DATA ITEM DESCRIPTION

TITLE: Software Programmer's Guide

Number: DI-IPSC-81633
AMSC Number: F7478
DTIC Applicable: No
Preparing Activity: F/13
Applicable Forms: None

Approval Date: 20020813
Limitation:
GIDEP Applicable: No

Use/Relationships: The Software Programmer's Guide (SPG) provides information to enable a programmer to understand component internal and external interfaces and dependencies associated with a software program.

The SPG is developed for a specific computer configuration.

This data item description (DID) contains the format, content, and intended use information for the data deliverable resulting from the work task described in the statement of work.

This DID may be used with DID DI-IPSC-81435A, Software Design Description.

Requirements:

1.0 Reference documents. The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices, and revisions, shall be as cited in the current issue of the DODISS at the time of solicitation; or, for non DODISS-listed documents, as stated herein.

2.0 Format. The SPG format shall follow the format style used in the Joint Mission Planning System (JMPS) programmer's guide. The interfaces are defined in IDL files, and compiled into type libraries. The JMPS programmer's guide may be obtained by writing:

ESC/ACU
50 Griffis Street
Hanscom AFB, MA 01731-1625

or

Naval Air Systems Command
47123 Buse Road
Unit IPT Bldg 2272, Suite 453
Patuxent River, MD 20670-1547

3.0 Content. The SPG shall include the following:

a. Cover Page
b. Table of Contents
c. Scope
d. Referenced Documents
e. General Information
f. Programming Specific Information
g. Notes

h. Appendixes

3.1 Cover Page. This page shall contain the document control number in the upper right-hand corner. In the center of the page, these words shall appear in the following format:

SOFTWARE PROGRAMMER'S GUIDE

FOR THE

[PROJECT NAME]

CONTRACT NO.[contract number]

CDRL SEQUENCE NO. [CDRL number]

[Date of document -day month year]

Prepared for:

[Contracting Agency Name, department code]

Prepared by:

[Contractor name and address]

3.2 Table of Contents. This manual shall contain a Table of Contents listing the title and page number of paragraphs and subparagraphs. The Table of Contents shall list the title and page number of all figures, appendixes, in that order.

3.3 Scope. This section shall be divided into the following paragraphs.

3.3.1 Identification. This paragraph shall contain the approved identification numbers, titles, and if applicable, abbreviations of the system, components, dependent components, operating system, to which this SPG applies. This paragraph shall begin with the following sentence: “This Software Programmer’s Guide provides information to facilitate programming or modifying the software of the (insert title, if applicable insert abbreviation in parenthesis, insert system identification number) System”. It is applicable to the following components(s) (insert title(s), if applicable insert abbreviation(s) in parenthesis, insert Components identification number(s), for the target computer (insert title, computer identification number), if applicable insert abbreviation in parenthesis, insert host computer identification number).”

3.3.2 Purpose. This paragraph shall state the purpose of the system, and identify the computer operating system to which this SPG applies.

3.3.3 Introduction. This paragraph shall summarize the purpose and contents of this document.

3.4 Reference Documents. This section shall list by document number and title all documents referenced in this manual. This section shall also identify the source for all documents not available through normal Government stocking activities.

3.5 General Information. This section shall be divided into the following paragraphs, as applicable, to describe the components of and the programming information for the computer systems.

3.5.1 Software Configuration. This paragraph shall briefly describe the components of the computer system.

3.5.2 Operational Structure. This paragraph shall describe the operating characteristics, capabilities, and limitations of the computer systems relevant to the programming function. If this information is provided in a commercially available document, then this paragraph shall identify the document by title and number and shall reference appropriate sections of the document. Otherwise, this paragraph shall describe (as applicable):

a. Minimum configuration required
b. Memory capacity and characteristics
c. Administration instructions
d. Modes of operation (e.g., batch, interactive, etc.)
e. Error indicators
f. Input/output characteristics
g. Special features

3.5.3 Build Process Compilations and Assemblies. This paragraph shall provide a description of development environment, such as use of Visual Studio C++ or Visual Basic for programming environment. In addition, it shall define a build process, configuration management tools to control the baseline development, methodology to monitor and control baseline versioning, style guides, and programming standards. This paragraph shall describe the equipment (e.g. tapes, disks, and peripheral equipment) necessary to perform compilations and assemblies of software on the system. This paragraph shall identify (as applicable) by name and version number, the editor, linker, link-editor, compiler, assembler, cross-compilers, cross-assemblers, operating system, and any other utilities used and shall reference the appropriate manuals describing their use. This paragraph shall also highlight any special flags or instructions necessary for loading, executing, or recording the results of compilations and assemblies. Finally, it shall provide descriptions of the COTS products used and the licensing requirements.

3.6 Programming Specific Information. This section shall be divided into the following paragraphs, as applicable.

3.6.1 Component Interfaces. The interfaces are defined in IDL files, and compiled into type libraries. This paragraph shall describe necessary items to effectively document the programming interface and include the detailed information required to understand programming of the computer interfaces.

a. Interface description a description of how the component operates internally.
b. Description of inputs/outputs of methods, including data representation.(e.g., byte, word, integer, floating-point, packed decimal, and double precision)
c. Ranges (such as 0-99)
d. Accuracy (correctness)
e. Priority
f. Data structures (trees, link-list)
g. Semantics of data and integrity rules
h. Units of measure (such as meters, nanoseconds)
i. Events
j. States
k. Pre/Post conditions
l. Error conditions
m. Algorithm description, if applicable
n. Security and privacy considerations
o. Constraints
p. Limitations

3.6.2 Component Features. This paragraph shall describe the programming features of the computer software from the programmer's point of view. This paragraph shall describe (as applicable):

a. Logical Data Model defining the entities of the system and their relationships.
b. Data dictionary
c. Physical Data Model
d. Performance built-in software
e. Identify States/Modes
f. All methods are public methods (e.g. non-reentrant, reentrant, macrocode routines, argument lists, and parameter passing conventions (call by name and call by value))
g. Patch Features
h. Memory Protection Features. (e.g. read-only memory)
i. Additional Features. A separate paragraph shall be prepared for each additional feature

3.6.3 Program Instructions. This paragraph shall contain a detailed description of the architecture applicable to external interfaces and dependencies. If this information is provided in other available documents (e.g. commercially available documents, MIL-STD(s)), then this paragraph shall identify the document by title and number and shall reference appropriate sections of the document. Otherwise, for each instruction the following (as applicable) shall be described:

a. Top level architecture
b. Use of external interfaces, referencing specific Interface Control Documents (ICDs)
c. Timing budget allocation to components
d. Execution time of component
e. Conventions (Naming, XML, Mnemonic)

f. Other characteristics.

3.6.4 Programming Examples. This paragraph shall present examples of programming techniques that adequately demonstrate the accepted methods of using the instructions in the instruction set architecture of the target computer system. This paragraph shall include examples of the proper use of all categories of instructions. The examples shall demonstrate the use of programming techniques on the specific target computer system (e.g. instructions, statements).

3.6.5 Additional or Special Technologies. This paragraph shall describe any additional or special techniques of the prescribed language not included elsewhere.

3.6.6 Error Detection and Diagnostic Features. This paragraph shall describe the error detection and diagnostic features of the assembly language, machine language, or higher order language. This description shall include condition codes, overflow and addressing exception interrupts, and input and output error status indicators.

3.7 Notes. This section shall contain any general information that aids in understanding this document (e.g. background information, glossary). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document.

3.8 Appendixes. Appendixes may contain any supplemental information which is published separately for convenience in document maintenance (e.g. charts, classified data). Appendixes may be bound as separate documents for ease in handling. Appendixes shall be numbered sequentially in Roman numeral (I, II, etc). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided.

End of DI-IPSC-81633