DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, DC 20350-2000

IN REPLY REFER TO
OPNAVINST 1500.73
OP-111
28 JUL 1992

**OPNAV INSTRUCTION 1500.73**

From: Chief of Naval Operations

Subj: DEVELOPMENT, ACQUISITION, AND MANAGEMENT OF INTERACTIVE COURSEWARE (ICW) FOR NAVY TRAINING

Ref: (a) DODINST 1322.20 of 14 Mar 91 (NOTAL)
(b) MIL-STD 1379D (NOTAL)
(c) OPNAVINST 1500.8M (NOTAL)
(d) OPNAVINST 1500.51B (NOTAL)
(e) OPNAVINST 1550.8B (NOTAL)
(f) OPNAVINST 5000.50A (NOTAL)
(g) OPNAVINST 5290.1A (NOTAL)
(h) SECNAVINST 5231.1B (NOTAL)
(i) SECNAVINST 5239.2 (NOTAL)
(j) MIL-HDBK 284-1-2-3 (NOTAL)
(k) DoD STD 2167A (NOTAL)
(l) MILSTD 1472D (NOTAL)
(m) DoD 7750.5-M of Nov 86 (NOTAL)

Encl: (1) Navy Advisory Group on Interactive Courseware (NAGIC)
(2) DITIS Guidance
(3) Definitions
(4) Front End Analysis (FEA) Report Guidance
(5) Standards for ICW Hardware/Software/Courseware
(6) Guidelines for the Implementation of Formative Evaluation
(7) Life Cycle Management Plan
(8) Training Effectiveness Evaluation Plan
(9) ICW Hardware Designator Numbers

1. Purpose

a. To provide policy, prescribe procedures, assign responsibilities, and establish information requirements for the development, acquisition, and management of Navy interactive courseware (ICW) training.

b. To establish a Navy Advisory Group on ICW as outlined in enclosure (1) and require query of and entry into the Defense Instructional Technology Information System (DITIS) ICW inventory per reference (a) using the guidance in enclosure (2).

c. To implement references (a) and (b) to promote cost effective military training and provide guidance for the development, management, and efficient distribution of Navy ICW programs that are readily portable to all potential

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users. To direct the use of reference (b) in the analysis of the job and related training requirements, and the design and development of Navy ICW programs.

2. Background. In order to achieve training effectiveness and cost effective training systems by using interactive courseware training technology, it is necessary to unify and systematize its acquisition and application in training. References (b) through (e) are the existing guidance pertaining to training requirements determination and development. Reference (f) contains guidance for the acquisition of training devices. Reference (g) contains guidance for acquisition of audio visual systems. Reference (h) contains guidance for acquisition of information systems. Reference (i) outlines information systems security. Reference (j) provides detailed guidance for the acquisition of ICW training. Reference (k) contains DoD guidance for software development. Reference (l) contains guidance for user-computer interface, and reference (m) provides procedures for management of information requirements.

3. Applicability and Scope. This instruction applies to all Navy active and reserve components. United States Marine Corps will issue its own guidance for this training capability.

a. This instruction applies to all ICW developed for or by the Navy, including ICW programs developed in conjunction with weapon system acquisition. ICW refers to all computer controlled courseware that relies on trainee input to determine the pace, sequence or content of training delivery.

b. Specifically excluded from this instruction are full scale simulators and embedded trainers with computer-controlled training capabilities embedded in, or attached to, actual tactical equipment, per reference (a). Also excluded are the actual equipment or simulated equipment in part task trainers when such equipment is not integral to the courseware and is required for program performance. This instruction applies to portable courseware that is not integral to such equipment.

4. Definitions. Definitions of selected terms are provided in enclosure (3).

5. Policy. The Chief of Naval Operations policy is to use the most cost effective and appropriate method for the delivery of training as determined by instructional media analysis. Front end analysis (FEA) will be documented. When ICW is appropriate to meet the training objective the following will pertain:

a. Course materials will be portable among the DoD Components, and comply with the standard DoD programming protocols as stated in reference (a) and technical requirements of reference (b).

b. The Government shall not agree to pay royalties, recurring license or run-time fees, use tax, or similar additional payments for courseware, associated presentation programs necessary to interpret and execute the courseware, documentation, or associated training materials for ICW programs developed for or by the Department of the Navy (DON).

c. An inventory of ICW programs shall be maintained to assist Navy and Department of Defense (DoD) components to effectively and efficiently manage their ICW resources. This inventory shall be retained in the DITIS. The inventory shall be queried before the development of a new ICW program to determine if a program exists in the inventory that can be used or cost-effectively modified to meet new training needs.

d. Reproduction Master Materials and all materials necessary to modify the ICW courseware shall be archived by the developer or his or her designee for the life cycle of each ICW program.

e. Computer-aided Acquisition and Logistic Support (CALS) guidelines will be complied with in the acquisition of ICW. The application of CALS standards to training is included in reference (b).

f. ICW portability conformance is the responsibility of the developing agency initially and the Training Agent or Life Cycle Manager (LCM) after acceptance.

g. Life cycle management plans shall identify support and configuration management requirements and procedures for courseware and supporting software which make up the ICW training system per guidance derived from reference (k).

h. An initial assessment of the Training Effectiveness Evaluation (TEE) requirements will be addressed in a TEE plan prior to planned installation.

6. Procedures

a. Development

(1) The decision to use ICW shall be based on a comprehensive analysis of the total training system requirements and a media selection analysis to determine if the use of ICW is a training and cost effective means for presenting training materials when compared with other potential training media. These analyses will be performed per reference (b) and the results documented per guidelines of enclosure (4).

(2) Developers of ICW shall review the DITIS courseware inventory following requirements definition and before ICW program development or acquisition to determine what existing products meet or can be modified cost-effectively to meet new training needs. Guidance is provided by reference (a) and enclosure (2).

(3) ICW developers shall ensure their courseware meets the portability requirements of reference (a). The ICW developers shall also ensure their hardware system has been certified and that it conforms to the interface requirements through conformance testing. In order to provide assistance for potential ICW developers, three guidelines have been prepared:

(a) ICW Guidelines for Hardware/Software Selection. Enclosure (5) provides hardware, operating system, interface, and software standards.

(b) ICW Style Guide Topical Outline. The development of a style guide is recommended for any ICW development effort. It clarifies the requirement and provides consistent guidance to all members of the ICW development team. Most importantly, it increases the likelihood that the resulting ICW will be well designed and consistent within its target audience. A topical outline of the general categories to be included in a style guide development effort is provided in enclosure (5) as guidance.

(c) Computer-Managed Training Data Guideline and Standard Categories: an ICW training system's design should include a specification of the categories of information about trainees that will be collected, and the reasons for its collection. An outline of the computer-managed instruction (CMI) data elements to consider is provided in enclosure (5).

(4) Developers shall obtain, to the extent authorized by the Federal Acquisition Regulations (FAR), unlimited rights or Government-purpose license rights to the courseware, associated presentation programs necessary to develop, interpret, and execute the courseware, documentation, and associated training materials for all ICW programs developed for or by the DON. These rights shall include the royalty-free rights to use, duplicate, and disclose data for Government purposes and to permit others to do so for Government purposes.

(5) When special-purpose software (e.g., simulation model, unique device driver, or a course management feature not supported by the authoring system) is developed for an ICW program, follow the procedures and requirements per reference (k).

(6) As required by reference (a), developers shall conduct a formative evaluation during the development of prototype ICW programs using a sample representative of the target trainee population per reference (b) and enclosure (6). The evaluation will be used to assess ICW content and accuracy, program effectiveness, training objective achievement, ease of program use and graphic use, and documentation effectiveness. User-computer interface design guidelines provided in reference (l) will be utilized for screen design and graphics use. Discrepancies in the design, including courseware content and associated software, shall be corrected, and the system retested and verified before acceptance, distribution and use.

(7) For ICW programs that are an integral part of a training system supporting a weapon system or equipment, ICW life cycle support and configuration planning requirements will be documented in an attachment to the parent training system life cycle management plan. For ICW programs not integral to a parent training system, a stand-alone life cycle management plan and configuration management plan will be developed. An outline of a life cycle management plan is provided in enclosure (7).

(8) As required by reference (a), developers shall evaluate the training effectiveness of all ICW programs and document the results of the evaluations per reference (b) and guidance provided in enclosure (8). The TEE is a combination of an operational effectiveness evaluation and a student performance evaluation to assess the effectiveness of a training alternative. It is performed 6 months after first use of a course. Developers shall prepare the TEE plan prior to installation of the ICW. Evaluations shall identify lessons learned and the extent to which specified training objectives and performance goals are met.

(9) Stand-alone ICW programs that are classified as training devices shall also follow the guidance of reference (f). Life cycle management of ICW programs that are classified as audiovisual (AV) productions or visual information (VI) products also shall follow the procedures of reference (g). ICW programs that are classified as information systems (IS) products shall also follow the procedures of references (h) and (i).

(10) CALS guidance shall be properly applied in the acquisition of ICW. Applicable standards, specifications, and handbooks must be referenced in contract solicitations, and statements of work under applicable documents as required by reference (b).

b. Management

(1) Each ICW program shall be life cycle managed by the procuring activity (developer), the life cycle manager, or its designee. This activity shall be responsible for maintenance of courseware, associated materials, documentation, and administrative records. The life cycle management activity shall insure that:

(a) A record copy shall be retained by the developing agency, life cycle manager, or its designee and reproduction master materials will be retained by the LCM for all assigned ICW programs throughout the program life cycle. Master materials that are necessary to reproduce or modify any or all components of an ICW shall also be retained. These are specified by DI-ILSS-81091, DI-ILSS-81092, and DI-ILSS-81093 of reference (b).

(b) An executable LCM circulation copy of all assigned ICW courseware (including associated presentation programs necessary to interpret and execute the courseware, support software, and user documentation) shall be retained by the procuring activity or its designee for the life cycle of the program for review by requesting activities and organizations to determine the program's applicability to their training requirements.

(2) The courseware developer, course curriculum model manager (CCMM), or his or her designee shall ensure the life cycle availability of the version of the authoring program, assembly language, or higher order language compiler used to develop the courseware; source code for the courseware; concomitant documentation; all associated software libraries; and all other materials necessary and sufficient to modify the courseware.

(a) If these materials are acquired as part of the ICW procurement or are developed using Government authoring tools, a copy shall be archived throughout the life cycle of the ICW program.

(b) If these materials are not acquired as part of the ICW procurement, the developer shall require the contractor to archive, escrow with a third party, or otherwise ensure their availability throughout the life cycle of the ICW program.

7. Responsibilities

a. The Chief of Naval Operations

(1) Deputy Chief of Naval Operations (Manpower, Personnel and Training (DCNO MPT) (OP-01) shall:

(a) Provide oversight for meeting ICW training standards and specifications per reference (a).

(b) Coordinate ICW program requirements, having joint application, with other DoD Components and Federal Agencies.

(c) Ensure provision of a permanent member to the DoD Advisory Group on ICW (DAGIC) per reference (a).

(d) Convene and chair a Navy Advisory Group on ICW (NAGIC).

(2) OPNAV Principal Officials (less Special Assistants and OP-01) shall:

(a) Review and approve training requirements for ICW programs for which there is mutual responsibility.

(b) Ensure that ICW programs developed for them have been documented with FEA, TEE, and LCM reports and they have been entered in the DITIS database.

b. Program Sponsors shall:

(1) Require that ICW programs are designed to promote portability and shall comply with standard DoD programming protocols and other technical requirements prescribed in reference (b) as documented in conformance tests.

(2) Require that ICW analysis and development are documented by a FEA, TEE and LCM plan, and appropriately entered in the DITIS.

(3) Designate a TEE Agent.

(4) Approve ICW in program planning and programming documents.

c. The Resource Sponsor shall:

(1) Participate fully with program sponsors (if different) in the review and approval of training requirements for ICW training.

(2) Plan, program, and budget for ICW training resource requirements. This includes the resources required to conduct the FEA, TEE, and LCM plan and the various life cycle developer responsibilities outlined in paragraph b. When applicable these resources may be identified in the parent weapon system documentation.

(3) Address ICW in new procurement Navy Training Plans (NTPs) and provide appropriate inputs to the NTP when ICW is updated due to weapon system modification.

(4) Identify the type of ICW procurement when funded for acquisition.

d. The Systems Commanders (SYSCOMS), Training Support Agents (TSA), and Chief, Bureau of Medicine and Surgery (BUMED) shall:

(1) Review training system design and acquisition instructions under their purview and revise as necessary to implement the provisions of ICW described herein.

(2) Address ICW in the overall training system acquisition strategy to comply with this instruction where ICW is a part of the training system.

(3) Assign responsibilities for ICW life cycle manager for a stand alone system or in coordination with the parent weapon system.

(4) Assign a DITIS manager to ensure compliance of DITIS search and entry for ICW acquired under their purview.

(5) Ensure their ICW conforms to portability requirements of reference (a).

(6) Ensure their ICW developers provide storage for their ICW master materials and associated documentation.

e. Commander, Naval Air Systems Command (COMNAVAIRSYSCOM). In addition to its responsibilities listed in paragraph d above, COMNAVAIRSYSCOM shall:

(1) Provide technical assistance as requested to support ICW development, standards, and promote ICW portability as required by reference (a).

(2) Establish and maintain an ICW new development hardware designator numbering system.

f. The Training Agent (TA) shall:

(1) Identify ICW in program planning and programming documents.

(2) Assist the sponsor in the preparation of the FEA, TEE, and Formative Evaluation reports.

(3) Participate in the conduct of TEE and Formative Evaluations.

(4) For ICW life cycle supported by a TA, serve as DITIS manager for procurements and ensure input of ICW data in DITIS for existing and new developments under their purview.

(5) If ICW supports fleet needs request Fleet Commander in Chiefs (FLTCINCs) review and comment.

(6) For ICW TA supported ensure their ICW conforms to portability requirements of reference (a).

(7) Ensure that the developer, CCMM, or his or her designee shall provide a means for storing reproduction master materials and all materials necessary to modify the ICW courseware and provide a circulation copy upon request for ICW under their purview.

g. Chief of Naval Education and Training (CNET) In addition to paragraph (f) above CNET shall:

(1) Serve as the DITIS manager for ICW under his purview, and ensure completion of DITIS searches during training alternative analysis, and ensure entry of ICW inventory data for all CNET ICW in DITIS.

(2) Coordinate the assignment of subject matter experts (SMEs), when requested, to evaluate ICW developments.

8. Action

a. Applicable Navy activities shall immediately implement this instruction.

b. Existing ICW Programs. ICW programs already developed or under development shall be made compliant with this instruction if economically feasible, or phased out at the end of their useful lives. In addition, all existing programs shall comply with the DITIS reporting requirements in reference (a). Existing programs that require the Government to pay

royalties, recurring license or run-time fees, use tax, or similar additional payments for courseware, associated presentation programs necessary to interpret and execute the courseware, documentation or associated training materials developed for the Navy shall be made compliant with reference (a) at the most advantageous time for renegotiation of that contract clause.

9. Information Requirements

a. Requirements analysis and training effectiveness evaluation reports for all non-intelligence related ICW programs -- up to and including the "Secret" classification level -- shall be submitted through command channels to the Defense Technical Information Center (DTIC) within 30 days of the report completion.

b. Information and reports regarding intelligence-related ICW programs shall be reported and maintained following the guidance of the Naval Intelligence Command.

c. All ICW programs documenting student progress must meet appropriate security requirements with at least Unclassified sensitive (Privacy Act) information.

d. When a notice of proposed ICW procurement is published in the "Commerce Business Daily" (CBD), it shall be provided for inclusion under the section entitled "Training Services" or the section entitled "Training Aids and Devices." Upon contract award, the contract title, the contractor name, and the total contract cost shall be announced in the CBD.

e. Information regarding all non-intelligence related ICW programs -- up to and including the "Secret" classification level -- shall be reported and maintained in the DITIS per reference (a) using the process outlined in enclosure (2). These reporting requirements complement but do not supplant the report requirements of the Defense Automated Visual Information System (DAVIS) in reference (g). To complete the DITIS data on hardware, a designator number identifying new development hardware which is purchased to run ICW training will be assigned per guidance in enclosure (9).

f. The information requirements in subsections 7a, 7b, and 7e, above are exempt from licensing per paragraph G10 of SECNAVINST 5214.2B.

10. Forms. DD 2568 (6/91), Defense Instructional Technology Information System (DITIS) Report, is available from the Chief of Naval Operations (OP-111E).

R. J. ZLATOPER

Deputy Chief of Naval Operations
(Manpower, Personnel and Training)

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# NAVY ADVISORY GROUP ON INTERACTIVE COURSEWARE (NAGIC)

## 1.0 PURPOSE

1.1 The primary purpose of the Navy Advisory Group on ICW (NAGIC) is to monitor and update ICW standards to keep them current with advances in technology.

1.2 The NAGIC shall advise and assist the Chief of Naval Operations Naval Training Oversight Committee (NTOC) on ICW policy, planning, management and standards.

## 2.0 MEMBERSHIP

2.1 The NAGIC consists of applicable NTOC representation, as outlined in reference (d), with others, as appropriate. The OP-11 representative will serve as chair.

2.2 Working groups shall be instituted by the Chair as required.

## 3.0 SCHEDULE

3.1 The NAGIC shall meet semiannually, or as required by the Chair.

**DITIS GUIDANCE**

**1.0 PURPOSE.** To provide guidance necessary to query and input data into the Defense Instructional Technology Information System (DITIS).

**2.0 SUBMIT REQUEST.** Queries may be made electronically, telephonically, or in writing. It is planned to establish an on-line system for computer modem access. In the interim however, contact:

DITIS Project Manager
Defense Manpower Data Center (DMDC)
99 Pacific Street
Suite 155A
Monterey, CA 93940-2453

(408) 655-0400
(DSN) 878-2951
(800) NET-DMDC (Data, modem)

**3.0 INFORMATION REQUEST.** The following information must be included in the request for DITIS data:

3.1 Full name of requester, complete mailing address of the requesting activity and both commercial and autovon/defense communications telephone network phone numbers including the information items contained in Sections I and II of DD Form 2568.

3.2 To query the system it is also necessary to identify key words of interest. There will be no catalog printed or distributed.

**4.0 DATA INPUT REQUEST.**

4.1 Use data entry form in accordance with reference (a). Data entry may also be entered on a disk provided upon request. All DITIS information is to be unclassified.

**DEFINITIONS**

1. Audiovisual (AV) Production. A visual information production that combines motion media with sound in a self-contained, complete presentation, developed according to a plan or script for conveying information to, or communicating with, an audience.

2. Cost-Effectiveness. The relative efficiency of alternative training methods and media in accomplishing a goal or objectives.

3. Courseware. Training materials, including the curriculum database and all discs, tapes, books, charts, and computer programs necessary to deliver a complete ICW program. Courseware includes special application programs and other software necessary to interpret and execute an ICW program.

4. Defense Automated Visual Information System (DAVIS). A standard, DoD-wide automated data processing system for managing visual information (VI) at the DoD Component and major command levels. DAVIS includes a production database covering production, acquisition, inventory, distribution, product status and archival control of audiovisual productions and VI materials, and a VI facilities database that includes activities, facilities, personnel, and funds.

5. Defense Instructional Technology Information System (DITIS). A standard, DoD-wide database designed to facilitate ICW resource sharing within the DoD Components by providing a central source of ICW information. The DITIS database provides information on all DoD-owned ICW programs, whether fielded or under development, including information on delivery systems, operating software, authoring tools, and courseware.

6. Developer. The developer is the activity who generates ICW either through in-house development or through procurement action.

7. Effectiveness. The degree to which a product or program meets its stated goals or objectives.

8. Efficiency. The extent to which resources are used economically while achieving effectiveness. Efficiency refers to resource investments required to achieve specific objectives or requirements.

9. Embedded Training. Training involving simulation or stimulation of operational equipment performance in addition to the equipment's primary operational function(s). Training provided by capabilities not specifically required for mission completion, but that are built into or added onto operational systems, subsystems, or equipment to enhance or maintain user skill proficiency.

10. Front End Analysis (FEA). A systematic process in which: (1) The component tasks and the knowledge, skills, and abilities (KSAs) necessary to perform these tasks are determined for a job; (2) tasks are selected for training based on the determination of which KSAs are not already in the trainee's repertoire; and (3) job-related performance criteria are developed to measure trainees' ability to satisfy job requirements.

11. Full-Scale Simulator. A training device that simulates the salient features of the equipment and environment for all major tasks for a particular mission on a given weapon system.

12. Information Resources Management (IRM). The planning, budgeting, organizing, directing, training, promoting, controlling, and management activities associated with the collection, creation, use, and dissemination of information, including the management of information and related resources such as personnel, funds, and information technology.

13. Interactive Courseware (ICW). Computer-controlled training that relies on trainee input to determine the order and pace of training delivery.

14. Interactive Courseware (ICW) Program. An assembly or series of closely-related ICW lessons and concomitant training materials and documentation that are grouped together under a single course identification number. An ICW program is designed to present trainees within a given specialty code or series of specialty codes with information on a set of operationally-related tasks or duties. An ICW program comprises one or more lessons (i.e., segments of instruction designed to teach one or more training objectives) which may be grouped into separate modules that can be taught, measured, and evaluated as a single unit.

15. Interactive Videodisc (IVD). A visual medium for training delivery that integrates videodisc with computer technologies to provide a high degree of interaction between the trainee and the training program. IVD uses a computer-driven videodisc player to randomly access selected sequences of frames to present visually-based interactive courseware.

16. Life Cycle Management (LCM). The process for administering a system from the time it is initially developed until it is terminated, with emphasis on strengthening early decisions that shape costs and effectiveness.

17. Logistic Support. The manpower, facilities, materials, equipment, and resources required to support training delivery.

18. Media Selection. The process of analyzing potential means for presenting training materials to determine the most efficient alternative.

19. Open Architecture. Computer system design with industry standard

interface structure that allows for the addition of peripherals and internal enhancement cards for hardware and software upgrade and enhancement.

20. Part-Task Training (PTT) Device. A device that permits selected aspects of a task to be practiced independently of other elements of the task. The purpose of a part-task training device is to provide economical training on specified task elements requiring special practice, but that are not dependent upon the total equipment.

21. Portability. The capability to run courseware and associated application programs without modification on a delivery system other than the one for which they were originally designed.

22. Programming Protocols. Software requirements to perform specific tasks in accordance with established procedures.

23. Program Sponsor. The OPNAV Principal Official who is responsible for determining program objectives, time phasing and support requirements, and for appraising progress, readiness, and military worth for a given system, function, or task.

24. Reproduction Master Materials. The materials necessary to reproduce or modify all components of the ICW courseware, including all video and audio source materials as originally supplied to the mastering facility. Reproduction master materials also include the appropriate associated development documentation necessary to reproduce or modify the ICW courseware (e.g., flow charts, scripts and storyboards cross-referenced to the video shot list, edit decision list).

25. Resource Sponsor. An OPNAV Principal Official responsible for an identifiable aggregation of resources which constitute inputs to warfare and supporting tasks.

26. Training Agent (TA). An office, command or headquarters exercising command over and providing support to some major increment of the DON's formalized training effort. Tas are: The Commander in Chief, U.S. Atlantic Fleet; Commander in Chief, U.S. Pacific Fleet; Commandant of the Marine Corps; Chief of Naval Education and Training; Chief, Bureau of Medicine and Surgery; and Commander, Naval Reserve Force.

27. Training Effectiveness Evaluation (TEE). The process of determining the degree to which training objectives have been achieved, regardless of training efficiency.

28. Training Materials. All items of material prepared, procured, and made use of in a course or program as part of the teaching or general learning process. A general term covering plans, control documents, disks, tapes,

II.C. Training Application. Identify how the ICW fits in the overall training approach. Include any impact on embedded or onboard training.

II.D. Functional Requirements.

II.D.1. Number/Locations/RFT. Identify the number of training systems, locations required, and ready-for-training (RFT) dates for each alternative. Identify any replaced training equipment.

II.D.2. Students. Identify projected student flows.

II.D.3. Instructors/Support. Identify requirements for instructors and other support manpower (Navy billets, military or civilian if contractor support is to be utilized) for each training alternative.

II.D.4. Facilities. Identify facility requirements in support of each training alternative. Reference the Equipment Facility Requirements (EFR) document as appropriate (reference (i)). Include storage requirements and security requirements.

II.D.5. Documentation. Identify curriculum and training system peculiar documentation required to support each training alternative. (For example, student/instructor guides, technical manuals, etc.)

II.D.6. Reserves/Joint Services/Foreign Military Applicability. Identify applicability to Reserve, National Guard, Joint Services, and foreign military training needs. Indicate not applicable if none.

II.D.7. Fleet Training Requirements. Identify any application for fleet training. Indicate not applicable if none.

III. Logistic, Configuration Management, and Contractor Support Considerations. Identify any logistic (e.g., spare parts and configuration management (reference (j)) considerations for each training alternative. Identify what may impact the acquisition strategy and supportability by initial operational capability (IOC). Provide the status of the related Integrated Logistics Support Plan (ILSP). Address requirements for contractor support if planned.

IV. Alternatives Comparison. Identify alternative media that can meet the training requirement. Identify criteria for comparison and present advantages and disadvantages and rough order of magnitude cost for each. Provide rationale for the media selected.

V. DITIS Search. Provide results of a search of the Defense Instructional Technology Information System (DITIS) database for existence of applicable ICW already developed within the military services and the availability of Commercial Off-the-Shelf (COTS) courseware. Also provide results of analysis of commercial sources for existence of applicable COTS ICW. Document deficiencies if courseware exists but is not selected.

VI. Resource Impact

VI.A. Resource Requirements. Provide resource impact for the selected alternative. Include acquisition costs, facilities, operator and maintenance staffing, and annual operating costs by appropriation for the Six-Year Defense Program (SYDP) years.

VI.B. Acquisition Strategy. Summarize the overall plan for contracting and procurement. Include contract type, incentives, competition, and rights to technical data, software, and courseware developed.

VII. Milestones. Provide key milestone dates in the acquisition and implementation of the training device program.

VIII. Actions/Decisions. Indicate any key actions and decisions to be resolved (with lead/assist responsibilities and due dates). Address the requirements and time frame for preparing a Training Effectiveness Evaluation (TEE) Plan and conducting a TEE.

IX. Points of Contact. Provide key points of contact (e.g., OPNAV Sponsor, OP-11, PDA, TSA, TA, etc.) by Command, Code, Name, Title, and Telephone.

X. Glossary. Provide a Glossary of unique terms and acronyms.

XI. Report Distribution. Provide a copy of the FEA through command channels to the Defense Technical Information Center (DTIC) and a copy to CNO (OP-111), program and resource sponsors, and other commands (E.g., TA, TSA) as appropriate within 30 days of report completion.

# STANDARDS FOR ICW HARDWARE/SOFTWARE/COURSEWARE

## 1.0 INTRODUCTION

This document provides guidance on compliance with Navy interactive courseware (ICW) hardware, software, and courseware standards. Conformance with the guidelines described here will insure conformance with references (a) and (b). Reference (a) refers to the key requirement, which is described more fully in Appendix D of reference (b), and in the associated military handbook reference (i). This key requirement is a standard set of software interface and related command protocol implementation practices.

The software interface and command protocols currently apply to ICW applications and authoring systems using Microsoft Disk Operating System (MS-DOS) version 2.0 or higher, or its functional equivalent; and the Intel 8088/80x86 family of microprocessor architectures or its functional equivalent. When the standard interface and the protocols have been implemented, no other hardware, software, or courseware standards are necessary beyond those listed here.

## 2.0 BACKGROUND

The DoD invests heavily in ICW training materials. As part of this investment, the Navy and DoD will acquire a variety of computers and peripheral devices, and a variety of computer operating systems, authoring systems and high-level languages. The resulting ICW training systems include sophisticated software interfaces between the ICW application software and the hardware. Because these interfaces are usually proprietary to the vender, the ICW and authoring software written to operate on one system has in the past required expensive reprogramming to adapt it to another system with its associated proprietary interfaces. These reprogramming costs can be eliminated or significantly reduced by using standard software interfaces to shield the ICW from hardware variations. Similarly, proprietary authoring system software interface may prevent an authoring system from operating on any hardware system besides the one for which it was written. If authoring systems adopt a standard software interface, courseware written with an authoring system that conforms with the standard will operate on any hardware system that conforms with the standard.

The standard software interface described in reference (b) Appendix D has been mandated by reference (a) as the baseline standard. It currently applies only to MS-DOS systems, but will migrate to conformance with systems standards such as POSIX, GOSIP, and X-Windows.

The adoption of the standard interface benefits the DoD and the ICW industry by furnishing a common ground for manufacturers, system integrators, courseware developers, and users in a field of rapidly changing technologies. Expected benefits include:

2.1 Broader acceptance of ICW technology and subsequent growth in ICW applications to meet increased DoD demands for quality training.

2.2 Assurance of long-lasting investments in ICW applications and systems.

2.3 Reduced need to change and support ICW applications for specific hardware configurations.

2.4 Increased productivity, lower maintenance costs, and improved application consistency across platforms.

2.5 Higher quality and less costly ICW applications resulting from a larger market-place and the application of resources to courseware development instead of customizing applications, software, and delivery platforms.

**3.0 STANDARD INTERFACE ARCHITECTURE**

Reference (b) defines a standard interface between ICW and authoring system applications and system hardware. The architecture of this interface is shown in figure 1.

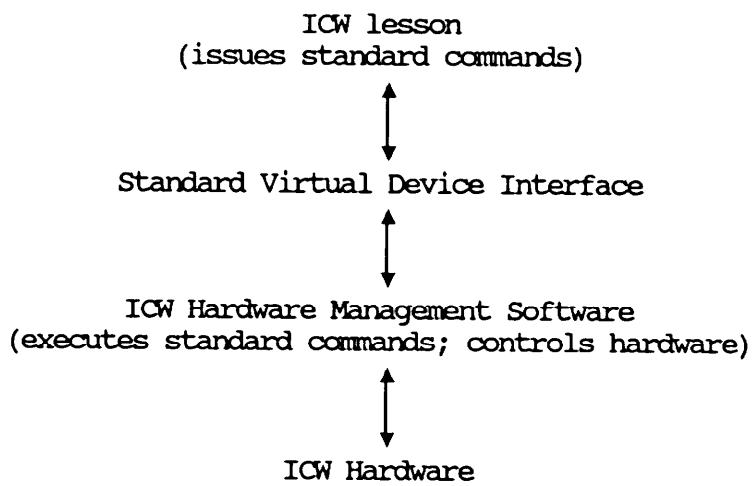


Figure 1. Architecture of a conformant system.

## 4.0 HARDWARE, OPERATING SYSTEM, AND SOFTWARE STANDARDS

The standard software interface described here will eventually apply to a wide range of hardware and operating systems. The general structure and functionality of the standard protocols used are transferable to other environments. However, substantial portions of the current standard are, of necessity, specific to MS-DOS and the Intel 8088/80x86 architecture. These assumptions currently apply:

4.1 The computer is based on a 8088 or 80x86 or functionally equivalent processor.

4.2 The operating system is MS-DOS version 2.0 or higher, PC DOS version 2.0 or higher, or a functionally equivalent operating system operating in real mode.

4.3 The computer uses a ROM BIOS that is compatible with the IBM PC, PC/AT, or PS/2.

4.4 The computer is based on an IBM PC, PC/AT, or Microchannel bus or an Enhanced Industry-Standard Architecture (EISA) bus.

4.5 The system uses color graphics adapter (CGA), enhanced graphics adapter (EGA), or video graphics array (VGA) graphics, has a graphics/video overlay capability using CGA/EGA/VGA graphics, or uses two monitors, one with video and the other with CGA/EGA/VGA graphics.

4.6 One or more of several XY-input devices may be present (touch screen, mouse, light pen, bit pad, or other).

4.7 One or more videodisc players or functionally equivalent video sources may be present.

4.8 Application authors should be free to choose any appropriate commercial off the shelf authoring language or languages to prepare the required instructional material.

4.9 Instructor stations may require special controller functions.

Applications that require capabilities outside of the above guidelines should be able to incorporate those capabilities freely; justification for their incorporation must be provided if requested.

## 5.0 COURSEWARE STANDARDS

The standard interface described here provides all of the standardization required for courseware. As long as the architecture and the standard protocols described in reference (b) Appendix D are used by the courseware,

whether it is developed using an authoring system or coded by other means, the courseware will operate on systems that conform with the standard interface. Similarly, if conformant hardware is used, it will operate all ICW that conforms. Currently, only MS-DOS courseware is included in the standard, but work is underway to expand the standard to include courseware developed for other environments.

**6.0 CONFORMANCE TESTING**

**6.1** DoD, together with the Interactive Multimedia Association (IMA), a non-profit industry group, has established tests to verify hardware and applications software conformance with the standard interface. ICW Hardware systems will be certified to conform by running a set of test programs on the hardware.

6.2 ICW applications and authoring systems will be certified by operating them on ICW hardware systems other than the one for which they were developed.

6.3 The Developing Agent is responsible for ensuring conformance of ICW applications and hardware. The Training Agent or LCM is responsible for maintaining conformance.

6.4 The hardware and application software conformance test programs and other guidance will be available to vendors to provide them the guidance necessary to become conformant.

6.5 For additional information about conformance testing and the facilities where tests are conducted, contact the IMA's Compatibility Project at 9 Randall Court, Annapolis, MD 21401; Phone: (410) 626-1380; Fax: (410) 263-0590.

**7.0 ICW STYLE GUIDE TOPICAL OUTLINE**

The development and implementation of an ICW style guide is recommended for all ICW production efforts. A style guide clarifies the specific training requirement for an ICW lesson module(s), provides consistent technical and production guidance for the government and contractor development team, and increases the likelihood for the resulting ICW instructional materials to meet the production and implementation objectives. The following topical outline provides general guidance for developing a ICW program style guide. Additional guidance is available in reference (b). A complete generic style guide following this outline is under development.

7.1 Forward. Indicates who will use, to whom recommendations and changes are submitted, and precedence with existing Federal, DoD, and SECNAV regulations.

7.2 Introduction. Explains what ICW is, the need to match training needs to media capabilities which meet specific training objectives.

7.3 Purpose. Provides guidance to ICW developers that aids in the design and development process.

7.4 Scope. Identifies standard techniques, practices, principles, and procedures to be followed throughout the design, development, and presentation of Navy ICW lessons or modules.

7.4.1 Application Guidance. Conveys convention policy and guidance to developers.

7.4.2 Style Guide Improvement. States that the style guide is a "living" document that is subject to change based on application and user feedback.

7.5 General Guidance and Considerations. Provides general guidelines and considerations for ICW design and development; development considerations; staffing; deliverables; security requirements; automatic data processing security; labeling, shipping, and handling; privacy act statement; and quality assurance.

7.6 Detailed Guidance and Considerations. Provides detailed guidelines and considerations for designing and developing ICW.

7.6.1 Instructional Design Strategies. Addresses strategies such as drill and practice, tutorial, gaming, simulation, case studies, and problem analysis.

7.6.2 Course Structure. Addresses start-up, pretest, progress check, post-test, critique, and alternative paths/flows.

7.6.3 Course Design. Addresses trainee control, menus, help commands, and motivational factors.

7.6.4 Language. Addresses writing style, punctuation, lists, and numbers.

7.6.5 Screen Design. Addresses general standards and conventions, text general standards and conventions, (color or highlighting), and computer generated graphics.

7.6.6 Testing. Addresses general standards and conventions and test construction.

7.6.7 Feedback and Remediation. Addresses general standards and conventions and suggestions.

7.6.8 Authoring. Addresses portability and floppy disk management.

7.6.9 Addresses additional ICW design and development considerations.

7.6.10 Addresses interfacing considerations.

7.6.11 Addresses formative evaluation.

7.6.12 Addresses training effectiveness evaluation.

7.6.13 Appendices

7.6.13.1 Glossary

7.6.13.2 Checklist

7.6.13.3 Applicable Documents

**8.0 COMPUTER-MANAGED TRAINING DATA GUIDELINE AND STANDARD CATEGORIES**

The consideration to use computer-managed instruction (CMI) as part of an interactive courseware (ICW) effort can apply to a single computer or a large scale, networked computer training system. Regardless of the population of computers, the instructional and data categories selected for controlling, monitoring, collecting, evaluating, analyzing, and reporting can be the same, although the magnitude of difficulty in managing the instruction and collecting, storing, reporting, and analyzing the data will increase as the computer training system expands.

The categories listed below represent a compilation of data collected from various computer-managed instruction course material. CMI categories, whether considered in whole or in part, must be preceded by a justification of use. The need to manage instruction, store and analyze data, and report results within the ICW structure must be identified in and be supported by a front end analysis.

8.1 Instructional Registration

8.1.1 Course identification number

8.1.2 Class identification number

8.1.3 Trainee log on data

8.1.3.1 Trainee name

8.1.3.2 Trainee social security number

8.1.3.3 Entry password (provides security and confidentiality)

8.2 Instructional Management

8.2.1 Class structure

8.2.1.1 Multi-computer station/analogous lesson at each station

8.2.1.2 Multi-computer station/different lesson at each station

8.2.1.3 Single station computer/large screen for group lesson

8.2.2 Student structure

8.2.2.1 Lesson start (automatic based on progress)

8.2.2.2 Lesson remediation (automatic based on in-lesson test results)

8.2.2.3 Lesson refresher (elective based on trainee selection)

8.2.2.4 Lesson assignment (automatic based on progress test results)

8.2.3 Test structure

8.2.3.1 Test bank database

8.2.3.2 In-lesson test administration

8.2.3.3 End-of-lesson test administration

8.2.3.4 Comprehensive multi-lesson test

8.2.3.5. Refresher quizzes

8.3 Data Collection

8.3.1 Course data

8.3.1.1 Course identification number

8.3.1.2 Course length

8.3.2.3 Course convening dates

8.3.2.4 Course attrition rate

8.3.2 Class data

8.3.2.1 Class identification number

8.3.2.2 Roster information (number and names of students)

8.3.2.3 Class test scores

8.3.2.4 Class convening dates

8.3.2.5 Class graduation date

8.3.3 Trainee data

8.3.3.1 Trainee name, rate, and identification number

8.3.3.2 Trainee entry level scores

8.3.3.3 Trainee pre-test/post-test scores

8.3.3.4 Number of lessons completed/remaining

8.3.3.5 Exercise/lesson test score

8.3.3.6 Number of remediations at each level

8.3.3.7 Time required to complete lesson (timed executable test)

8.3.3.8 Accuracy percentage (recognition test)

8.3.4 Test data

8.3.4.1 Trainee/class performance data

8.3.4.2 Test question performance (frequency of correct/incorrect response)

8.4 Data Reporting

8.4.1 On-screen data availability

8.4.1.1 Instructor station preview

8.4.1.2 Class progress report

8.4.1.3 Trainee progress report

8.4.2 Hard copy data dump

8.4.2.1 Course analysis (number of personnel trained, attrition, etc.)

8.4.2.2 Class analysis (progress review)

8.4.2.3 Class receipt/transfer records

8.4.2.4 Trainee service record entry

# GUIDELINES FOR THE IMPLEMENTATION OF FORMATIVE EVALUATION

## 1.0 INTRODUCTION

This document provides guidance on compliance with Navy Interactive Courseware (ICW) standards requiring formative evaluation of ICW during the development process. The process shall take the form of a prototype that shall be validated in the actual training environment using sample representatives of the target population including the Reserve components, as applicable. Any discrepancies found during the prototype phase in the design, courseware content, and associated software shall be corrected and the system shall be retested and verified before acceptance and use.

This document provides guidance for the development of formative evaluation, criteria that may be addressed when establishing a program, and methodology that may be used to successfully meet the requirements.

## 2.0 BACKGROUND

There are two types of evaluation: summative and formative. Summative evaluation measures the effectiveness of ICW after it has been developed for the purpose of determining the value or worth of the instruction. The results from summative evaluations usually do not impact the content or design of a course until the ICW goes through a revision or update. Formative evaluations are performed during the development process for the purpose of improving effectiveness of the instruction. This enclosure is specifically concerned with formative evaluations and will discuss only formative evaluation methodology that may be used.

## 3.0 STANDARD FORMATIVE EVALUATION METHODOLOGY

The purpose of formative evaluation is to assess ICW content accuracy, program effectiveness, objective achievement, ease of program use, attitude change accomplishment, and documentation effectiveness. User-computer interface design guidelines provided in reference (1) will be utilized for screen design and graphics use. Formative evaluation is on-going, it can be performed at every step of the design and development process. There are three types of formative evaluation: One-to-One, Small Group, and Field Test.

### 3.1 One-to-One

One-to-one formative evaluation is usually performed during the initial design and development of the ICW. It is an informal evaluation method used to identify courseware problems early in the design process so that lesson design can be redirected to avoid potential problems. Features of instructional designers (IDs), and subject matter experts (SME/s) are presented in table 1.

Table 1. Formative evaluation areas of review

| Reviewee | Areas of Review |
|---|---|
| Students | . Prototype lesson design |
| IDs | . Ideas for better way to design lesson<br>. Assess if basic lesson assumptions are correct<br>. Insight into correctness of lesson design to meet established objectives |
| SMEs | . Review of content correctness<br>. Review if correct concepts are being portrayed |

3.2 Small Group Evaluation

Small group evaluation can be performed when development of the ICW lesson is nearly complete. The purpose of this type of formative evaluation is to identify where, if anywhere in a lesson, improvements are needed. This can be done by determining the effectiveness of the lesson, acceptability of the lesson, the appropriateness of the materials and the strategies employed, and the extent the lesson complies with the design specifications.

Small group evaluations usually are administered under roughly the same environmental conditions in which the ICW will be implemented. If this method is used, it is recommended that a small group of representative students who will be the intended user of the ICW receive the instruction, and conclusions from the evaluation will be based upon the performance and feedback of the students.

This type of formative evaluation typically uses more formal evaluation techniques than the One-to-One, for example, surveys, interviews, and tests, although informal methods such as observations, can be used.

3.3 Field Test Evaluation

Field test evaluations are usually performed on ICW that is of final draft quality. The purpose of field test evaluations is to prototype the ICW by collecting data related to the objectives and other designed outcomes of the lesson, organizing the information according to the evaluation questions to be answered, and analyzing the data relative to expected versus obtained outcomes. If the obtained outcomes do not match the expected outcomes, the lesson may then go back to the development process for revision. If it does, the ICW may then be implemented.

Field test evaluations are usually performed in the actual setting or a place that closely resembles the actual setting. This type of evaluation typically

relies heavily on formal evaluation techniques such as embedded testing, paper and pencil tests, and usability tests.

**4.0 COMPONENTS OF ICW FORMATIVE EVALUATION**

Four components of ICW formative evaluation, instructional adequacy, cosmetic adequacy, program adequacy and curriculum adequacy may be addressed during design and development of ICW.

4.1 Instructional Adequacy

The instructional adequacy component can evaluate the extent that the ICW lesson provides the necessary kind of support for learning and meeting the instructional objectives. There are four areas of instructional adequacy that can be addressed: design, procedures, clarity, and efficiency. Within the four areas are many questions that can be asked during a formative evaluation.

4.2 Cosmetic Adequacy

The cosmetic adequacy component refers to what the lesson actually looks like. Areas of concern include font types, color palettes, and graphic styles used. Reference (1) contains guidance in user-computer interface design. Although important, cosmetic adequacy is not as important as ensuring that the content taught is correct and effective. In general, there are two areas that are assessed within the cosmetic adequacy component; appearance and clarity.

4.3 Program Adequacy

Program adequacy component refers to the actual courseware itself. Questions that are addressed are: Is the software running as programmed? Are there any problems with the hardware or software of the lessons? Does the lesson run like it was designed to run? The formative evaluation of this component may take the form of a system testing and evaluation within three main areas: design, procedures, and proficiency.

4.4 Curriculum Adequacy

The area of curriculum adequacy addresses whether (to what extent possible or necessary) the lesson is compatible with the styles of instructors and students, easily incorporated into existing curriculum activities and structures, and compatible with lesson activities and procedures already in place. There are two areas of curriculum adequacy, design and procedures.

**5.0 REPORT FORMAT**

I. Cover Sheet. Identify the ICW title and number in the center of the page followed by "Formative Evaluation Report of ICW Application in 'Course Title'." In the lower right corner show the date prepared, activity preparing the document, and the sponsor.

II. Table of Contents. Provide a Table of Contents.

III. Formative Evaluation Methodology. Specify the methodology used for this effort.

IV. Findings. Describe the findings as they relate to the following four components of formative evaluation:

A. Instructional Adequacy

B. Cosmetic Adequacy

C. Program Adequacy

D. Curriculum Adequacy

V. Recommendations. Provide recommendations with rationale.

# LIFE CYCLE MANAGEMENT PLAN

## 1.0 INTRODUCTION

### 1.1 Purpose

Life cycle management planning for interactive courseware (ICW) includes resource requirements and management processes necessary to achieve satisfactory support across all logistic elements. These elements are detailed below and in reference (b). Requirements within each ILS element will be prepared by the life cycle manager in conjunction with the developer, considering the type of hardware and/or software that ICW uses. Funding will be identified in the appropriate logistics requirements funding plan (LRFP). This information and the following information should be included in a parent weapon system integrated logistics support plan (ILSP) or, for a stand-alone program, in a separate life cycle management plan. A copy of this plan will be provided by the life cycle manager to the appropriate training agent.

## 2.0 BACKGROUND DESCRIPTION

2.1 Courseware Title

2.2 Courseware Description as identified by entry on DITIS form DD2568 Jan 1991.

## 3.0 RESPONSIBLE COURSEWARE LIFE CYCLE MANAGER

3.1 Provide the agency name, address, the point of contact, phone number for maintaining the ILSM, Operational Support System (OSS), Operational Logistical Support Plan (OLSP).

## 4.0 MAINTENANCE PLANNING

Identify a plan for maintaining the ICW program in the maintenance plan and in maintenance manuals. Establish a process for storing, handling, and distributing courseware. Establish a process for updating courseware through periodic review of changes to the parent system. Computer-aided Acquisition and Logistics Support (CALS) requirements and compatibility impacts, or feedback (fleet, user, etc.) and in accordance with reference (b) and appropriate Naval Systems Commands and Training Agent directives. Identify the point of contact (POC) for updating the life cycle management plan.

## 5.0 MANPOWER AND PERSONNEL

Identify the title, background, and number of personnel required to provide operational support. Specify if using Government and/or contractor personnel. This requirement is intended to provide the site with the level of personnel it will need to operate or administer the system. This data will be recorded in the appropriate Navy Training Plan (NTP), reference (c).

**6.0 SUPPLY SUPPORT**

Document all management actions, procedures, and techniques used to determine requirements to acquire, catalog, receive, store, transfer, issue, and dispose. Courseware must be cataloged in the DITIS. Special storage may be required for the master materials as well as the student materials, e.g., compact disk read only memory (CD ROM), floppy disks, or videodisc, etc. Identify unique sources of supply as appropriate. This includes provisioning for initial support as well as replenishment supply support as recorded in provisioning technical documentation.

**7.0 SUPPORT MATERIAL**

All material required to support the operation and maintenance of an ICW system must be listed. Identify unique sources if appropriate. This includes authoring systems, diagnostics, drivers, execution programs, interfaces to make the hardware and courseware compatible. If none required, so state.

**8.0 TECHNICAL DATA**

For each courseware program ensure that the development data outlined in reference (b) and the contract, e.g., script storyboards, be identified including the location of this data. Establish and maintain a data audit trail from the parent system to the ICW to ensure currency of training to support the parent system requirements to include engineering change proposals (ECP), procedural changes, etc.

**9.0 TRAINING AND TRAINING SUPPORT**

Identify processes, procedures, techniques, training devices, and equipment used for training military and civilian personnel to operate, administer, and support an interactive courseware system. This includes initial, formal and on-the-job training, and logistic support planning for acquisitions and installations.

**10.0 COMPUTER RESOURCE SUPPORT**

ICW programs developed for or by the DON shall comply with the standard DoD programming protocols in accordance with reference (b). When special-purpose software (e.g., simulation models, unique device drivers, or course management features not supported by the authoring system) is developed for an ICW program, follow the procedures and requirements of reference (k). The assigned life cycle manager is responsible for life-cycle availability of the version of the authoring program, assembly language, or higher order language compiler used to develop the courseware, source code for the courseware, concomitant documentation, all associated software libraries, and all other materials necessary and sufficient to modify the courseware. If these materials are not acquired as part of the ICW procurement, the developer shall designate an activity to archive, escrow with a third party, or otherwise ensure their availability throughout the life cycle of the ICW program.

**11.0 FACILITIES**

Determine assets required to support the material system, including conducting studies to define types of facilities or facility improvements, locations, space needs, environmental requirements. ICW instructional materials may require special environmental conditions, e.g., climate control, electromagnetic interference, special surge protectors. Follow appropriate guidance for classified courseware in coordination with the parent program.

**12.0 PACKAGING, HANDLING, STORAGE, AND TRANSPORTATION**

Determine any unique resources, processes, procedures, design consideration, and methods to ensure that all system, equipment, and support items are preserved, packaged, handled and transported properly. Include environmental conditions, equipment preservation requirements, courseware preservation requirements for short and long-term storage, and transportation. Follow appropriate guidance for classified courseware.

**13.0 CONFIGURATION MANAGEMENT**

13.1 An ICW configuration management (CM) plan is required for each ICW program and shall include but not be limited to:

13.1.1 Identification of each phase of the ICW program's life cycle, depicting specific schedules, milestones, and CM requirements, and products of each phase. The ICW program configuration management organization and how it relates to the parent organization.

13.1.2 Configuration management participants, responsibilities and coordination requirements.

13.1.3 Authorized exceptions and their justification to these CM requirements and identification of the approving authority for each exception.

13.2 The activity responsible for life cycle support of the ICW training program should develop the ICW CM plan in accordance with reference (b) paragraph 5.6.2 and in coordination with the CM manager of the weapon system and equipment, where appropriate.

13.3 Data audit trail shall be maintained from the weapon system and equipment to the ICW to insure currency of ICW to weapon system and equipment requirements. For ICW programs not integral to a parent training system, a stand-alone CM plan will be developed. Planning and execution of ICW update and modification will be documented in the CM plan.

13.4 The procuring activity/developer or its designee will retain a record copy and the LCM will retain a reproduction master and an executable circulation copy of the ICW.

# TRAINING EFFECTIVENESS EVALUATION PLAN

## 1.0 INTRODUCTION

The following guidelines are recommended for the preparation of an ICW Training Effectiveness Evaluation (TEE) Plan. The TEE is an combination of an operational effectiveness evaluation and a student performance evaluation. It provides an operational assessment of the effectiveness of a training alternative, i.e., ICW to lead students to the achievement of the program learning objectives. A TEE provides an assessment of the training systems operational suitability, training capability, and student performance based on demonstrated trainee performance improvements directly attributable to the training received on the ICW being evaluated. The time frame for initial conduct of a TEE is 6 months after the first use of the ICW in a course.

## 2.0 TEE PLAN

TEE Content and Format. Each TEE presents a set of unique problems depending on the subject matter, the training pipeline, and the technology presented; therefore individual TEE plans will be developed. The TEE should include as necessary, an Operational Effectiveness Evaluation (OEE) and a Student Performance Evaluation (SPE). The OEE part of the TEE is conducted to estimate training operational effectiveness and suitability, identify needed modifications and provide instructor operator requirements. The SPE is intended to measure qualitatively and quantitatively the degree to which the device leads to achievement of learning objectives. The TEE Plan should be approved 1 year prior to conduct of a TEE.

Cover Page. Identify the title and number of the ICW in the center of the page followed by "Training Effectiveness Evaluation Plan" Mark it "Draft" or "Final." In the lower right corner include the date prepared, and by (organization/code), the program sponsor, TA, TSA, and activity preparing the document.

Table of Contents. Provide a Table of Contents.

I. Program Identification. Describe the ship class/aircraft type, equipment, system; the basic subject for the training involved; and identify the type of ICW training to be evaluated.

II. Planned Evaluation. Each TEE report must address and provide specifics on the following (as applicable):

II.A. Adequacy of Curriculum and Courseware.

II.B. Goals to be met by the evaluation.

II.C. Description of the courseware and how it supports the fidelity and pace of training and training capability to achieve learning objectives.

II.D. Description of the host hardware/software and how it supports the fidelity and pace of training.

II.E. Training tasks assigned to be accomplished through use of the ICW.

II.F. The standards (criteria) to be employed to determine whether the stated objectives (supportability data, ILS data, capability data) can be or have been met by ICW use.

II.G. Data to be collected (student proficiency, time to perform procedure, retention).

II.H. Techniques and procedures that will be used for collecting data.

II.I. Schedule for data collection.

II.J. Results of the TEE.

**3.0 TEE RESULTS**

Results of the TEE will be provided in a letter signed by the training effectiveness evaluation agent (TEEA) (or lead activity) containing the significant findings and recommendations, including identification of action offices. This letter will be sent via the chain of command within 30 days of completion of the report to the sponsor with a copy to CNO (OP-111E) and Defense Technical Information Center (DTIC). An enclosure to the cover letter will be a technical evaluation which contains background and detailed information on the TEE and its results. Resolution of any identified deficiencies will be recommended.

**4.0 TEEA ISSUES**

While these points are not part of the TEE Plan they are issues that need to be resolved prior to conducting the evaluation.

4.1 The numbers and types of personnel required to monitor, collect, and process the data.

4.2 Any special training requirements for personnel who will monitor, collect, and process the data.

4.3 Special resources required to conduct the TEE.

**5.0 TEE AGENT SELECTION**

In the selection of the TEEA, the program sponsor must consider the extent of TEE required and how it will be conducted. The TEEA must provide reports

directly to the program sponsor. Conduct of the TEE requires the following skills:

5.1 Capability to analyze the curriculum and instructional strategies.

5.2 Capability to make a technical (hardware, software, ILS) assessment of the ICW.

5.3 Capability to prepare specific tests and perform subsequent analyses of the data collected.

5.4 Subject matter expertise.

**NAVY INTERACTIVE COURSEWARE (ICW) HARDWARE DESIGNATOR NUMBERS**

**1.0 PURPOSE.** To provide guidance necessary to obtain a Navy ICW hardware number from the Naval Training Systems Center (NAVTRASYSCEN). This is for new development ICW hardware only, and the assigned number will be included in DITIS reporting. It is a one time requirement for each new hardware development.

**2.0 SUBMIT REQUEST.** A request for ICW hardware designator assignment must be addressed to:

Commanding Officer
Naval Training Systems Center (Code 413)
12350 Research Parkway
Orlando, FL 32826-3224

**3.0 PROVIDE INFORMATION.** The following information must be included in the request for ICW hardware designator assignment:

3.1 Complete mailing address of the requesting activity.

3.2 Name of the ICW program or hardware, which must not exceed 47 alpha/numeric characters.

3.3 A point of contact at the requesting activity, including DSN and commercial phone numbers.

**4.0 DESIGNATOR NUMBER CHARACTERISTICS.** For ICW hardware, the designator assigned will be prefixed by an "I". This will ensure that it is unique and will not be confused with COG 2"O" or other training simulator and device designator numbers.