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DATA ITEM DESCRIPTION

1. TITLE	2. IDENTIFICATION NUMBER
INTERFACE DESIGN DESCRIPTION (IDD)	PPA-004611-6 30 September 2020

3. DESCRIPTION/PURPOSE OF THE IDD

3.1 The Interface Design Description (IDD) describes the interface characteristics of one or more items which may typically be referred to as systems, subsystems, Hardware Configuration Items (HWCIs), Computer Software Configuration Items (CSCIs), manual operations or other system components. An IDD may describe one or more interfaces.

3.2 The IDD is used in system development to communicate and control external interface design, at the most detailed level of definition of external interfaces, and consistent with requirements contained within the companion Interface Requirements Specification (IRS) (see PPA-002234). The IRS specifies interface requirements; the IDD describes interface characteristics selected to meet those requirements. The IDD can also be used to supplement the System/Subsystem Design Description (SSDD) (see PPA-003461), Software Design Description (SDD) (see TAA-ME04-001132), or Database Design Description (DBDD) (see TAA-ME04-001134).

4. APPLICATION/INTERRELATIONSHIP

4.1 This Data Item Description (DID) contains the format and content preparation instructions for the data product generated by the performance of design of an item at the level of detail which permits the item to be fabricated (hardware), coded (software) or converted to documented procedures (manual operations).

4.2 This DID is used when the developer is tasked to define and record the interface design.

5. PREPARATION GUIDELINES

5.1 General Instructions

The term “document” in this DID means data and its medium, regardless of the manner in which the data are recorded.

5.2 Content Requirements

Content requirements begin on page 3. The numbers shown designate the paragraph numbers to be used in the document. Each such number is understood to have the prefix "5.2" within this DID. For example, the paragraph numbered 1.1 is understood to be paragraph 5.2.1.1 within this DID.

continued next page

6. SOURCE

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5. PREPARATION GUIDELINES *continued*

5.3 Acronyms

Acronyms used in this document shall be interpreted as follows:

CC	Creative Commons
CDRL	Contract Data Requirements List
CSCI	Computer Software Configuration Item
DBDD	Database Design Description
DID	Data Item Description
HWCI	Hardware Configuration Item
IDD	Interface Design Description
IRS	Interface Requirements Specification
SDD	Software Design Description
SOR	Statement of Requirement
SOW	Statement of Work
SSDD	System/Subsystem Design Description

5.4 Abbreviations

Abbreviations used in this document shall be interpreted as follows:

SI	International System of Units

5.5 Foreword

Developing the IDD in accordance with this DID will assist in the management and execution of system and software developments, in situations where characteristics of an interface are not fully specified by interface requirements, i.e. are not specified at a level of detail sufficient for fabrication or coding, as applicable. In order to execute a project effectively, development teams often need to concurrently develop systems that share an interface. These teams must make interface design decisions that are consistent, and to a matching level of detail. When the IDD is populated as specified by this DID with information reflecting interface design decisions based on sound engineering judgement, the probability that the interfacing systems will interface correctly, and therefore be able to interoperate correctly, is increased. Stakeholder involvement to validate interface design decisions is encouraged. It is further recommended that any potential to use industry-recognized standards for the type of interface that is the subject of the IDD be considered.

The IDD additionally serves a purpose after completion of initial development of interfacing systems. That is, the IDD serves to define the interface characteristics needed of any form-fit-and-functionally equivalent replacement system.

5.6 IDD Requirements

Content requirements begin on page 3. The numbers shown designate the paragraph numbers to be used in the document.

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1. INTRODUCTION AND SCOPE

This section should be divided into the following paragraphs.

1.1 Identification

This paragraph should contain a full identification of the interfacing items and the interface(s) to which the IDD applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s) and release number(s). Where the interfacing items to which the IDD applies includes variants of the items, the above information should be provided for each variant.

1.2 Background and Intended Use

This paragraph should briefly state the intended use of the interfacing items to which the document applies, relating them to the interface described by the IDD. The paragraph should describe the general nature of the items and the interface(s), summarize the history of item development, operation, and maintenance (if any); and identify, as applicable, the project sponsor, acquirer, developer, user and support organizations.

1.3 Interface(s) Overview

This paragraph should summarize the requirements, the design and any other significant features of the interface(s) as described in the remainder of the IDD.

1.4 Document Overview and Use

This paragraph should summarize the purpose and contents of the IDD and should describe any security or privacy considerations associated with its use.

2. APPLICABLE AND REFERENCED DOCUMENTS

This section should list the number, title, revision and date of each document referenced in the SDD. This section should also identify the source of each document not available through normal channels.

2.1 Applicable Documents

This paragraph should list each document which is invoked in whole or in part within the SDD as a part of the interface design description.

2.2 Other Referenced Documents

This paragraph should list each document which is referenced in the IDD but which does not form a part of the design description.

3. DEFINITIONS, ACRONYMS AND ABBREVIATIONS

This section should be divided into the following paragraphs.

3.1 Definitions

This paragraph should list alphabetically and define each word or term used in the IDD for which reliance on dictionary definitions or usage in a relevant technical community is not appropriate. As a guide, terms which are not likely to be in the vocabulary of the intended users of the IDD, terms which have multiple dictionary meanings but only a single IDD meaning, specialist technical terms and terms which are used with special meanings should be defined in this paragraph.

Alternatively, this paragraph may specify by name and issue a suitable technical dictionary or other reference publication to be used in the interpretation of terms used in the IDD and which meets the criteria above for definition of terms.

3.2 Acronyms

This section should list alphabetically each acronym used in the IDD, together with the acronym's expanded meaning.

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3.3 Abbreviations

This section should list alphabetically each abbreviation used in the IDD, together with the abbreviation's expanded meaning, except that abbreviations within the International System of Units (SI) should not be listed.

4. INTERFACE DESIGN

This section should be divided into the following paragraphs to describe the interface characteristics of one or more interfaces of systems, subsystems, configuration items, manual operations, or other system components. If design information falls into more than one paragraph, the information may be presented once and referenced from the other paragraphs. If part or all of this information is documented elsewhere, the information may be invoked by reference. Design conventions needed to understand the design should be presented or referenced.

4.1 Interface Identification and Diagrams

For each interface identified in 1.1, this paragraph should state the project-unique identifier assigned to the interface and should identify the interfacing entities (systems, configuration items, users, etc.) by name, number, version, and documentation references, as applicable. The identification should state which entities have fixed interface characteristics (and therefore impose interface requirements on interfacing entities) and which are being developed or modified (thus having interface requirements imposed on them). One or more interface diagrams should be provided, as appropriate, to depict the interfaces.

4.x (Project-Unique Identifier of Interface)

This paragraph (beginning with 4.2) should identify an interface by project-unique identifier, should briefly identify the interfacing entities, and should be divided into subparagraphs as needed to describe the interface characteristics of one or both of the interfacing entities. If a given interfacing entity is not covered by this IDD (for example, an external system) but its interface characteristics need to be mentioned to describe interfacing entities that are, these characteristics should be stated as assumptions or as "When [the entity not covered] does this, [the entity that is covered] will ...". This paragraph may reference other documents (such as data dictionaries, standards for protocols, and standards for user interfaces) in place of stating the information here. The design description should include the following, as applicable, presented in any order suited to the information to be provided, and should note any differences in these characteristics from the point of view of the interfacing entities (such as different expectations about the size, frequency, or other characteristics of data elements):

a. priority assigned to the interface by the interfacing entity(ies);

b. type of interface (such as mechanical, real-time data transfer, storage-and-retrieval of data, etc.) to be implemented;

c. characteristics of individual data elements carried by the interface that the interfacing entity(ies) will provide, store, send, access, receive, etc., such as:
    i. names/identifiers:
        1. project-unique identifier;
        2. non-technical (natural-language) name;
        3. standard data element name;
        4. technical name (e.g., variable or field name in code or database);
        5. abbreviation or synonymous names;
    ii. data type (alphanumeric, integer, etc.);
    iii. size and format (such as length and punctuation of a character string);
    iv. units of measurement (such as meters, dollars, nanoseconds);
    v. range or enumeration of possible values (such as 0-99);
    vi. accuracy (how correct) and precision (number of significant digits);
    vii. priority, timing, frequency, volume, sequencing, and other constraints, such as whether the data element may be updated and whether business rules apply;
    viii. security and privacy constraints;
    ix. sources (setting/sending entities) and recipients (using/receiving entities);

d. characteristics of data element assemblies (records, messages, files, arrays, displays, reports, etc.) that the interfacing entity(ies) will provide, store, send, access, receive, etc., such as:
    i. names/identifiers:
        1. project-unique identifier;
        2. non-technical (natural language) name;

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3. technical name (e.g., record or data structure name in code or database);
4. abbreviations or synonymous names;

ii. data elements in the assembly and their structure (number, order, grouping);
iii. medium (such as disk) and structure of data elements/assemblies on the medium;
iv. visual and auditory characteristics of displays and other outputs (such as colors, layouts, fonts, icons and other display elements, beeps, lights);
v. relationships among assemblies, such as sorting/access characteristics;
vi. priority, timing, frequency, volume, sequencing, and other constraints, such as whether the assembly may be updated and whether business rules apply;
vii. security and privacy constraints;
viii. sources (setting/sending entities) and recipients (using/receiving entities);

e. characteristics of communication methods that the interfacing entity(ies) will use for the interface, such as:
i. project-unique identifier(s);
ii. communication links/bands/frequencies/media and their characteristics;
iii. message formatting;
iv. flow control (such as sequence numbering and buffer allocation);
v. data transfer rate, whether periodic/aperiodic, and interval between transfers;
vi. routing, addressing, and naming conventions;
vii. transmission services, including priority and grade;
viii. safety/security/privacy considerations, such as encryption, user authentication, compartmentalization, and auditing;

f. characteristics of protocols the interfacing entity(ies) will use for the interface, such as:
i. project-unique identifier(s);
ii. priority/layer of the protocol;
iii. packeting, including fragmentation and reassembly, routing, and addressing;
iv. legality checks, error control, and recovery procedures;
v. synchronization, including connection establishment, maintenance, termination;
vi. status, identification, and any other reporting features; and

g. other characteristics, such as physical compatibility of the interfacing entity(ies) (dimensions, tolerances, loads, voltages, plug compatibility, etc.).

5. NOTES

This section if used should contain: any general information that aids in understanding or using the IDD (e.g., background information, rationale).

This section may include the following paragraphs, as applicable.

5.1 Requirements Traceability

This paragraph, if used, should contain, if applicable:

a. traceability from each interface covered by this IDD to the interfacing entity requirement(s) addressed by the entity's interface design; and
b. traceability from each requirement of an interfacing entity that affects an interface covered in the IDD to the interfacing entities that address the requirement.

A. ANNEXES

Annexes may be used to provide information published separately for convenience in document maintenance (e.g., charts, databases). As applicable, each annex should be referenced in the main body of the document where the data would normally have been provided. Annexes may be bound as separate documents or prepared digitally for ease of use. Annexes should be lettered alphabetically (A, B, etc.).

Appendices may be used to annexes. Appendices should be numbered numerically (1, 2, etc.).

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