Designation: F1716 − 96 (Reapproved 2022)

Standard Guide for
Transition and Performance of Marine Software Systems Maintenance[1]

1. Scope

1.1 This guide covers a recommended plan for transition and acceptance of marine software that was developed by an activity other than the maintaining activity. It further provides a recommended iterative process model for managing and executing software maintenance activities.

1.2 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]
E622 Guide for Developing Computerized Systems (Withdrawn 2000)[3]
E919 Specification for Software Documentation for a Computerized System (Withdrawn 2000)[3]
E1013 Terminology Relating to Computerized Systems (Withdrawn 2000)[3]

2.2 *IEEE Standards:*[4]
100 Standard Dictionary for Electrical and Electronic Terms
610 Standard Glossary of Software Engineering Terminology
1063 Standard for Software User Documentation
1074 Standard for Developing Software Life Cycle Processes
1219 Standard for Software Maintenance

2.3 *ANSI Standards:*[5]
ANSI/ISO/ASQC Q9000—3 Quality Management and Quality Assurance Standards: Guidelines for the Application of ANSI/ISO/ASQC Q 9001 to the Development, Supply and Maintenance of Software
ANSI/ISO/ASQC Q 9001 Quality Systems—Model for Quality Assurance in Design, Development, Production, Installation and Servicing

2.4 *Military Standards and Specifications:*[6]
MIL-STD 498 Software Development and Documentation

3. Terminology

3.1 The terminology used in this guide is defined in Terminology E1013 and Guide E622.

3.2 Other computer-related terms in this guide are defined in IEEE 100 and IEEE 610.12.

4. Significance and Use

4.1 This guide provides a recommended transition plan for a marine software maintainer, when the maintainer is other than the supplier, to develop the capability to make extensive changes or extensions to the programs. Further, this guide provides a recommended interactive process model for managing and executing software maintenance activities. This guide applies principally to the marine software that requires design effort and for which the product requirements are stated principally in performance terms.

5. Software Transition Plan

5.1 The software transition plan is developed when the software support concept calls for transition of responsibility from the developer to a separate support agent. The software transition plan identifies hardware, software, and other resources needed for life cycle support of deliverable software and describes the developer's plans for transitioning deliverable items to the support agent. The developer shall identify all software development resources needed by the support agent to

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[1] This guide is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.05 on Computer Applications.
Current edition approved Feb. 1, 2022. Published April 2022. Originally approved in 1996. Last previous edition approved in 2015 as F1716 – 96 (2015). DOI: 10.1520/F1716-96R22.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

[4] Available from Institute of Electrical and Electronics Engineers, Inc. (IEEE), 445 Hoes Ln., P.O. Box 1331, Piscataway, NJ 08854-1331, http://www.ieee.org.

[5] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

[6] Available from DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA 19111-5094, http://quicksearch.dla.mil.

fulfill the support concept specified in the contract. The developer shall develop and record plans identifying these resources and describing the approach to be followed for transitioning deliverable items to the support agent. The planning shall include the following.

5.1.1 *Software Support Resources*—Description of the resources needed to support the deliverable software. These resources shall include items needed to control, copy, and distribute the software and its documentation, and to specify, design, implement, document, test, evaluate, control, and distribute modifications to the software. This includes needed compilers, linkers, locators, mappers, and tools such as configuration utilities. In addition, include as applicable, any special operating systems.

5.1.2 *Facilities*—Description of the facilities needed to support the deliverable software. These facilities may include special rooms, mock-ups, special power requirements, and so forth.

5.1.3 *Hardware*—Identification and description of the hardware and associated documentation needed to support the deliverable software. This hardware may include computers, peripheral equipment, hardware simulators, stimulators, emulators, diagnostic equipment, and non-computer equipment. The description shall include:

5.1.3.1 Specific models, versions, and configurations.

5.1.3.2 Rationale for the selected hardware.

5.1.3.3 Reference to user/operator manuals or instructions for each item, as applicable.

5.1.3.4 Identification of each hardware item and document as acquirer-furnished, any item that will be delivered to the support agent, any item the support agent is known to have, any item the support agent must acquire, or other description of status.

5.1.3.5 When items must be acquired, information about a current source of supply, including whether the item is currently available and whether it is expected to be available at the time of delivery.

5.1.3.6 Information about manufacturer support, licensing, and data rights, including whether the item is currently supported by the manufacturer, whether it is expected to be supported at the time of delivery, whether licenses will be assigned to the support agent, and the terms of such licenses.

5.1.3.7 Privacy considerations or limitations.

5.1.4 *Software*—Identification and description of the software and associated documentation needed to support the deliverable software. This software may include computer-aided software engineering (CASE) tools, data in these tools, compilers, test tools, test data, simulations, emulations, utilities, configuration management tools, databases and data files and other software. The description shall include:

5.1.4.1 Specific names, identification numbers, version numbers, release numbers, and configurations, as applicable.

5.1.4.2 Rationale for the selected software.

5.1.4.3 Reference to user/operator manuals for instructions for each item, as applicable.

5.1.4.4 Identification of each software item and document as acquirer-furnished, any item that will be delivered to the

support agent, any item the support agent is known to have, any item the support agent must acquire, or other description of status.

5.1.4.5 When items must be acquired, information about a current source of supply, including whether the item is currently available and whether it is expected to be available at the time of delivery.

5.1.4.6 Information about vendor support, licensing, and data rights, including whether the item is currently supported by the vendor, whether it is expected to be supported at the time of delivery, whether licenses will be assigned to the support agent, and the term of such licenses.

5.1.4.7 Privacy considerations and limitations.

5.1.4.8 Certification of virus protection measures taken including identification and version of software used.

5.1.5 *Other Documentation*—Identification of any other documentation needed to support the deliverable software. This list will include, for example, plans, reports, studies, specifications, design descriptions, test cases/procedures, test reports, user/operator manuals, and support manuals for the deliverable software, including the following:

5.1.5.1 Names, identification numbers, version numbers, and release numbers as applicable.

5.1.5.2 Rationale for including each document.

5.1.5.3 Identification of each document as acquirer-furnished, any item that will be delivered to the support agent, any item the support agent is known to have, any item the support agent must acquire, or other description of status.

5.1.5.4 When a document must be acquired, information about where to acquire it.

5.1.5.5 Information about licensing and data rights.

5.1.5.6 Privacy and limitations.

5.1.5.7 *Beta Testing and Verification and Validation Records*—Records of Beta Testing and Verification and Validation shall be provided if applicable.

5.1.5.8 Description of significant problems and changes made during the development process.

5.1.6 *Personnel*—Description of the personnel needed to support the deliverable software, including anticipated number of personnel, and types and levels of skills and expertise.

5.1.7 *Other Resources*—Identify any other resources needed to support the deliverable software, including consumables.

5.1.8 *Interrelationship of Components*—Identify interrelationships of the components identified above. Figures may be used to show interrelationships.

5.1.9 *Recommended Procedures*—Describe any procedures, including advice and lessons learned, that the developer may wish to recommend to the support agent for supporting the deliverable software and associated support environment.

5.1.10 *Training*—Describe the developer's plans for training support personnel to support the deliverable software.

5.1.11 *Anticipated Areas of Change*—Describe anticipated areas of change to the deliverable software.

5.1.12 *Transition Planning*—Planning shall be performed for all activities to transition the deliverable software to the support agent. Plans for transitioning the deliverable software to the support agent shall address the following: