JEDMICS-ITFRD-23	The system shall provide the ability to import part revision metadata.
JEDMICS-ITFRD-24	The system shall provide the ability to import vendor metadata.
JEDMICS-ITFRD-25	The system shall provide the ability to review, edit and delete part revision metadata.
JEDMICS-ITFRD-26	The system shall provide the ability to review, edit and delete vendor metadata.

### 4.4 Weapon System Code (WSC) Input

The WSC input function allows users to input and edit system identifier information such as WSC and Unit Identification Codes (UICs).

**Table 5: WSC Input**

ID	Requirement
JEDMICS-ITFRD-27	The system shall provide the ability to query for WSCs.
JEDMICS-ITFRD-28	The system shall provide the ability to import WSC metadata.
JEDMICS-ITFRD-29	The system shall provide the ability to review, edit and delete WSC metadata.

## 4.5 Object Relationships

This section describes the type of object relationships that can be maintained.

### 4.5.1 General

The general object relationship function allows the maintenance of relationships between different types of JEDMICS objects.

**Table 6: General Object Relationships**

ID	Requirement
JEDMICS-ITFRD-30	The system shall provide the ability to create relationships between drawing revision, drawing, part revision, part, WSC, sets, and pending objects.
JEDMICS-ITFRD-31	The system shall provide the ability to edit relationships between drawing revision, drawing, part revision, part, WSC, sets, and pending objects.
JEDMICS-ITFRD-32	The system shall provide the ability to delete relationships between drawing revision, drawing, part revision, part, WSC, sets, and pending objects.
JEDMICS-ITFRD-33	The system shall provide the ability to automatically create equivalent permanent relationships when pending objects are migrated.

### 4.5.2 Data List

The object relationship function allows the maintenance of relationships necessary to produce an ASME Y14.34 data list.

**Table 7: Data List Object Relationships**

ID	Requirement
JEDMICS-ITFRD-34	The system shall provide the ability to create relationships necessary to generate an ASME Y14 data list.
JEDMICS-ITFRD-35	The system shall provide the ability to edit relationships necessary to generate an ASME Y14 data list.
JEDMICS-ITFRD-36	The system shall provide the ability to delete relationships necessary to generate an ASME Y14 data list.

### 4.5.3 Parts List

The object relationship function allows the maintenance of relationships necessary to produce an ASME Y14.34 parts list.

**Table 8: Parts List Object Relationships**

ID	Requirement
JEDMICS-ITFRD-37	The system shall provide the ability to create relationships necessary to generate an ASME Y14 parts list.
JEDMICS-ITFRD-38	The system shall provide the ability to edit relationships necessary to generate an ASME Y14 parts list.
JEDMICS-ITFRD-39	The system shall provide the ability to delete relationships necessary to generate an ASME Y14 parts list.

### 4.5.4 Assembly List

The object relationship function allows the maintenance of relationships necessary for an assembly list.

**Table 9: Assembly List Object Relationships**

ID	Requirement
JEDMICS-ITFRD-40	The system shall provide the ability to create relationships necessary to generate an assembly list.
JEDMICS-ITFRD-41	The system shall provide the ability to edit relationships necessary to generate an assembly list.
JEDMICS-ITFRD-42	The system shall provide the ability to delete relationships necessary to generate an assembly list.

## 4.6 Permanent Drawing Retrieval

The permanent drawing retrieval function allows the users to query for drawings and view or plot the associated image files.

**Table 10: Permanent Drawing Retrieval**

ID	Requirement
JEDMICS-ITFRD-43	The system shall provide the ability to query for one or more drawings using a drawing number, partial drawing number, WSC, part number, and/or CAGE.
JEDMICS-ITFRD-44	The system shall provide the ability to view the metadata associated with queried drawing images.
JEDMICS-ITFRD-45	The system shall provide the ability to the accompanying documents associated with queried drawing images.
JEDMICS-ITFRD-46	The system shall provide the ability to view the images associated with queried drawing images.
JEDMICS-ITFRD-47	The system shall provide the ability to plot the images associated with queried drawing images.

## 4.7 Sets

The sets functionality allows for the creation and maintenance of sets of drawing revisions that can be subsequently used (retrieved and plotted) in support of weapon system maintenance and procurement functions.

**Table 11: Sets**

ID	Requirement
JEDMICS-ITFRD-48	The system shall provide the ability to create sets of drawing revisions for existing JEDMICS permanent data.
JEDMICS-ITFRD-49	The system shall provide the ability to create sets of drawing revisions for drawings that do not currently reside in the JEDMICS permanent data.
JEDMICS-ITFRD-50	The system shall provide the ability to create structured sets of drawing revisions for existing JEDMICS permanent data or for drawings that do not currently reside in the JEDMICS permanent data.
JEDMICS-ITFRD-51	The system shall provide the ability to edit sets of drawing revisions for existing JEDMICS permanent data.
JEDMICS-ITFRD-52	The system shall provide the ability to edit sets of drawing revisions for drawings that do not currently reside in the JEDMICS permanent data.
JEDMICS-ITFRD-53	The system shall provide the ability to edit structured sets of drawing revisions for existing JEDMICS permanent data or for drawings that do not currently reside in the JEDMICS permanent data.
JEDMICS-ITFRD-54	The system shall provide the ability to delete sets of drawing revisions for existing JEDMICS permanent data.
JEDMICS-ITFRD-55	The system shall provide the ability to delete sets of drawing revisions for drawings that do not currently reside in the JEDMICS permanent data.
JEDMICS-ITFRD-56	The system shall provide the ability to delete structured sets of drawing revisions for existing JEDMICS permanent data or for drawings that do not currently reside in the JEDMICS permanent data.
JEDMICS-ITFRD-57	The system shall provide the ability to query for sets of drawing revisions.
JEDMICS-ITFRD-58	The system shall provide the ability to query for structured sets of drawing revisions using either the set name or structure name as the input.

## 4.8 Reports

The section describes the reports functionality in the system.

### 4.8.1 Query Return Results Report

The query return results reports allow the users to create a report from all query results screens.

**Table 12: Query Return Results Report**

ID	Requirement
JEDMICS-ITFRD-59	The system shall provide the ability to generate reports for all query result screens.

#### 4.8.2 Data List File Report

The data list file reports allow the users to create a formatted text file output from all query results screens.

**Table 13: Data List File Report**

ID	Requirement
JEDMICS-ITFRD-60	The system shall provide the ability to create a formatted text file output from all query results screens.

#### 4.9 Bulk Operations

The bulk operations function allows users to perform bulk input, report, edit and drawing export functions and administrators to check system health in off-line mode of operation.

**Table 14: Bulk Operations**

ID	Requirement
JEDMICS-ITFRD-61	The system shall provide the ability to perform bulk import operations.
JEDMICS-ITFRD-62	The system shall provide the ability to perform bulk reports.
JEDMICS-ITFRD-63	The system shall provide the ability to perform bulk editing operations.
JEDMICS-ITFRD-64	The system shall provide the ability to perform bulk drawing exports.
JEDMICS-ITFRD-65	The system shall provide the ability to validate the health of the system data and produce a report showing the results.

## 4.10 System Administration

The system administration function provides the capability to manage users' access to system functionality and data, validate the database integrity, and maintain system allowable values. The table lists requirements.

**Table 15: System Administration**

ID	Requirement
JEDMICS-ITFRD-66	The system shall provide the ability to administer the system resources.
JEDMICS-ITFRD-67	The system shall provide the ability to create, display, enable, and disable a User's account.
JEDMICS-ITFRD-68	The system shall provide the ability to manage a user's assigned rights to access system information and functionality.
JEDMICS-ITFRD-69	The system shall provide the ability to view all users and to filter the display of related account information.
JEDMICS-ITFRD-70	The system shall provide the ability to log all user management activity.
JEDMICS-ITFRD-71	The system shall provide the ability to restrict a user's access to drawings based on the metadata associated with the images.
JEDMICS-ITFRD-72	The system shall provide the ability to update the list of acceptable values for user managed, input restricted fields.
JEDMICS-ITFRD-73	The system shall provide the ability to report on and correct database integrity issues.

## 4.11 Help

The Help function provides the capability to present Help to the user. The table lists the requirements.

**Table 16: Help**

ID	Requirement
JEDMICS-ITFRD-74	The system shall provide the ability for users to access and view context sensitive help files fully describing the operation of the JEDMICS system.

## 5.0 Non-functional Requirements

### 5.1 Design Constraints

This section lists types of design constraints.

#### 5.1.1 Modes of operation

No modes of operation design constraints are identified.

### 5.1.2 Policy

The table lists policy design constraints that must met when designing the system.

**Table 17: Policy**

ID	Requirement
JEDMICS-ITFRD-75	The system shall provide the ability to comply with DoD Instruction 8500.1 Cybersecurity.
JEDMICS-ITFRD-76	The system shall provide the ability to comply with DoD Instruction 8500.2 IA Implementation.
JEDMICS-ITFRD-77	The system shall provide the ability to comply with DoD Instruction 8510.01 Risk Management Framework (RMF) for DoD IT.
JEDMICS-ITFRD-78	The system shall be developed and maintained in compliance with a Mission Assurance Capability (MAC) II system.

### 5.1.3 Accessibility

The table lists accessibility design constraints that must met when designing the system.

**Table 18: Accessibility**

ID	Requirement
JEDMICS-ITFRD-79	The system shall provide the ability to display a Section 508 compliant user interface.

### 5.1.4 Hardware and software requirements

The table lists hardware and software design constraints that must met when designing the system.

**Table 19: Hardware and Software**

ID	Requirement
JEDMICS-ITFRD-80	The system shall provide the ability to use a DoD approved web browser as a client.
JEDMICS-ITFRD-81	The system shall provide the ability to host the system in a DoD approved data center.
JEDMICS-ITFRD-82	The system shall provide the ability to operate on unclassified networks.
JEDMICS-ITFRD-83	The system shall be able to operate, for inquiry and report functions, using a DoD approved web browser on a mobile device.

### 5.1.5 Standards

No standards are identified.

## 5.2 Interface Requirements

This section identifies interface requirements

### 5.2.1 Internal interface requirements

There are no internal interface requirements.

### 5.2.2 External interface requirements

The table lists external interface requirements.

**Table 20: External Interface**

ID	Requirement
JEDMICS-ITFRD-84	The system shall provide the ability to interface with customer-developed Graphical User Interfaces (GUIs).
JEDMICS-ITFRD-85	The system shall provide the ability to interface with enterprise data management systems for the purpose of sharing data.
JEDMICS-ITFRD-86	The system shall provide the ability to interface with the Military Engineering Data Asset Locator System (MEDALS).

### 5.3 Performance Requirements

This section specifies performance requirements for the system.

No performance requirements are identified.

### 5.4 Safety Requirements

This section specifies safety requirements that are concerned with possible loss, damage, or harm to equipment or humans that could result from the use of the system.

No safety requirements are identified.

### 5.5 Security and Privacy Requirements

The table lists security and privacy requirements.

**Table 21: Security and Privacy**

ID	Requirement
JEDMICS-ITFRD-87	The system shall provide the ability to log all system activity and perform audits.
JEDMICS-ITFRD-88	The system shall provide the ability to authenticate users using a valid DoD Common Access Card (CAC) and certificate.
JEDMICS-ITFRD-89	The system shall provide the ability to perform a Single Sign On for authentication and authorization for all system functionality.

### 5.6 Software Quality Attributes

This section describes the Software Quality Attributes for the system. This section contains the following types of requirements: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, robustness, testability, and usability.

No software quality attributes are identified.

## 5.7 Common User Interface

This section describes the common user interface requirements.

**Table 22: Common User Interface**

ID	Requirement
JEDMICS-ITFRD-90	The system shall provide the ability to implement the ALE defined common user interface.

## 5.8 Business Rules

This section defines any operating principles about the product, such as which individuals or roles can perform which functions under specific circumstances.

No business rules are identified.