

**UNITED STATES COAST GUARD
E-LEARNING STANDARDS AND STYLES GUIDE**

e-Learning Standards to include:

Courseware

Electronic Performance Support Systems

Knowledge Growth Systems

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**Questions: Contact Chief, Design and Development Branch
US Coast Guard Performance Technology Center
Coast Guard Training Center Yorktown, VA**

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Table of Contents

<u>Topic</u>	<u>Page</u>
Overview.....	5
Introduction.....	5
Coast Guard	5
e-Learning.....	5
Purpose.....	6
Target Audience.....	6
Scope.....	6
Coast Guard Applications of e-Learning	7
The Coast Guard Learning Network’s Functional Scheme	7
The Coast Guard Learning Network Technical Architecture	8
Coast Guard Learning Network Portal	9
AICC and SCORM Standards	9
Courseware and Electronic Performance Support Tool Design and Development	
Milestones.....	11
Design and Development Milestones	11
Required Documents and Deliverables.....	12
General Standards.....	13
Instructional Systems Design (ISD).....	13
Objectives	13
Browser	13
Plug-ins	13
Connectivity Issues: Design for Both High and Low Bandwidth Users	14
Multimedia Formats and Standards	15
Use of Media.....	15
Static Graphics.....	15
Audio.....	15
Standard Audio Format.....	15
Discussion of Audio Formats.....	16
Recommended Audio Formats	17
Animation	18
Required Response Times.....	19
Page Response Times	19
Interactivity Guidelines.....	21
Interactivity.....	21
Interactivity Levels	21
Interactivity Strategies	22
Interface Layout: General Guidance.....	24
Scope.....	24
The Goals.....	24
Principles of Interface Layout.....	24
Navigation Elements.....	25
Progress Indicators.....	26

Graphics Layout.....	26
Standards for Blended Solutions.....	26
Asynchronous Web-based Courseware Standards.....	28
Development Tools and Standard Outputs.....	28
Navigation Elements.....	29
Navigation Features Summarized.....	30
Menu Standards.....	31
Orientation Indicators.....	32
Assessment Standards.....	32
Types of Assessments.....	32
Storyboard Requirements.....	33
Course Evaluation Standards.....	34
Example of a Design Storyboard.....	35
Collaborative Courseware Standards.....	36
Systems and Approaches.....	36
What is “Collaborative Courseware”?.....	36
Systems Used in the Coast Guard.....	36
Strengths of Collaborative Systems.....	36
Course Design.....	37
Electronic Performance Support System Standards.....	38
Articulating EPSS Objectives.....	38
Development Tools and Standard Outputs.....	39
Navigation Elements.....	39
Two Ways to Structure an EPSS.....	40
Menu Standards.....	40
Orientation Indicators.....	42
Accomplishment-Centered.....	42
Link to Tools.....	42
Storyboard Requirements.....	42
EPSS/e-Tool Evaluation Standards.....	43
Knowledge Growth Systems.....	44
What is a “Knowledge Growth System”?.....	44
History Shows.....	45
Web-Based.....	45
Certification of Courseware and Electronic Performance Support Tools.....	46
Course and EPSS Certification.....	46
Appendix B: Text, Graphics, and Audio Layout Standards.....	50
Appendix C: e-Learning Program Roles and Responsibilities.....	51
Glossary.....	62
Reading Level.....	66
Index.....	73

Overview

Introduction

This Guide is for developers of Coast Guard e-learning courseware and electronic tools. It provides guidance for both government developers and commercial vendors. The goal is to provide a flexible framework for development while maintaining interoperability of e-learning products. Coast Guard people should see one system with interoperable components.

This guide covers development of the following types of e-learning products:

- Web-based Courseware
 - Computer-based Courseware
 - CD-ROM Courseware
 - Electronic Performance Support Systems
 - Knowledge Capture
 - PDA Applications
 - Alternative System Application Development
-

Coast Guard e-Learning

Coast Guard e-Learning is defined as:

“Growing, using, and moving knowledge using electronic means where we need it and when our people want it.”

This definition of e-learning involves training, but it encompasses much more... It also incorporates on-the-job performance support, online professional communities, expert exchanges, interactive technical manuals, and many other e-approaches. These e-Learning methods together form *The Coast Guard Learning Network*.

The Coast Guard Learning Network is a network of electronic media and tools that supports Coast Guard mission accomplishment through:

- Providing intuitive access to knowledge, process, and skill information
 - Delivering effective courseware
 - Facilitating the growth of the knowledge we need
 - Providing access to online college courses
 - Supporting collaborative project completion
 - Delivering required knowledge to the point of performance through electronic performance support
-

The Coast Guard Learning Network is sponsored by Commandant (G-WT) and administered by the Performance Technology Center (PTC) at Training Center Yorktown.

Purpose

This Standards and Styles Guide provides step-by-step guidance for designing, developing, evaluating, delivering, and sustaining great e-courses and e-tools. These steps objectively improve performance and adhere to the technical and usability requirements that allow us to get maximum benefit from the products. It also lays out the process and variables related to project funding and program interaction. This guide gives an overview of the process of performance intervention selection, identifies the starting place for e-learning design, specifies media and design decision criteria, describes the broad range of e-learning approaches, defines the design process, the development process, the evaluation process, and funding and fielding processes for e-learning.

This guide is maintained by the Performance Technology Center (PTC) at Training Center Yorktown.

Target Audience

This guide is aimed primarily at Coast Guard e-learning product developers: both government and commercial.

Scope

This Style Guide directs styles, format, and technical standards for the following types of learning, performance support, and knowledge growth products:

- Asynchronous Courseware (Web-based and Desktop)
- Collaborative/Synchronous Courseware
- Electronic Performance Support Tools (e-tools)
 - Electronic Performance Support Systems (EPSS)
 - Interactive Electronic Technical Manuals (IETM)
 - Electronic Job Aids
- Knowledge Growth Systems
 - Expertise Exchanges
 - Communities of Practice

Government and Commercial developers shall adhere to these styles and standards unless waived by the Government Program Manager.

Coast Guard Applications of e-Learning

The Coast Guard defines e-learning as the “growth, movement, and use of knowledge using electronic means where we need it and when our people want it.” In practice, this includes many types of technologies and approaches. It includes:

- Web-based Courseware
- Computer-based Courseware
- CD-ROM Courseware
- Electronic Performance Support Systems
- DVD Applications
- Knowledge Capture
- PDA Applications
- Alternative System Applications
- Telephone/Web Blends

Coast Guard e-learning includes ways for people to communicate and share knowledge; the D7 University is essentially an “expertise exchange.” The new Coast Guard enterprise portal contains “communities of practice” sites which allow users to ‘get together’ online and work on issues or projects. The web is proving to be a fertile location for the development of creative ways of sharing and growing knowledge together. The unifying principle in all this is that we use technology to get knowledge right where and when we need it.

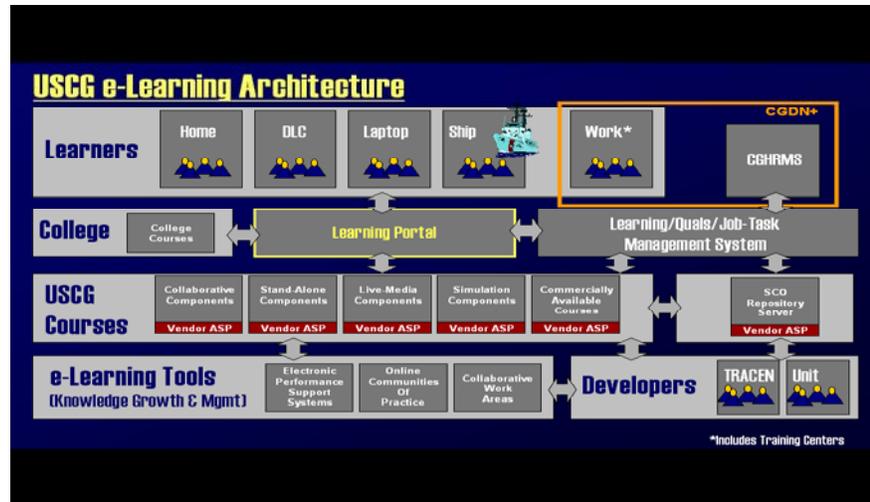
Here are some current Coast Guard examples:

- YN”A” School
- MSST Precom Training
- WLB Orientation and PQS
- Use of Force Training
- Boarding Officer PDA Job Aid
- Port Engineer Electronic Performance Support System
- D7 University
- Coast Guard Enterprise Portal

The Coast

Guard Learning Network's Functional Scheme

The diagram below pictures the functional schema for the Learning Network. The idea is that performers/learners have a “one-click” way to access any knowledge/training component they need or want. The systems that support these different features are invisible to the user. Our Coast Guard people do not care if they are using an LMS or are operating within a certain software, they only care that they can do what they want to do and that system use is simple.



The Coast Guard Learning Network Technical Architecture

The goal of the technical architecture is to support the easy use of the functions described in the previous section.

The technical system is fairly straightforward:

- A remotely hosted central Learning Management System using the DOCENT Learning Management System product
- Commercial Content Distribution using SkillSoft
- Collaborative course systems using Blackboard and Web4M products
- Coast Guard Digital Network (CGDN+) using Microsoft XP operating system
- Human Resources System: PeopleSoft Direct Access
- Plug-ins and applications that are already in use on the CGDN+ include Flash 6.0 player, Windows Media Player, Microsoft Internet Explorer 6.0, Adobe Acrobat Reader 4.05, Macromedia Shockwave 8.5, and Web4m Audio

**Coast Guard
Learning
Network Portal**

The Coast Guard Learning Network Portal (pictured below) is designed to be a rapid-access means of getting to e-learning courses, tools, and educational resources. All courseware or tools should be addressable through a unique URL so that they may be linked to the CG Learning Network Portal.

**[[Space saved for screenshot of Learning Network Portal
expected completion November 2003]]**

**AICC and
SCORM
Standards**

The protocol for Coast Guard e-learning courseware shall be AICC HTTP unless waived by the Program Manager.

The oldest reliable guidelines for interactive courseware are the AICC standards. SCORM standards are also becoming an accepted industry standard. SCORM API and AICC API protocols may be use with Program Manager approval.

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Courseware and Electronic Performance Support Tool Design and Development Milestones

Design and Development Milestones

The Coast Guard uses nine significant design and development process milestones. The next several pages describe the steps for achieving these milestones.

1. PreDesign Analysis
2. Performance Objectives/Evaluation Items
3. Pre-Design Document
 - a. Approach
 - b. Performer Descriptions
 - c. Detailed Content
 - d. General Media/Delivery
 - e. Peer Review/Visual Concepts
4. Design Plan
 - a. Storyboards
 - b. Development Worklist
 - c. “Look-and-Feel” Preview Development
5. Development Plan
6. Evaluation Plan
 - a. Alpha Tests
 - b. Beta Tests
 - c. Personnel
 - d. Checklists/Evaluation Forms/Evaluation Data
7. Pilot Course or Tool
8. Deployed Course or Tool
9. Hosting, Distribution, Maintenance Plan, and Debrief

Required Documents and Deliverables

This table summarizes the required documents and deliverables for courseware and e-tools. The statement of work (SOW) for contracted design or development should include progress meetings that are appropriate to the scope of the design or development project.

Required Documents and Deliverables	
<p>Alignment document:</p> <ul style="list-style-type: none"> • Project Sponsor • Financial Resources • Approximate timeline for development • Project Constraints/Parameters • Description of Existing Content Sources • SME/AP Listing • Overall Asset Approach 	
<p>Pre-design document:</p> <ul style="list-style-type: none"> • Performance objectives • Evaluation items for each objectives • Learner Profiles: Skill Level, Motivation, Environment • Detailed Task Description: Job Patterns, Accomplishments, Context, Tasks, Steps, Paradigms • Detailed Summary of Existing Content: A detailed description of the text, graphics, presentations, policy that already exists. • Alignment Information 	
<p>Design Plan:</p> <ul style="list-style-type: none"> • Hosting and Distribution requirements • Course/Tool Schema • Screen-by-screen text content • Screen-by-screen media and application requirements • Screen-by-screen practice and assessment content/activities • Scripts for all video or audio pieces • List of all required media elements • Storyboards (Screen-by-screen text presentation, Special elements) • “Look-and-Feel” Preview of course or tool 	<div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; border-right: 1px solid black; border-top: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 40px; margin-right: 5px;"></div> Storyboards </div>
<p>Development Plan:</p> <ul style="list-style-type: none"> • Responsibilities • Milestones • Microsoft Project 97 File • Review Meeting Dates • Specific Resources required: Skills, Money, Technology 	
<p>Evaluation Plan:</p> <ul style="list-style-type: none"> • Alpha Testing Plan • Beta Testing Plan • Pilot and Revision Plan 	
Final version of courseware or e-tool	
Lessons Learned Memo	
<p>Maintenance and Sustainment Plan:</p> <ul style="list-style-type: none"> • Description of actual hosting and distribution system • Description or agreements regarding maintenance and recurring funding or resources 	

General Standards

Instructional Systems Design (ISD)

The Coast Guard adheres to the systematic design of instruction (ISD). It is expected that all design and development projects will follow standard ISD practices as presented in The Systematic Design of Instruction, by Walter Dick and Lou Carey.

Objectives

All courseware and e-tools shall be designed based upon performance objectives. Meeting or exceeding the performance objectives is the only meaningful measure of success.

An objective is composed of a minimum of three parts:

Performance: An observable achievement.

Condition: The environment where the work is done and the tools and conditions provided. What the performer will have and use; or not have and not use. In the ideal, this would mirror workplace conditions.

Standard: The required level of competency.

Example:

*Given the Printer Installation EPSS (Condition), an “A” School trained Electronics Technician will **install a printer** (Performance) so that *100% of workgroup users can use it* (Standard).*

Browser

Products shall be designed and optimized for Microsoft Internet Explorer 6.0.

Plug-ins

These plug-ins are supported by the CGDN+:

- Flash 6.0 player,
- Macromedia Shockwave 8.5
- Windows Media Player (WMP)
- Adobe Acrobat Reader 4.05
- Web4m Audio

The Government Program Manager is responsible for informing content vendors of any changes in the plug-ins above.

**Connectivity
Issues: Design
for Both High and
Low Bandwidth
Users**

Coast Guard Learning Network users are in four places:

1. at home on a dial-up connection using the internet,
2. at home on a broadband connection,
3. at work in an office with high-bandwidth connectivity,
4. in a Coast Guard learning lab with high bandwidth connectivity, and
5. aboard ship using a disconnected shipboard server.

Coast Guard courseware and e-tools must be designed for both high and low bandwidth users, giving the user the option to select the connection that is most appropriate.

High-Bandwidth Option: Optimized for a 400Kbps connection between user and the content server.

Low-Bandwidth Option: Optimized for a 26 Kbps connection between the user and the content server.

Multimedia Formats and Standards

Use of Media

The use of media and its impact on the Coast Guard Intranet (CGDN+) should be taken into account. In every case, designers and developers shall use the minimum bandwidth necessary to reach the objectives. General rules of thumb and techniques that can be used to ensure compliance while maintaining engaging content presentations are described below.

The use of streaming media formats is specifically prohibited by policy. RealMedia and Quicktime are not supported on the Coast Guard Standard Image. Macromedia Flash is supported on the Standard Image and offers many of the same benefits of these streaming media types. Refer to the technical specifications for supported media types; some of these are described below.

Static Graphics

The following standards apply to static graphics:

1. Static Photo Formats:
 - JPG (preferred)
 - GIF
 - SWF
2. Static Line Drawing Formats:
 - GIF
 - SWF
3. The table below lists maximum file sizes for static images:

	Average File Size	Max File Size
Low-Bandwidth	15K	40K
High-Bandwidth	50K	400K

4. Prime Dimension: Unspecified
 5. Prefer Shadow Offset on Static Images
 6. All images shall be 72 dots per inch
 7. Optimize for browser display
-

Audio

Standard Audio Format

The standard audio format for Coast Guard e-learning products is:

- Windows Media Audio (WMA)
 - 32Kbps at 44.1Khz (The default setting is 192Kbps)
-

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- Average file size: less than 200K
 - Maximum file size: 400K
 - Average audio clip duration: 6-30 seconds
 - Maximum audio clip duration: 60 seconds
 - (Rule of thumb for narration: keep it to less than 50 words per screen)

Other audio formats (as discussed below) may be approved by the Government Program Manager.

Discussion of Audio Formats

When used in moderation, audio narration provides users with another avenue of absorbing information. The right narrator can increase the perceived value of the course, provide emphasis and cues, and add an emotional component that is difficult to represent in other electronic presentation methods.

Audio is also helpful in representing aural stimulus the learner may encounter on the job. Tones, engine sounds, short radio clips, and other performance-related audio can greatly enhance the effectiveness of a presentation and tie the recognition of the audio in the physical space to recall of information.

As for the **bandwidth: efficacy ratio**, the average person will advance through three to five screens in one minute. If each screen contains an image and text, the total bandwidth usage for these screens can be close to 250K. Conversely, if the student stays on the same screen for one minute, the audio file may also be 250K. No matter what presentation method is used, 250K for one minute of presentation is 250K for one minute of presentation. Using this example, audio might be no more bandwidth intensive than static images.

Keep the audio short. The typical audio bite will run between six and 30 seconds. Beyond this, there is risk that the student may lose interest in the audio. Large blocks of audio may be split into chunks that are triggered by interactivity (student choice) within the page. Use narration sparingly. Avoid having the narrator read word for word what is on the screen.

Recommended Audio Formats

The recommended audio formats for Web native presentation are:

- Windows Media Audio (WMA)
- MP3
- Flash (SWF)

Windows Media Audio (WMA): Tends to be more efficient at higher bitrates. The default consumer bitrates for most outputs and converters is 192Kbps stereo at 44.1Khz. At this bitrate, WMA is the most efficient file/compression format. Sixty seconds of audio at this bitrate may create a ~400K file.

MP3: The MP3 file format is probably the most popular audio compression format. At high bitrates, MP3 is less efficient than WMA at the same compression quality. Using the same source audio file as above, at 192Kbps stereo, 44.1Khz, sixty seconds of audio will create a ~1.4Mb file. At 32Kbps mono sampling, the MP3 will come in around 260K, the same quality and file size as the WMA at the same settings.

Flash (SWF): Flash files are not typically considered vehicles to deliver sound. Flash is generally a visual and interactive medium. However, Flash does offer MP3 compression within the file format that is decompressed by the player. Using the same source audio file above, Flash created a file at 32Kbps mono, medium quality that weighed in at 240K. At best quality, the file weighed in at 260K, identical in quality and file size to the MP3 file produced above. Flash offers synchronization of audio with presentation elements (cue points), random cues based on user input and choice, and the ability to trigger browser events based on cue points. A Flash file can also contain built-in loading indicators and pre-load portions of the audio.

The simplest method and recommended format is WMA. Stress test your application on the target environment. A slow connection may call for another method. Test early, and when in doubt – test often.

DO NOT USE WAV FILES! Sixty seconds of audio in a WAV file can easily reach 10Mb (uncompressed) and will never approach the compression efficiency of WMA's, MP3's and SWF's.

The previous recommendations are based on the assumption that Web-native courseware (browser based) will be distributed via a network. Concessions in quality can be made for hybrid CD-ROM distributions.

This table represents the information categorized on the previous page:

File type	File size (192Kbps)	File size (32Kbps)	Use when:
WMA	400K	260K	Normally
MP3	1.4Mb	260K	Optionally
SWF	338K (160Kbps – Max)	240K (medium quality)	When interactivity or synchronization is called for, or preloading is required.
WAV	10Mb		Never

Animation

Macromedia Flash and Shockwave may be used to develop animations and interactive content. The table below lists maximum file sizes:

	Average File Size	Max File Size
Low-Bandwidth	15K	40K
High-Bandwidth	50K	400K

**Required
Response Times**

The table below lists the average and maximum response times for multimedia contained within courseware. Maximum response times represent the upper-limit that a user shall wait to view media. This is the time it takes from initial activation of the media until it is downloaded and displayed for the user.

Type of Media	Average Response Time	Max Response Time
Static Visual	About 2 seconds	8 seconds
Streaming Media	About 5 seconds	5 seconds
Flash and Shockwave Media	About 3 seconds	8 seconds

The above response times are based on the amount of time a CGDN+ user should expect to wait to view content. The Government Program Manager may waive these requirements in rare circumstances.

**Page Response
Times**

Under normal conditions, any courseware or e-tool page should fully present within ten (10) seconds. The “Next” button, allowing users to progress to the next screen, shall be active within five (5) seconds without delay for the entire page to load.

Vendors may not exceed these guidelines without approval from the Government Program Manager.

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Interactivity Guidelines

Interactivity

Interactivity is the level to which a learner is drawn to engage in activities, thought, or problems within a course or tool.

Interactivity is a means not an end... The short-term goal is for a learner or performer to engage energy and thought in the course or tool. Interactivity is not the number of button clicks required of a user; it is how *engaged* the user is in the asset.

The ODP WBT Style Guide Draft developed by Vertex Corporation provides some excellent guidance relating to interactivity. The following table is drawn from the ODP WBT Style Guide:

Interactivity Levels

Interactive Level	Description
Level I-Passive	The learner acts solely as a receiver of information. The learner is required to read the text on the screen, view graphics, illustrations, charts, and use the navigational buttons to progress forward through the program or move back. An example of this type of WBT product may also contain pop-ups and hyperlinks to Websites, materials, and other information interspersed between the text and graphic presentations.
Level II-Limited Interaction	The learner makes simple responses to instructional cues. The WBT product includes learning activities listed in Level I as well as multiple choice and column matching related to the text and graphic presentation. A good example is a WBT product that includes these types of test items at the end of a unit of instruction to test the learner's grasp of the information.
Level III-Complex Participation	The learner makes a variety of responses using varied techniques in response to instructional cues. The responses may include those listed for a Level II – Limited Interaction as well as text entry boxes and manipulation of graphic objects to test assessment of the information presented. A good example of this type WBT product is desktop software training requiring the learner to perform as though using the program. Level III also refers to the complexity of graphics and special elements and implies greater use of 3D graphics and some animations.
Level IV—Real-time Participation	The learner is directly involved in a life-like set of complex cues and responses. This involves engaging the learner in a simulation that mirrors the work situation with stimulus-and-response coordinated in the actual environment. An example of this type of WBT product is using artificial intelligence similar to computer games and flight simulators.

Interactivity Strategies

Strategy	Explanation
<p>Minimal Engagement. Provide opportunities for learner activity and interaction every three to five screens. Mandatory interaction should not be superficial.</p>	<p>Without interaction, the course risks becoming an electronic page turner. BUT, if the action is deemed as unnecessary, the learner will become frustrated and dislike the instruction. So, include interactions frequently—but not useless interactions.</p>
<p>Grouping. Group the content into small segments and build in questions (with feedback), periodic reviews, and summaries for each segment.</p>	<p>Grouping content into smaller units and providing opportunities for interaction (e.g. questions or small scenario problems) within each information segment allows learners to interact with the program more frequently.</p>
<p>Questions/Problems. Ask as many relevant questions as possible without interrupting the continuity of the instructional flow.</p>	<p>Questions should provide immediate feedback to learners regarding their own performance, and sustain learner attention by keeping them mentally engaged in the learning process.</p>
<p>Contextualize. Take every natural opportunity to present practice, instruction, and assessment in the context of the actual performance. Use characters that are like the users/learners. Use situations that would occur on the job.</p>	<p>This is key to learner/performer motivation—the learning must be relevant to the job. This is particularly important to Coast Guard learners.</p> <p>This will also tend to enhance transfer of learning to the job; learners will have experienced appropriate stimuli.</p>
<p>Application Questions. Ask questions at the application level rather than at the memory level.</p>	<p>Application questions enhance attention and comprehension and facilitate transfer of learning. Coast Guard learners tend to be “application oriented”—they ask, “how will I use this?”</p>
<p>Ask Open Questions. Ask questions that get learners to think about the ramifications of poor performance, to get them to think, to stimulate curiosity.</p>	<p>A rhetorical question is a question that does not require learners to overtly answer. It invites learners to mentally interact with content. Used as transition, or early in a module of instruction, it can direct learner’s attention to what is coming up next.</p>
<p>Use Scenario Assessments. Put learners in situations that require them to synthesize and apply the things they have learned in the context of performance.</p>	<p>Scenarios hit two key points in online learning: 1) they provide the context for the performance, which immediately makes the training more relevant to learners; and 2) they provide an opportunity to use personal characters with whom the learners may relate. This latter point indirectly addresses the biggest drawback to online or e-learning: lack of personal connection.</p>
<p>Connect Learners with People. If possible, and whenever practical, connect the learners with people. This is best done using real-time or chat features, but learners can also “connect” with actual or realistic characters in scenarios. The key is, they need to associate their learning activity with people.</p>	<p>The most consistent criticism learners have about online training is the lack of personal contact. Many studies have shown that learners who feel connected to other learners and with their instructor prefer the instruction and are more likely to remain engaged. It is good to connect novices with experts wherever feasible.</p>
<p>Branching/Self-Directed Structure. Consider designs where the learner is not presented with information in a linear format, but rather discovers information through active exploration in the program. Developers should consider structuring a course for learner exploration or even along the lines of an actual complex experience, without a predetermined “order” to the learner’s selection of modules or topics.</p>	<p>This approach adds variety, challenges learners, maintains their interest, and is in keeping with the best research about how adult learners learn best.</p>
<p>Assessment Presentation. This strategy involves the intentional presentation of instruction as a natural result of feedback on a practice or “you-try-it” exercise. Instead of providing a pop-up box with cursory feedback, provide highly mediated presentation—sometimes for the first time—of content.</p>	<p>This approach takes advantage of what research has shown to be “most teachable moments”; that is, learners are most energetically engaged when taking quizzes and tests. This strategy invests development resources in presentation that is really feedback to learner actions or decisions.</p>

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Interface Layout: General Guidance

Scope

The standards described in this chapter apply to all courseware and electronic performance support tools (e-tools). Quick Reference Standards located in Appendices A and B describe more detailed requirements for asynchronous courseware (WBT or CBT).

The Goals

The design of interfaces for e-learning courses and tools is critical to the success and utility of the course or tool. Interfaces must be:

- Absolutely intuitive to the person who will be using it
 - Uncluttered
 - Simple: containing less than seven main options
 - Some interfaces may allow many options, but they are peripheral.
 - In the language of the novice performer
 - Quickly navigable by experts
 - In the language of the performance accomplishment (accomplishment, tasks, steps)
 - Structured against the desires or interests of the users
 - Visually excellent
-

Principles of Interface Layout

The following principles shall be followed in creating interfaces for all Coast Guard e-learning courses and tools:

- **Structure Content Into Accomplishment-based Organization.** In other words, base the structure of the web course or tool on the achievements the user may anticipate. Use the users' language for describing these accomplishments.
 - **Translate Content for Your Users.** Often, designers get into very technical and accurate language as they get to know the details of a performance. Use common words to define your content. Present it in as simple a way as possible.
 - **Ask Users What They Want (FAQs)**
 - **Keep it Simple: Accomplishments/Tasks/Steps.** Always present performance in terms of what the result of the performance will be, then the tasks that lead to that result, and then the steps that lead to the task completion.
 - **The Home Page should do a couple of things:** 1) present an overall view of the performance in simple (graphical?) terms. 2) reflect the accomplishments and major features of the tool.
-

-
- **Layered Interface Design.** Organize complicated content into “layers” that share visual and navigational features. See glossary for description of “Layered Interface Design.”
 - **Graphical Interface Elements.** The web and computer are essentially visual media. Use high-quality graphical icons and elements to support your purposes. If you cannot get high quality visuals, use only text.
 - **Menus.** Use standard protocols for menus, global navigation (major elements) is horizontally represented across the top of a page (and bottom), and local navigation/organization is represented vertically down the left side of the page.
 - **Expanding Menus.** Do not overwhelm users with choices—especially if they are novices. Use expanding menus to present options but not overwhelm. See glossary for definition of “Expanding Menus.”
 - **Incorporate Feedback.** Users need to know ‘where they are’ in the application or course; they also need to know if the button they just clicked or moused over did (or does) anything. Use SUBTLE signals to show them there is a button here, or that their last click is activating a control. Industry leaders use subtle changes to text color or underlining to show that a user has moused over an active link.
 - **Show Position/Progress.** Use breadcrumbs or bookmarking to help users know where they are, or pick up where they left off. As courses and e-tools become more complex, the user has a growing need to orient him or her to where they are in an application or course.
 - **Clear outputs: screens, reports.** When incorporating a report or a query response in a course or tool, make sure that the output is clear to the user for the user’s intended purpose. If a print-out is used, insure that the report is clear in printed format.
 - **User Testing.** Perhaps the most important thing to remember in interface design is that you must create the interface for the intended users. Test it. Find people from the intended user group and test it on them. Then, revise it to match your findings.
-

Navigation Elements

Unless the Government Program Manager waives this requirement, all courseware or e-tools shall have the following navigation elements on every screen. A quick reference guide for navigation can be found in Appendix A.

“Home”: Every screen shall have a “home” button on every screen. This button shall be located on either the top or bottom screen bar.

“Exit”: Every screen shall provide an exit button that will bookmark the location for courseware and close the application for e-tools. This button shall be located on either the top or bottom screen bar.

“Next”, “Back” or “Menu”: Every screen shall have a navigation button for normal progression. It shall be either “Next” and “Back” for linear navigation, or a static, drop-down, or expanding menu for branching navigation. These buttons shall be located on either the top or bottom screen bar.

“Glossary”: Normally, every screen will have a “glossary” button, but this may be eliminated if it does not enhance the function of the course or tool.

Progress Indicators

Every screen shall provide some means for identifying the current location within the course or e-tool, and should provide a means for orienting the user to how that location relates to 1) earlier screens, and/or 2) next options.

Breadcrumbs are the most common method of accomplishing this, but subtle graphical indicators that refer back to an explanation or pervasive metaphor may be used with Program Manager approval.

Example of breadcrumbs (at top left of content screen):

[Home](#)>[Financial Lessons](#)>[Budgeting](#)> [Balancing the Checkbook](#)

Graphics Layout

The asynchronous courseware standards are located in Appendix B, the quick reference standard for graphics.

All graphics shall be web-optimized and arranged so that the screens are aesthetically and functionally appropriate as judged by the Program Manager.

Standards for Blended Solutions

The presentation standards for all e-learning portions of blended solutions shall adhere to these standards. Whenever possible, blended solutions will be based in a common website with standard navigation and visual elements. From the perspective of

the user, all the components should be part of one single system: the job performance system.

Therefore, in the case of blended synchronous and asynchronous courseware, it is optimal that the synchronous portions be part of the asynchronous package. For example, in the Hazardous Waste Coordinator courseware, most of the course is asynchronous; however, the learners may access a synchronous component at set times using the Flash Communications server. It looks just like the rest of the course screens and is accessed from the Hazardous Waste Coordinator home page. To users, it seems like part of the same course.

Asynchronous Web-based Courseware Standards

Development Tools and Standard Outputs

A quick reference standard for graphics requirements is located in Appendix B.

Tools. The preferred development tool for asynchronous courseware (WBT and CBT) is Lectora Publisher by Trivantis Corporation.

For graphics and animation work the preferred tools are:

- Macromedia Flash, Shockwave, and Fireworks
- Photoshop
- 3D Studio Max

The Coast Guard's Interim Learning Management System (LMS) (until 1FEB04) is the DOCENT LMS. All courseware must play on the DOCENT LMS. DOCENT Learning Content Management System (LCMS) tools may be used with Program Manager Approval.

AICC HTTP Protocol: Coast Guard asynchronous courseware (WBT and CBT) shall utilize the AICC HTTP protocol.

SCORM API and AICC API may be used with Program Manager approval. The Coast Guard prefers the AICC HTML Protocol because it provides the flexibility to distribute courseware to units that are disconnected with the LMS.

Develop Web-Native Courseware. All courseware shall be developed web-native — even if the course uses “heavy” media. We do this because 1) instruction does not generally require large media, 2) “backfitting” courseware is difficult, and 3) the courseware (or parts of it), may survive the next bandwidth breakthrough. Web delivery of courseware is preferred whenever possible because access is assured to all who need the knowledge or skills, and because updating is much more reliable than any other delivery.

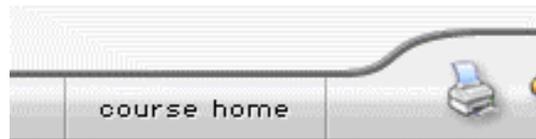
Navigation Elements

Asynchronous Courseware standards are defined in the quick reference guide for navigation found in Appendix A.

Global Navigation:

Unless the Government Program Manager waives this requirement all courseware or e-tools shall have the following navigation elements on every screen.

“Course Home”: Every screen shall have a “home” button on every screen.



“Exit Course”: Every screen shall provide an exit button that will bookmark the location for courseware and close the application for e-tools.



“Next”, “Back” or “Menu”: Every screen shall have a navigation button for normal progression. It shall be either “Next” and “Back” for linear navigation, or a static, drop-down, or expanding menu for branching navigation.



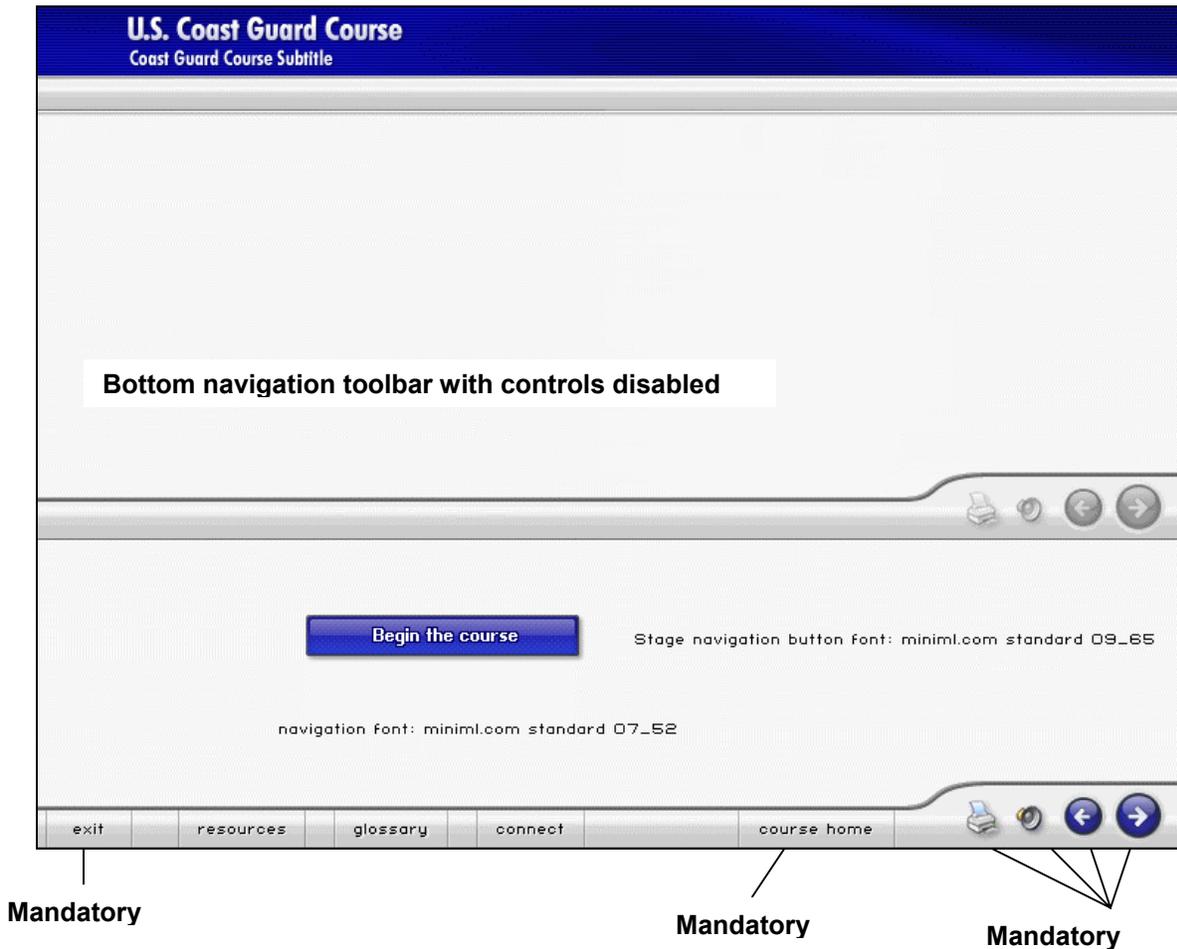
“Sound Icon”: When there is audio on a screen, the “sound icon” should be represented in the lower center of the bottom screen bar.



“Glossary”: Normally, every screen will have a “glossary” button, but this may be eliminated if it does not enhance the function of the course or tool.

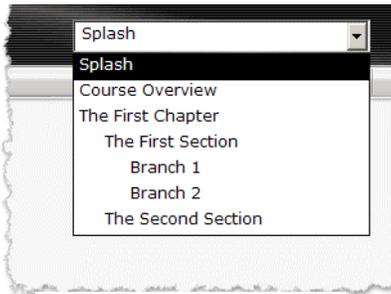


Navigation Features Summarized



Menu Standards

There are many ways to lay out menus within a course or e-tool. *Follow the industry standard: global navigation options arranged horizontally across the top of the screen, and local navigation arranged vertically down the left side of the screen.* The following standards apply unless waived by the Program Manager:



Drop-down menu

- 1) Global or Overall Navigation elements shall be either:
 - a) Across the top of the screen arranged horizontally with:
 - San-serif fonts
 - Subtle mouse-over cues to show links (Font changes color or underlines)
 - b) Conspicuous, easy-to-decipher Icons

The horizontal menu is the preferred global navigation.

- 2) Module Navigation shall:
 - a) Be consistent across the application
 - b) Be text-based, using the left 1/5 of the screen
 - c) Show no more than 7 options on initial screen load.
When more than 7 options are desired:
 - first preference is the use of expanding menus
 - another option is breaking the screen options up into other screens

Expanding Menu



Orientation Indicators

Every screen shall provide some means for identifying the current location within the course or e-tool, and should provide a means for orienting the user to how that location relates to 1) earlier screens, and/or 2) next options.

Breadcrumbs are the most common method of accomplishing this, but subtle graphical indicators that refer back to an explanation or pervasive metaphor may be used with Program Manager approval.

Example of breadcrumbs (at top left of content screen):

[Home](#)>[Financial Lessons](#)>[Budgeting](#)> [Balancing the Checkbook](#)

Assessment Standards

The goals of assessment are that the Coast Guard can ascertain that learning has occurred and so that performers can gain a sense of how they mastered the required performance.

Pre-tests/Post-tests

- Pre-tests are used to measure learners' entry knowledge and provide them with a sense for what they need to know. They may also be used to have learners "test out" of parts or all of a course.
- Post-tests are completed upon completing training and are used to measure the degree of learning that actually occurred. One interesting research finding is that the activity that has the greatest impact on long-term memory is not course activities, rather, student responses in final test situations. Use this opportunity to evaluate learning but also to reinforce it if possible.

Learner Competence Level

The recommended competence level for Coast Guard e-learning courseware is 80% on the post-test.

Types of Assessments

Whenever possible, use real-life scenarios and performance stimuli and conditions that approximate the real work world. Post-tests shall be practical and whenever possible, set within a scenario requiring a synthesis of trained objectives.

Practice Assessments. Practice is used to ensure learners comprehend the training content. Practice exercises are presented within a module (typically every three to five screens). There shall be at least one practice question for each enabling objective.

Module Assessments. At the end of each module, enabling objectives shall be assessed. These assessments must match the nature of the performance required by the objective. If a learner is supposed to perform a particular skill, then the skill must be elicited and evaluated. Stay away from tests of pure memory. Require performance within a realistic context whenever possible.

Creative Alternatives. It is possible to use multiple choice tests to test complex practical behavior. Present a scenario that would elicit the performance. The performance, in turn, produces a step-by-step behavior and then (if done correctly) a product. You can use multiple-choice questions that ask details about the product that will show whether or not the practical skill was performed. Feedback is difficult in these situations since there is not real record of HOW the performance was achieved.

Use **Case Studies** and **Practical Product-Producing** exercises.

Use good test-writing techniques as presented in The Systematic Design of Instruction, Walter Dick and Richard Carey.

Storyboard Requirements

A storyboard defines the look and feel of each screen and provides the specific media or special element development requirements of each screen. Do not worry about actual look of graphics or special media elements, but DO include text descriptions of the functions and look of these things. Storyboard each screen.

The storyboard is essentially a text document that defines the goals of development. In the course of development, it is essential to get sponsor buy-in on look-and-feel issues. Create a four to ten screen “**Look-and-Feel**” **Preview** that will show screen layout, branding, and special functions.

Coordinate with PTC at TRACEN Yorktown to ensure you use an acceptable storyboard structure. A template is available from PTC upon request. The text on these storyboards should look exactly like the text you will use in the course. Graphic elements

can be represented by primitive graphics or text, but must be described clearly. Developers should develop from these descriptions.

**Course
Evaluation
Standards**

At a minimum, a Level I evaluation should automatically be associated with every course and activated upon completion. Level II evaluations may be conducted at the end of a course, or throughout the course. A Level III evaluation should be conducted within 6 months of course completion.

Example of a Design Storyboard

Note that the storyboard only describes requirements for a screen, it does not actually depict the visual or functional elements. In addition to these text storyboards, we use a four to ten screen “Look and Feel” Preview to confirm the style and look of the asset.

Storyboard Example

COURSE	SC&E
LESSON	SAR System

STORYBOARD 064
DATE 1 August 2003

TEXT



STUDENT PROMPT	Click NEXT to proceed.
----------------	------------------------



Talking head of a woman (babysitter) Watchstation watermark background

Programmer Notes	Graphic / Audio Text
------------------	----------------------

Show talking head, “2100 Hours,” and play audio. After audio complete, fade out talking head and 2100 Hours, then enter text.	(Audio) Hello, is this the Coast Guard? My name is Judy Dunn. I’m babysitting Mr. Schmidt’s daughter. He went fishing this morning and hasn’t returned to pick her up. I’m worried.
--	---

Collaborative Courseware Standards

Systems and Approaches

What is “Collaborative Courseware”?

In collaborative courseware learning occurs largely because of the interactions (real-time or not) between students and between students and instructor. There are several ways to do this:

- Threaded Chats
- Virtual Classrooms: Students meet in real-time with an online instructor
- Voice Over IP: The internet carries the audio—typically one way—from one participant to all.
- Web/Phone System: This growing strategy uses the web to present visuals and facilitate threaded discussion while using the telephone to carry audio.

Systems Used in the Coast Guard

TRACEN Petaluma has led in the development and use of collaborative courseware and is now delivering courses using two systems: Blackboard and Web4M. The Instructional Support Team (IST) at TRACEN Petaluma is a great resource for questions or information about collaborative systems.

Strengths of Collaborative Systems

1. Since an instructor or facilitator is involved, many of the challenges of other online approaches are eliminated: there is a personal connection with instructors and other students.
2. Look and feel issues are minimal since the system generally dictates these sorts of things. Still, standard presentation principles apply and all graphics must be web-optimized.
3. Since an instructor is involved, the amount of time that must be dedicated to course design and development are much reduced over asynchronous deliveries. Course development for collaborative courseware has been estimated to take between five and ten times longer than for classroom delivery of training. This is a small percentage of the time required for other e-learning tools and courses.
4. This method is widely used by colleges, and there are many great instructional tactics available.

-
5. Content can be real-time. Case studies can be current. Relevant news can be included in the instruction.
-

Course Design

Standard Instructional Systems Design methodology shall be applied. Course Design should follow the process outlined for general development, but one obvious difference is that there will be an instructor or facilitator “filling in content gaps.”

Electronic Performance Support System Standards

Articulating EPSS Objectives

EPSS design is almost identical to courseware design with the exception of the approaches and special elements employed. Further, EPSS takes on a different world, the visual and navigation elements are much more varied and flexible.

Stating Performance Objectives. One great similarity between courseware and EPSS (or e-tools) is that the desired outcomes are performance accomplishments. EPSS objectives are written exactly the same way as courseware objectives, including three main parts:

- 1) A description of the performers (Condition)
- 2) The required achievement (Performance)
- 3) And the “standard” criteria—the desired expertise level (Standard)

These objectives look just like training objectives.

Stating Technical Performance Objectives. In addition to what people will accomplish using the EPSS, it is critical that minimum technical performance criteria be specified. Use the same type of structure in stating these objectives.

- 1) A description of the circumstances (Condition)
- 2) The required technical performance (Performance)
- 3) And the minimum criteria for acceptable technical performance. (Standard)

For example, if the EPSS were a web-based system assisting computer repair personnel to install an operational printer, the following objectives would be appropriate:

- **Human Performance Objective:** Given the EPSS and a normally functioning CGDN+ Network, an “A” School trained Electronics Technician will install a printer in good working condition.
- **Technical Performance Objective:** Given routine network performance, the EPSS will present full-function screens to users within 5 seconds of activation.

In practice, these objectives are listed in two adjacent lists and become the criteria for evaluating EPSS efficacy.

**Development
Tools and
Standard Outputs**

Tools. The preferred development tools for EPSS (e-tools) is Macromedia Dreamweaver. Lectora Publisher by Trivantis Corporation also provides an easy web-authoring environment.

For graphics and animation work the preferred tools are:

- Macromedia Flash, Shockwave, and Fireworks
- Photoshop
- 3D Studio Max

For Database elements, the Coast Guard standard for web-based databases is MsSQL and the desktop database tool is Microsoft ACCESS.

Personal Data Assistants (PDAs) and Tablet Computers... There are no standard mobile computing technologies for EPSS use. All EPSS hardware must be compatible with the CGDN+ software and security standards. The CGDN+ uses a Microsoft XP operating system. ActiveSync is a standard plug-in.

All courseware must play on the DOCENT LMS. DOCENT Learning Content Management System (LCMS) tools may be used with Program Manager Approval. Sharable Courseware Objects (SCOs) used in EPSS products will launch these objects using the LMS.

AICC HTTP Protocol: When using WBT as part of an EPSS, utilize the AICC HTTP protocol.

Develop Web-Native EPSS Applications. All EPSS applications shall be developed web-native—even if the tool uses “heavy” media. We do this because 1) performance support does not generally require large media, 2) “backfitting” of applications is difficult, and 3) the application (or parts of it), may survive the next bandwidth breakthrough. Web delivery of EPSSs is preferred whenever possible because access is assured to all who need the knowledge or skills, and because updating is much more reliable than any other delivery.

**Navigation
Elements**

The principles and requirements for navigation in an EPSS are the same as those listed for general interface design.

The Volume of Options is Overwhelming. The unique problem that is often presented with EPSS is that there is so much content that users are baffled by the sheer volume of it. This is a

significant problem with novice performers. Therefore, the presentation of menus and menu options is critical in EPSS.

Clearly define who the target audience is — if novice performers will use the system, then the interface and menu design may be the most important aspect of the system

Two Ways to Structure an EPSS

There are two main ways to structure an EPSS:

- 1) Structure based on Accomplishments. This is the preferred method and is always appropriate.
- 2) Structure based on Roles. Some jobs, particularly management or leadership positions, are really a set of combined roles. Each role has a set of accomplishments and tasks associated with it.

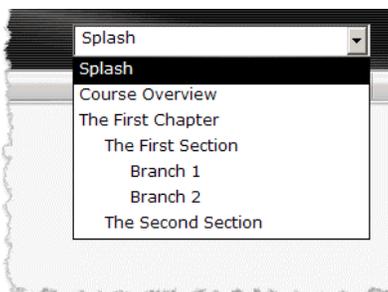
Many systems incorporate both options. The primary interface may be based on major accomplishments, but then a secondary option allows users to access a role-based interface.

Role-Based Interface Example

An example of how a role-based interface may be designed might be an EPSS for Company Commanders at TRACEN Cape May. The CC fills several roles: Leader, Trainer, Mentor, USCG Expert, Coach, Military Superior, etc. An interface structured along roles, which are then organized along accomplishments, tasks, and steps within each role, might be very appropriate.

Menu Standards

There are many ways to layout menus within a course or e-tool. *Follow the industry standard: global navigation options arranged horizontally across the top of the screen, and local navigation arranged vertically down the left side of the screen.* The following standards apply unless waived by the Program Manager:



Drop-down menu

- 1) Global or Overall Navigation elements shall be either:
 - a) Across the top of the screen arranged horizontally with:
 - San-serif fonts
 - Subtle mouse-over cues to show links (Font changes color or underlines)
 - b) Conspicuous, easy-to-decipher Icons

The horizontal menu is the preferred global navigation.

2) Module Navigation shall be:

- a) Consistent across the application
- b) Text-based, using the left 1/5 of the screen
- c) Show no more than 7 options on initial screen load.

When more than 7 options are desired:

- first preference is the use of expanding menus
- another option is breaking the screen options up into other screens.

The screenshot shows the 'HAZARDOUS WASTE COORDINATOR' web application. The header is red with a 'HOME' button and a logo. Below the header is a horizontal navigation menu with buttons for 'Receive', 'Identify', 'Inspect', 'Dispose', and 'Mgmt Tool'. A secondary menu below that includes 'Resources' and 'Glossary'. The main content area is titled 'Receiving and Storing the Waste-Overview'. On the left is a vertical sidebar menu with expandable sections: 'Screening the Material' (with sub-items: Overview, Known non-hazardous/non-regulated waste, Reusable or recyclable material, Known hazardous waste, Unknown waste, Universal waste), 'Securing the Waste', 'Marking the Container', and 'Storing the Waste'. The main content area features a photo of a worker in a blue uniform and cap writing on a clipboard next to a large black drum. To the right of the photo is text explaining the role of a HW Coordinator and a list of tasks: 'Receive the waste', 'Place in proper container', 'Document the waste', 'Mark the container', and 'Store in proper location'. Below this is a paragraph about common vs. unidentified wastes and a section for 'Related Tasks'.

Orientation Indicators

Because EPSSs can be so large, users often get lost in the screens. It is critical that screens give indications of the major section of the EPSS that the user is currently using, and that it shows where the user has been.

Every screen shall provide some means for identifying the current location within the course or e-tool, and should provide a means for orienting the user to how that location relates to 1) earlier screens, and/or 2) next options.

Breadcrumbs are the most common method of accomplishing this, but subtle graphical indicators that refer back to an explanation or pervasive metaphor may be used with Program Manager approval.

Example of breadcrumbs (at top left of content screen):

[Home](#)>[Financial Lessons](#)>[Budgeting](#)> [Balancing the Checkbook](#)

Accomplishment-Centered

The EPSS must, at every turn, point straight at the performance accomplishment. Many systems have been fielded that provide exhaustive reference materials to performers. While they are helpful, they are not good performance support.

Link to Tools

Why have a person learn to do a thing that can be reliably or automatically done by a computer? Whenever possible, link processes to tools that actually do the performance for the user. EPSS is not about teaching; it is about getting the job done.

Storyboard Requirements

An EPSS is a complex system. Use the storyboarding methods described for asynchronous courseware to structure flow and accomplishment. Use these storyboards to brief Coast Guard sponsors. Storyboards shall be used in design of an EPSS unless specifically waived by the Government Program Manager.

**EPSS/e-Tool
Evaluation
Standards**

Refer to the Coast Guard's Evaluation SOP. Use the performance and technical performance objectives developed in design (described earlier) to develop criteria for success. Otherwise, evaluation of performance based on EPSS intervention is similar to evaluation of performance based on courseware intervention.

Knowledge Growth Systems

What is a “Knowledge Growth System”?

Bill Gates said that the most valuable thing about an organization is not what it produces, but “what it knows and can learn.” This is true of the Coast Guard. The web and other communications and mobile technologies have dramatically improved our ability to communicate, capture knowledge, and work together to build new knowledge.

Knowledge Growth Systems are systems (regardless of technologies used) that help us capture knowledge, share it, and then communicate about it to gain consensus and grow “new” insights.

Examples of Knowledge Growth Systems include:

- Online Communities of Practice: websites which include threaded chat areas, file sharing, and the ability to create new topic areas.
- Expertise Exchanges: websites that allow individuals to pursue topics of interest, share experiences, and share advice. The D7 University is a great example of an expertise exchange.
- Wiki: This web-phenomenon is essentially an online dynamic dictionary. It works by storing entries keyed to concepts or words, and then presenting recent contributions. It grows. PTC used a Wiki in developing requirements for the Coast Guard’s Learning Management System. Danny Langdon, a past president of the International Society for Performance Improvement has made a powerful case for the importance of the “language of work”. A Wiki focuses on clarifying and growing the language of work to match current needs.
- Blog: or “Web Log”. This is a method of capturing and sharing knowledge that is painless for participants. Essentially, people log impressions, perceptions, beliefs, and opinions at a simple entry point. It is primarily for their own use. But, with simple or automated features, those entries become publicly accessible. Result: interested people grow in perspective by having a “view” into the thoughts of others.

The list is endless. There are many approaches to facilitating the “creative abrasion” that creates the knowledge the Coast Guard needs to accomplish our missions.

History Shows

One of the important things to remember about all of these “knowledge growth” strategies is that they are completely dependent upon their users for efficacy. They are only used if they have value, and they only have value if they are used.

The point is that simply fielding a knowledge growth system will not insure its use. There must be a thorough evaluation of the point of the system and the user group.

History shows that groups that really use these systems typically:

- Are computer users already
- Have an intense need to grow their knowledge or expertise base
 - Or, have an immediate operational need
- Have some discretion in the use of their time
- Are large. The odds of a group of 15 people having the interest to maintain a dynamic online community are very small. Larger populations are generally required to have the requisite number of the type of people who prefer this type of interaction.
- Subscribe to email user groups, so that content and discussion are “pushed” to them.

History shows that using knowledge systems like this for small groups of hands-on workers with little discretionary work time does not work.

Web-Based

Though no technologies are implied here, and mobile technologies are used in several knowledge capture and growth applications, these systems should be designed for web use. Ultimately, the nature of shared knowledge lends itself to web strategies. So, consider a web base to any knowledge growth system.

Certification of Courseware and Electronic Performance Support Tools

Course and EPSS Certification

Courseware and electronic performance support tools developed in accordance with these standards and evaluated by an approved Coast Guard e-Learning Reviewer may be certified as “Coast Guard e-Learning” products. Courses and tools with this certification shall have the “Certified Coast Guard e-Learning” brand on the home page or splash screen.

Authorized Reviewers. Courses and electronic performance support tools shall be evaluated by reviewers at either the PTC at TRACEN Yorktown or the Instructional Support Team at TRACEN Petaluma. These reviewers will use processes based on the ASTD e-learning courseware certification model to evaluate and certify Coast Guard e-learning products.

All asynchronous courseware shall be certified prior to fielding it on the Coast Guard’s Learning Network. The concern here is for instructional quality, performance effectiveness, and technical performance.

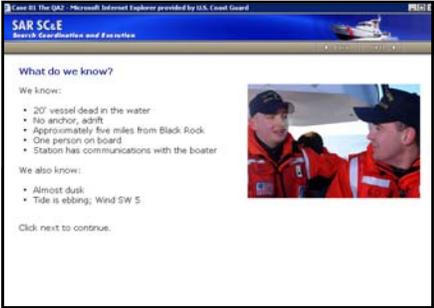
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Appendix A: Visual Layout and Navigation Standards

Area	Standard	Notes
Screen Size	<ul style="list-style-type: none"> 780 x 578 	
Pop-up Size	<ul style="list-style-type: none"> approx 200 x 300 	Use best judgment...
Pop-up Box Title	<ul style="list-style-type: none"> Matches text header 	
Navigation	<ul style="list-style-type: none"> Use templated controls for Home, Next, Previous Use templated graphical menus when appropriate 	Standard and familiar to the student
Navigation Instructions	<ul style="list-style-type: none"> Use the standard nav instructions 	Contact PTC at TRACEN Yorktown for standard navigation instructions
Mandatory Navigation Elements	<ul style="list-style-type: none"> The noted templated controls are mandatory>>> 	Exit, Course Home, Next, Back, Sound Icon (if sound associated with screen)
Exit Button	<ul style="list-style-type: none"> Place exit buttons on every screen 	
Next Button	<ul style="list-style-type: none"> Use templated next button on all but last presentation screen and last test screen. 	 <p style="text-align: center;">Next Button</p>
Back Button	<ul style="list-style-type: none"> Use templated “back” button on all but the Splash Screen and the first test screen. 	 <p style="text-align: center;">Back Button</p>
Course Home Button	<ul style="list-style-type: none"> Use templated “home” button on all but splash and home page. 	 <p style="text-align: center;">Home Button</p>
Sound Icon	<ul style="list-style-type: none"> Use templated sound icon when there is audio on screen. 	 <p style="text-align: center;">Sound Icon</p>

Screen Border and Element Colors	<ul style="list-style-type: none"> • Colors may vary but must be approved by government project manager. 	
Screen Progression	<ul style="list-style-type: none"> • Splash Screen • Course Admin Screen • Navigation Instructions • First Learning Screen 	
Splash Screen Elements	<ul style="list-style-type: none"> • CG Brand • Course Brand • Course Graphic • Title • Certification Branding • Forward arrow only 	Course Brand may be large on this screen.
First Screen Elements (Course Admin Screen)	<ul style="list-style-type: none"> • Course Title • Course Overview Information • POC • Sponsor (School/Program) • Announcements • If Facilitated: Instructor info link 	<p>This is the first course screen. If there is a community of practice, the link should be here....</p> <p>If there is a synchronous component, this screen should post scheduled synchronous sessions.</p>
Global Screen Elements	<ul style="list-style-type: none"> • Branding • Home • Exit Button • Forward • Previous • Print optional 	Options: glossary, print, wiki, application help...
Course Branding—Course Title	<ul style="list-style-type: none"> • Recommended Font Style: None • Recommended Font Size: None • Recommended Font Effects: None 	
Course Branding--Visuals	<ul style="list-style-type: none"> • Not required • Use only when appropriate to course • Graphic may be no taller than 47 pixels • Must fit in the banner area above any navigation controls 	<p>Maximum size: 47 pixels high by 780 pixels wide.</p> 

Appendix B: Text, Graphics, and Audio Layout Standards

Area	Standard	Notes
Pop-up Text	<ul style="list-style-type: none"> Header; 12 pt Verdana Bold Text: 11 pt Non-bold 	
Text Menus-Font	<ul style="list-style-type: none"> See Notes ⇒ 	“Standard 07_52” from Miniml.Com Font Size: 8 points
Typeface	Verdana	
Headers	Verdana 14 Bold	
Sub-headers	Verdana 12 Bold	
Regular Text	Verdana 11 Not Bold	
Text principles	Short line of 40 – 60 characters Limit amount of text on screen Use: <ul style="list-style-type: none"> bullets numbered lists table charts 	<p>This is the maximum text you should use..</p>  <p>This is the optimal amount of text</p> 
Reading Level	Draft all text to be read at the 7 th grade reading level using the Fog Index Reading Level indicator.	Use the <i>Flesch-Kincaid Reading Level Score</i> that is part of Microsoft Word to determine reading level of a document.

Text Appearance	<ul style="list-style-type: none"> • Don't indent paragraphs • Left justify • Reserve upper case for special titles • Underline and color hyperlinks following standard visibility guidelines • No blinking text 	Left justify titles
Bullet Appearance	When using bulleted lists, use "Wingdings 11pt Square Bullet"	Or use custom bullets specific to the course. No flying bullets!
Bullet Indentation	Indent bulleted lists at .2 inches	If the bulleted statement is a complete sentence, then use periods, otherwise do not use periods.
Static Graphics	<ul style="list-style-type: none"> • JPEG (preferred) • GIF • SWF 	
Static Line Drawing Formats	<ul style="list-style-type: none"> • GIF • SWF 	Used for diagrams and schematics. Often used to illustrate mechanical processes or parts.
Animation Formats	<ul style="list-style-type: none"> • GIF • SWF 	
Static Graphic Shadows	Use shadow to place static graphic off screen	If appropriate. Use only on solid backgrounds.
Audio Formats	<ul style="list-style-type: none"> • SWF • MP3 • WMA 	
Audio Use	<ul style="list-style-type: none"> • Use judiciously where appropriate to mastery of objective • Digitize at 22 kHz • 16 bit • Mono 	Record highest quality possible. Use stereo ONLY when you have an absolute need for it.
A-V Formats	<ul style="list-style-type: none"> • SWF • WMF • MPG 	
A-V Use	Use judiciously where critical to mastery of objective	Prefer archive video in uncompressed AVI or original tape.
3D Illustration	Display as JPEG or GIF	Develop in 3DS for archiving capability
Use of Background Images	Use solid backgrounds	

Appendix C: e-Learning Program Roles and Responsibilities

Unit/Office	Role	Responsibilities
G-WTT	Program Manager	<ul style="list-style-type: none"> • Promulgate e-learning policy • Fund system • Provide oversight and direction • Coordinate with Headquarters programs for alignment of policy and direction
PTC Yorktown	Program Execution	<ul style="list-style-type: none"> • Run day-to-day e-learning system operation • Maintain e-learning policy • Manage and distribute e-learning funds • Draft vision documents • Acquire, Administer, and Maintain LMS, LCMS, authoring, and media systems • Develop e-learning processes • Coordinate USCG e-learning development • Coordinate e-learning certification processes • Conduct courseware and e-tool certification • Develop courseware and e-tools • Oversee external development of courseware and e-tools (COTR Capacity) • Coordinate with CGI to build and administer e-testing system • Lead for Asynchronous development and delivery processes
TRACEN Petaluma	Courseware Certification and System Development	<ul style="list-style-type: none"> • USCG e-learning system development • Coordinate e-learning certification processes • Develop e-learning processes • Conduct courseware and e-tool certification • Develop courseware and e-tools • Administer allotted e-learning development funds • Lead for Synchronous product development and delivery processes
TQC	Quota Manager	<ul style="list-style-type: none"> • Work with training providers and PTC to position people and processes to execute student assignment and tracking
CGI	Distance Learning	<ul style="list-style-type: none"> • Lead for e-testing performance requirements • Coordinate with PTC for system plans and implementation for e-testing
TRACENs, LDC, TRATEAMS	Training Providers	<ul style="list-style-type: none"> • Work with G-WTT and PTC on e-learning projects as defined by the TAC or approved by G-WTT.

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Appendix D: Initiating a Project and Time/Cost Estimates

Two Ways to Start a Project

e-Learning Development can be initiated in one of two ways: either a program proposes and resources the analysis, design, and development of courseware or e-tools, or the Training Advisory Council (TAC) identifies the need for e-learning development.

From TAC Input

The TAC impacts development in two ways: first, projects that were identified for analysis are the highest priority for development. Second, in support of the e-learning initiative, the TAC approved a prioritized listing of course conversion projects. These development priorities reflect the Coast Guard's performance priorities.

Requesting e-Learning Development Assistance

A program may request design and development assistance online by going to http://10.30.80.243/ptc/proposal_form.asp and completing the "e-Learning Project Proposal" form. This form is also available from the Coast Guard's Learning Network Portal. Directions for completing and submitting the form are on the form. The person submitting the proposal will be contacted by an e-Learning training/performance provider within 10 working days to discuss the options and costs of the proposed project.

e-Learning Development Costs, Expectations, and Timelines

Costs of Development

There are four established levels (sometimes called “categories”) of interactivity. A full description of these levels is found in the USCG e-Learning Standards and Styles Guide. Essentially, the four levels range from linear instruction requiring passive learner participation to real-time participation in a set of life-like cues and responses. Development hours are directly proportional to the complexity of interactivity. The following table describes cost per student hour of various levels of instruction.

Development Costs For Interactive Tools and Courseware

Interactive Level	Cost per Finished Hour of Instruction
Level I	\$10,000-\$20,000
Level II	\$25,000-\$35,000
Level III	\$40,000-\$50,000
Level IV	\$55,000-\$70,000

Source: OPD WBT Style Guide Draft quoting ASTD (2002)

Actual costs for specific projects vary greatly depending on the complexity of the project and the availability of resources. It is less expensive to have internal USCG developers complete a project than to have contractors do it. But, internal resources are extremely limited, almost completely dedicated to projects identified by the TAC as Coast Guard priorities.

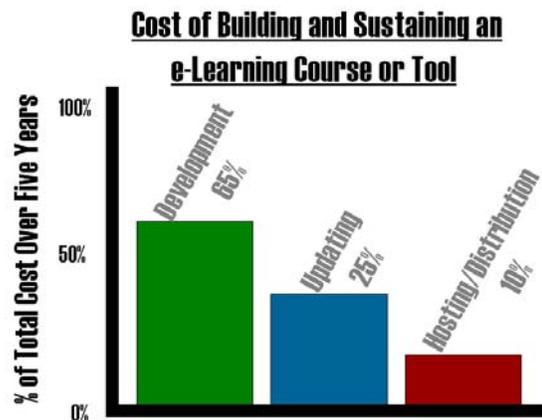
It is generally a little less expensive to work with contractors at a Coast Guard TRACEN than to contract to have all the work done outside. In this case, the Coast Guard can provide design labor, and can direct control over development decisions. The figures above describe the costs for having a contractor take a project from start to finish, developing at the contractor’s location.

Overall Costs

What are the costs associated with e-learning development and maintenance? Though actual costs vary, there are three common cost areas:

1. **Initial Design and Development: 65% of total costs over 5 years.** The initial design and development, which is the most expensive portion of development. This includes any pre-design analysis, design, and development.

-
2. **Regular Updates: 25% of total costs over 5 years.** Industry standards are that e-learning assets (courses and tools), require updates every *two* years and the costs average about *15%* of the original development costs.
 3. **Hosting/Distribution: 10% of total costs over 5 years.** Regardless of the asset type, there are costs associated with hosting or distributing the asset. Here are some examples:
 - An e-learning course costs \$2000 a year to host in the Coast Guard's Learning Network. This cost includes hosting, cataloging, student tracking, inclusion in the LMS, and access from the Learning Network Portal.
 - In one case, a web-based database was part of the performance intervention for an e-tool. Hosting and maintaining this database are costs that must be included in the deployment and maintenance costs.
 - Some e-learning assets are distributed via CD-ROM. The costs of printing and mailing these CD-ROMs must be included in the deployment and maintenance costs.



Managing Expectations: Complexity and Costs for Different Development Projects

This table provides a picture of the complexity and requirements of different types of development. The key to understanding this table is to see that the complexity of a development project is a function of the difficulty of the accomplishment and how much of the accomplishment will rely on the tool.

Asset Type	Complexity	Analysis Detail	Developer Expertise	Cost
Synchronous Courseware	Low	Low	Low	Low
Simple e-Job Aid	Low	Medium	Low	Low
Community of Practice	Low	Low	Low	Low
Online Project Area	Low	Low	Low	Low
Wiki	Low	Low	Medium	Low
Blog	Low	Low	Low	Low
Database	Medium	High	Medium	Med
Workgroup Portal	Medium	Medium	Medium	Med
Expertise Exchange	Medium	High	High	Med
IETM	Medium	High	High	High
Asynchronous Courseware	Med-High	Medium	Med-High	High
EPSS	Med-High	High	Med-High	High
Blended Learning Solution	Med-High	High	Med-High	High
Mobile Performance Support (Tablet, Wearable, PDA)	High	High	High	Med-High
Blended Performance Solution	High	High	High	High

Maintenance and Sustainment Costs

The table below provides information about maintenance and sustainment costs of different types of e-learning assets. Though specific maintenance and update costs run about 15% of initial development costs every two years, actual maintenance costs vary greatly depending on the technologies and interactivity of the asset. In the case of courseware, an additional “Learning Network Share” fee is assessed annually. This fee helps pay for the infrastructure of the Learning Network.

Here is an example. Let us say the online “Introduction to Port Security Course” development costs were \$100,000. Then (on average) the maintenance costs every two years would be about \$15,000. Since the course resides and is hosted on the Coast Guard Learning Network, then the “Learning Network Share” of \$2000 a year is also assessed. This means that the costs of the course work out this way:

- | | |
|-------------------------------|------------------------|
| 1. Initial Development: | \$100,000 |
| 2. Learning Network Share Fee | 2,000 (Annually) |
| 3. Update/Maintenance Costs | 15,000 (Every 2 Years) |

Maintenance/Sustainment Costs for e-Learning Assets

Asset Type	Learning Network Share*	Updates (2 yrs)
Synchronous Courseware	\$1000	15% of Dev costs
Simple e-Job Aid	0	15% of Dev costs
Community of Practice	0	License Costs
Online Project Area	0	License Costs
Wiki	0	License Costs
Blog	0	License Costs
Database	0	15% of Dev costs
Workgroup Portal	0	15% of Dev costs
Expertise Exchange	0	15% of Dev costs
IETM	0	15% of Dev costs
Asynchronous Courseware	\$2000	15% of Dev costs
EPSS**	\$2000	15% of Dev costs
Blended Learning Solution**	\$2000	15% of Dev costs
Mobile Performance Support (Tablet, Wearable, PDA)	0	15% of Dev costs + Hardware Recap
Blended Performance Solution**	\$2000	15% of Dev costs

*This is a function of the number of learners per year and the draw of the asset on CG resources.

**The Learning Network Share only if asynchronous courseware is included in the system.

How Much Analysis?

Analysis always precedes design and development. Many program managers have asked if there are ways to predict the amount of analysis required prior to design. The answer is “no”, there is not a great way of doing this. But, in general terms, some types of interventions are more generic in nature and require less analysis than others. The table below describes average requirements—actual needs vary by project.

Is significant Analysis Required Before design?

The basic principle is this: You cannot support a job that you have not thoroughly and accurately defined. A related truth is that you cannot train a person to do a thing that you don't know how to do yourself. Some analysis is ALWAYS required.

Asset Type	Significant Analysis	Basic Analysis
Synchronous Courseware	X	X
Simple e-Job Aid		X
Community of Practice		X
Online Project Area		X
Wiki		X
Blog		X
Database	X	
Workgroup Portal	X	X
Expertise Exchange	X	X
IETM	X	
Asynchronous Courseware	X	X
EPSS	X	
Blended Learning Solution	X	
Mobile Performance Support (Tablet, Wearable, PDA)	X	
Blended Performance Solution	X	

**The
Development
Timeline**

An OMB study of US Army e-learning found that the average development project lasted 2.25 years. It is important to point out that e-learning products—especially if they are to have a significant impact in a complex performance area—take a great deal of effort to design and build correctly. There have been a few Coast Guard e-learning projects that have taken over two years to complete.

The table below provides average development timelines for different e-learning products. It is important to note that the Coast Guard does not always have a Coast Guard development resource and may have to contract for development.

This table uses US Army estimates for development hours based on level of interactivity:

Estimating ICW Development Hours	
Level of Interactivity	Estimated Time
Level I	50-150
Level II	150-300
Level III	300-600
Level IV	400-700

NOTE: These estimates vary. The Office of Disaster Preparedness estimates the time associated with development at the various interactivity levels at a significantly higher level. For example, ODP estimates Level I development requiring up to 200 hours of development; and Level IV development requiring up to 2000 hours of development.

Managing Expectations: Overall Development Time for Different Development Projects

This table provides a picture of the length of time between design start and pilotable course or tool. The key to understanding this table is to understand that the complexity of a development project is a function of the difficulty of the accomplishment and how much of the accomplishment will rely on the tool. Complexity, in turn, is directly related to development time.

Asset Type	Complexity	Analysis Detail	Development Months
Synchronous Courseware (10 Hrs)	Low	Low	1-2
Simple e-Job Aid	Low	Medium	1-2
Community of Practice	Low	Low	COTS*
Online Project Area	Low	Low	GOTS**
Wiki	Low	Low	COTS*
Blog	Low	Low	COTS*
Database	Medium	High	3-9
Workgroup Portal	Medium	Medium	GOTS **
Expertise Exchange	Medium	High	GOTS **
IETM	Medium	High	3-6
Asynchronous Courseware (10 Hrs)	Med-High	Medium	5-9
EPSS	Med-High	High	12
Blended Learning Solution	Med-High	High	10-12
Mobile Performance Support (Tablet, Wearable, PDA)	High	High	5-9
Blended Performance Solution	High	High	10-18

*COTS (Commercial off-the-shelf): Usually requires some hosting and CGDN+ integration, but may be deployed within weeks.

**GOTS (Government off-the-shelf): Usually requires some tailoring to meet specific requirements, but generally deployable within a month or two.

Glossary

Term	Meaning
Accomplished Performer (AP)	Taken from the Harless “Peak Performance System” Model, the accomplished performer is the person who does the job with excellence. This is the performer you would hold up as a role model. If you could clone any of the job performers and send them throughout the work-world, this would be the one you would clone.
Accomplishment	An observable achievement or product. Usually it is a noun: “painted ship” or “moored ship” are examples. This is the bottom line in all our e-learning efforts: the accomplishment of our people.
AICC Standards	The Aviation Industry CBT (Computer-Based Training) Committee (AICC) is an international association of technology-based training professionals. The AICC develops guidelines for the aviation industry in the development, delivery, and evaluation of CBT and related training technologies.
AICC HTTP Protocol	This is a format for asynchronous web-based training that comes from the Aviation industry. This is the Coast Guard’s default protocol for asynchronous online courseware.
Aligned Objectives	Used in course conversion of resident training only. After training/performance providers have validated objectives they meet with school representatives to agree that the newly validated objectives are the ones that will be used in the converted courseware. When the school personnel and training/performance providers agree on the conversion objectives, these objectives are considered to be the final objectives for the courseware: they are “aligned”. The continuum: <ul style="list-style-type: none">• Original Resident Training Objectives• Validated Objectives• Aligned Objectives (the objectives used in the courseware)
Alpha Test (ing)	The testing of small portions of assets as they are completed. Somewhat informal, used to insure that development is on the right track. Part of “formative evaluation” (See Evaluation SOP).
Alpha Test Checklist	A checklist that designers use to evaluate portions of assets in alpha testing. Includes performance objectives and technical performance observations.
Analysis	Analysis is the systematic investigation or study of a job, problem, or opportunity. It identifies right performance, performance gaps and recommended solutions. Analysis often includes and examination of prior knowledge, skills, and attitudes toward the content to be taught.

Asset	Any electronic product: tool or course or courseware object.
Asset Philosophy	The general approach taken in design of a course or tool. For example, “The philosophy of the SAR Search, Coordination, and Execution course is that learners will be immersed in real-life scenarios, that presentation will be associated with scenarios, and that learners will gain confidence through “properly executing” realistic cases.
Asynchronous Courseware	Course material presented outside of the constraints of the time or events in which the course was first taught or first presented.
Best Practice	A tried-and-true way of accomplishing a task or job. “Best Practice” often refers to industry leaders’ ways of doing things.
Beta Test	An asset is Beta Tested when the rough draft of all materials is complete. This test must be structured so that developers determine: 1) whether learners/performers are accomplishing the objectives, 2) whether the technical objectives are being met, and 3) if any improvements or revisions should be made.
Beta Test Plan	A written document that spells out responsibilities, scope of test, testees, evaluators, checklists, etc.
Blended Solution	A blend is an integrated strategy for accomplishing the performance objectives. It includes a combination of approaches, such as resident training with a job aid, with an online course component, with a handbook. For example, the Hazardous Waste Coordinator Performance Support System integrates a print handbook, a web-based performance support system, online training, and a PDA application into a single job support system.
Blog (Web Log)	Also called a “web log.” A Blog is a tactic for getting people to share their expertise as they go about their normal business. It works this way: users subscribe to an online site for logging their observations in a given topic area. They choose whether or not to share their entries. In this way, subscribers have access to all shared observations.
Chunking	Used in talking about the structure and organization of tasks in training. “Chunking” refers to grouping tasks together in a lesson.
Coast Guard Learning Network (CGLN)	A network of electronic media and tools that support human performers in accomplishing the Coast Guard mission. It is sponsored by Commandant(G-WT) and administered by the Performance Technology Center (PTC) at Training Center Yorktown.

Communities of Practice (COP)

Websites that are designed to give users with similar job interests access to threaded chat, file sharing, and other collaborative features.

Computer Based Training (CBT)

This is training that is run from the local computer. The advantage is that more media may be used, but the disadvantage is that it is difficult to control versions and link with other resources.

Courseware

Courseware can include:

- Material for instructor-led classes
- Material for self-directed computer-based training (CBT)
- Web sites that offer interactive tutorials
- Material that is coordinated with distance learning, such as live classes conducted over the Internet
- Videos for use individually or as part of classes

Collaborative Elements

Email, chat or conferencing, or other collaborative elements to facilitate small group learning. Can be integrated with the web pages in combination with other elements, or set up using specific dedicated software.

Commercial off-the-shelf (COTS)

COTS products are systems or programs that are available in usable form from commercial sources.

Context

The environment and circumstances of a performance. For example, a woman steers a small boat in the context of 1) an underway environment, 2) in the course of a case, 3) with other crewmembers, 4) sometimes with rough weather.

Contextualization

The science and art of placing a learner or performer in as real an environment or circumstances as possible. Accomplished by the use of scenarios, case studies, role plays, simulations, and games.

Design

Instructional design is a systematic approach to course or e-tool development that ensures that specific performance goals are accomplished. It is an iterative process that requires ongoing evaluation and feedback. The design is the blueprint for an e-tool or course and precedes development.

Design Document

A document that spells out the intended course of development. It describes the objectives, approaches, and includes storyboards of each screen. Prototypes are often created to be accomplished in conjunction with the completion of the design document.

Designer

Used to describe any member of a training or performance intervention project team, usually referring to creators such as writers, graphic artists, and programmers. Technically, this term should refer only to *instructional* designers, but it is often used synonymously with the term *developer*.

Developer	Used to describe a member of a training or performance intervention project team involved in development activities or the project team as a whole. Could refer to an instructional designer, graphic designer, writer, etc.
Development	The process of taking the design plans and making them a reality. This involves media development, tool assembly, programming, and acquisition.
Development Plan	The last part of the Design is the articulation of the steps and timeline for development. This plan includes responsibilities and milestones.
e-Gov Initiatives	E-Government uses improved Internet-based technology to make it easy for citizens and businesses to interact with the government, save taxpayer dollars, and streamline citizen-to-government communications.
e-Learning	<p>Broad definition of the field of using technology to deliver learning programs and performance support.</p> <p>In the Coast Guard, we say e-learning is: “Growing, using, and moving knowledge by electronic means where we need it and when our people want it.”</p> <p>This includes: Courseware, Electronic Performance Support, Expertise Exchanges, Mobile and Wireless Computing Technologies, Online Communities of Practice and more.</p>
Electronic Tool (e-tool)	Synonymous with Electronic Performance Support System in this Guide. eTools are "stand-alone," web-based or automated performance enhancing tools. They are highly illustrated and utilize graphical menus. Some also use expert system modules, which enable the user to answer questions, and receive reliable advice.
Expanding Menus	Expanding Menus use Dynamic HTML or Flash to expand navigation menu options. Users are presented with a limited number of main navigation options, but when one is activated a new set of menu options is shown while still allowing access to the original options.
Expertise Exchange	This is a website that contains many topic areas. Users enter the topic areas and exchange experiences and views with other users. Some of these systems have means for rating the value of individual contributions, others allow for file sharing. There is no technology assumed here.
Electronic Performance Support System (EPSS)	An integrated electronic environment that is available to and easily accessible by each employee and is structured to provide immediate, individualized on-line access to the full range of information, software, guidance, advice and assistance, data, images, tools, and assessment and monitoring systems to permit job performance with minimal support and intervention by others.

Evaluation	The systematic assessment of a course or tool to insure that it meets pre-determined objectives. Also, the systematic assessment of a course or tool to insure that it meets objectives in as efficient and effective a manner as possible.
Evaluation Planning Document	Used in Development to outline roles and responsibilities, timelines, checklists, evaluators, testees, etc. Spells out the objective criteria for success of a development project.
Federal Enterprise Architecture (FEA)	The FEA is being constructed through a collection of interrelated "reference models" designed to facilitate cross-agency analysis and the identification of duplicative investments, gaps, and opportunities for collaboration within and across Federal Agencies.
Flesch-Kincaid Reading Level (Fog Index)	Use the Flesch-Kincaid Reading Level Score that is part of Microsoft Word to determine reading level of a document. To activate the Flesch-Kincaid Reading Level feature, go to "Tools" and "Options" the bottom selection of the "View" tab enables the reading level score. The next time you spell-check your document, the reading level score will be displayed at the end of the spell-check.
GIF Files	Stands for graphics interchange format. This is a graphics format developed specifically for the web. It is a "thin" media and works well in web applications.
Government Program Manager	This is the contracting official who is the point of contact with commercial vendors or serves as the project manager for Coast Guard internal development. PTC at TRACEN Yorktown is the lead in e-learning standards, but either PTC or the IST at TRACEN Petaluma may interpret any of the standards in this guide. Government Program Managers must coordinate all interpretations with PTC or IST.
Government off-the-shelf (GOTS)	This is any software or system that the US Government already owns and is available for use.
Hypertext Markup Language (HTML)	The set of commands used to format an interactive document for the World Wide Web.
HTTP	Stands for "Hypertext Transfer Protocol" and is used to designate addresses on the World Wide Web.
Interactive	The combination of different types of media into a digital presentation that allows the user to make choices and engage with an asset.
Interactive Courseware (ICW)	This is a global term that is used to describe any training applications that run on either a local computer or the internet. ICW uses computer and web technologies to present and provide feedback and practice opportunities to students.

Interactivity Levels	The combination of different types of media into a digital presentation that allows the user to make choices. The degree to which users are drawn into virtual scenarios, problems, or environments.
Interactive Electronic Technical Manual (IETM)	An IETM is an interactive technical manual. It is similar to EPSS (above), but is aimed at providing automated access to reference materials rather than direct job accomplishment.
Interface	The visual layout of content and interactive controls that lets the user interact with the program. At its best, an interface does not draw the user's attention, but facilitates intuitive use of the application.
J2EE	The J2EE standard includes complete specifications and compliance tests to ensure portability of applications across the wide range of existing enterprise systems capable of supporting J2EE.
Java	Java is a computing platform released by Sun Microsystems in 1995. Originally called OAK , the Java programming language was renamed as Java in 1995.
Job Aid	A checklist, procedural guide, decision table, work sheet, algorithm, or other aid which aid in task performance.
JPG or JPEG Files	This format that is the preferred graphics format for presentation of photos on the web.
Layered Interface	An interface that is structured to reflect levels of activity in an online resource. The first layer is the home page... This page has a unique organization and structure. The second layer may be pages that are formatted in a similar fashion to each other, and themselves serve as "home pages" for modules. Then, content pages within a module may have a different structure or format. At this level or "layer" they should share visual and functional elements.
Learner Motivation	The degree to which a learner (or performer) chooses to engage in energetically learning.
Learning Management System (LMS)	Used to administer one or more courses to one or more learners. A web-based system that allows learners to authenticate themselves, register for courses, complete courses and take assessments. At the time of this writing, DOCENT is the Coast Guard's interim LMS. An LMS may also perform the following functions: authoring, classroom management, competency management, knowledge management, certification or compliance training, personalization, mentoring, video conferencing, chat, and discussion boards.
Learning Content	A web-based administration program that facilitates the

Management System (LCMS)	creation, storage and delivery of unique learning objects, as well the management of students, rosters, and assessments.
Learning Network Portal	A Coast Guard gateway to “all things” e-learning. It is a website that provides rapid and intuitive access to courses, catalogs, performance support tools, and knowledge growth areas. It displays on both the internet and intranet.
Learning Network Share Fee	This fee is assessed to program sponsors for hosting e-learning courseware on the Coast Guard e-learning network. The fee goes to pay for the annual licensing fees for the Learning Management System (LMS) and other system components.
Look-and-Feel Preview	Similar to a prototype; only less labor. This is a four to ten screen preview of parts of the asset to give sponsors a feel for what it will look like and how it will function.
Maintenance Plan	A plan that spells out the timelines, costs, and responsibilities relating to maintenance of an asset.
Media Object	Picture, Audio, Animation, Video, etc. A media object is used to convey meaning, illustrate a point, or reinforce a principle.
Media Selection	This is choosing the best means (or media) for presenting information or providing practice. It refers to media formats, but it also is used to describe types of presentation devices and systems.
Metadata	Metadata is machine understandable information for the web.
Metatag	The META element can be used to identify properties of a document (e.g., author, expiration date, a list of key words, etc.) and assign values to those properties. This specification does not define a normative set of properties.
MPG Files	This is a motion media compression format (sound and video). The good thing about MPG files that MPG files will play on the CGDN+. The bad thing is that they are still large files and so are extremely limited in use on the business network.
MP3 Files	MP3 is the most popular audio compression format. At high bitrates, it is less efficient than WMA at the same compression quality.
Performance Objectives	<p>Performance Objectives are observable behaviors that indicate that learners/performers can do the task required.</p> <p>Performance objectives contain three parts: Performance: the action required</p>

Condition: the circumstances and tools available

Standard: the level of expertise required

Example: Given the Printer Installation EPSS and properly functioning CGDN+ local network (Condition), technicians will install a network printer (Performance) so that 100% of workgroup users may use it (Standard).

Performer

Coast Guard worker—one who does a job. The “performer’s” accomplishments are the point of all training and e-tool development.

Personal Data Assistant (PDA)

A small, handheld computer currently limited in functionality (e.g., calendar, rolodex, to do list). PDA's are expanding in their capabilities to include wireless e-mail and Internet access, thus opening opportunities for mobile learning and support (m-learning). PDAs are often used for data capture in conjunction with EPSSs.

Pilotable Course

Follows beta testing of rough materials. The pilot is the first convening of a course or the first use of a tool. It is a test, but it also engages real learners from the target population. When a learner has participated in a pilot course, the credit counts. But, the pilot is still a test course. Developers will develop a test and observation plan, and many revisions will likely be completed based on discrepancies noted in the pilot.

Pre-Design Document

This document is an early compilation of all that is known, and the beginning of considering interventions. It lists all the objectives of the asset, along with the step-by-step how-to's. It includes descriptions of the learner/performer audience and the context of performance.

Program

A detailed set of instructions that make a computer able to perform some function. A program can be written by the user but the term is commonly used to refer to a specific pre-created software package, such as a word processor or spreadsheet.

Prototyping

Prototyping is constructing a small portion of a course or tool for the purpose of showing what the final product would be like. Ideally, this “piece” of the final product will be close to its final form to avoid rework. It is best to include as many of the special features or functions of the final product as can be completed. The prototype can be used at any time, but is best used in presenting the proposed design of the asset to the program sponsor or point of contact.

Rapid Prototyping

Rapid Prototyping is like prototyping with the difference that it is intended to give a quick look at the asset, and it is often used as a proof of concept of a new development approach.

School

A “school” as used in this guide refers to Coast Guard “A” and “C” schools.

Sequencing

Used in design to describe the order of presentation of objectives.

SCORM (Sharable Courseware Object Reusable Media)	An acronym that stands for Sharable Courseware Object Reusable Media. It is the effort to tag SCOs (see below) to be reusable in different applications and courses.
Sharable Courseware Object (SCO)	A collection of assets that becomes an independent, defined piece of instructional material.
Sponsor	A sponsor is the person representing the Coast Guard office or command that is being assisted by an e-learning project. Often, the sponsor funds a project and has final approval authority.
Standard Operating Procedure (SOP)	Provides step by step guidance for designing, developing, evaluating, delivering, and sustaining great e-courses and e-tools that objectively include performance and adhere to the technical and usability requirements that allow for maximum benefit from the products. This document is both a standards document and SOP for e-learning.
Static Medium	This is a presentation element that does not have movement, sound, or video... Examples are drawings and photographs.
Step	Used when describing performance, this is a part of a behavior. We describe a performance as an accomplishment, the tasks that lead to the accomplishment, and then the steps to accomplishing a task.
Storyboard	<p>Storyboards are screen-by-screen representations of content, visuals, animations, and functions. There are three main purposes for storyboards:</p> <ol style="list-style-type: none"> 1) To organize structure and content of the asset 2) To develop work lists for media and content developers 3) To give sponsors a picture of what the asset will look like and how it will perform.
Subject Matter Expert	A recognized authority on the content of a job who acts as a resource to the course designer.
SWF Files	This is the designation for a Flash file. Flash is a Macromedia product and is used in animation. This is the preferred method for animation and multimedia in asynchronous courses or tools. While essentially a visual and interactive medium, SWF files can be used for audio.
Tablet	Or "tablet pc." This is a small flat computer, usually operating a Windows operating system. It has full laptop-type capability but is flat and saves space.
Task	A major activity performed on the job resulting in a product or service that has value.
Technical Performance	Technical Performance refers to the reliability, functionality, and speed of the hardware and software components of an asset. One example of technical performance is the

“response time” of a web-based graphic. This is the amount of time it takes for the graphic to fully present after activating it.

Technical performance objectives of an asset can be described in terms similar to the performance objectives:

- Performance
- Condition
- Standard

Telephone/Web Blends

The web is essentially a visual medium. It is difficult to reliably transmit audio real-time. One tactic around this is the use of telephone conference calls in conjunction with web presentation. This tactic is a little more expensive than web alone, but yields high-fidelity audio while freeing the web resources for chat and visuals.

Training Advisory Council (TAC)

Cross-programmatic council that receives requests for an analysis and then prioritizes the requests.

Training/Performance Provider

This is the Coast Guard unit/office that will oversee or actually develop a new e-learning course or e-tool.

Currently, TRACENS Yorktown and Petaluma are the primary training or performance providers for the Coast Guard. They serve as points of contact for development of all types of e-learning assets.

Validated Objectives

Used in Course Conversions only. After objectives from an approved Coast Guard resident course have been checked by the training/performance provider to see that they are 1) good performance objectives with a performance, condition, and standard. AND 2) have been associated with a course accomplishment; then, the objectives are said to be “validated.” This is a short-hand way of doing quality control on course conversions when no additional analysis is envisioned. This is not the norm, and will be used only in the case of TAC-approved course conversions.

Video Teleconferencing (VTC)

Many Coast Guard units have VTC units. This allows for two-way video between one to four stations. VTC is an underutilized resource for training in the Coast Guard.

Visual Sentence

The “visual sentence” communicates a complete idea with visuals. Without words, the visuals should communicate the content. When words are added, the content is that much more powerful. KnowledgeNet, an e-learning asset developer, coined this phrase to describe the goal of the visual portion of a training screen.

WAV Files

This is a common audio format. It is not a recommended format. WAV files are take too much memory and are unwieldy in web applications.

Wearable Computer

These are computing devices that are wearable. Most often, they use Windows operating systems and can run standard software. They often have creative human interfaces, including hands-free approaches, speech-based interaction, sensory augmentation, human-centered robotics, user modeling, user evaluation methods or technologies for performing tasks.

Web-based Training (WBT)

This is interactive courseware that is delivered via the internet or the Coast Guard's intranet.

Web Services

This is a protocol for development that incorporates J2EE standards and .NET standards for development. The goal is total web compatibility of information technology tools. Web-based systems should be developed using "Web Services Protocols" to insure long-term flexibility of use.

Wiki

An online dynamic dictionary. Useful in clarifying and updating the language of work within a job-group. The Wiki is a website that presents both current and historic definitions of concepts and words.

Wireless

Refers to connecting to networks without the use of wires. This can refer to any type of device that does this, or to specific computing devices.

WMA Files

Window Media Audio is the preferred audio format. This format always carries a stereo signal, but carries clear audio while creating a modest draw on bandwidth resources.

Index

A

Accomplished Performer · 62
Accomplishment · 24, 42, 62
AICC · 9, 28, 39, 62
Alpha Testing · 62
Alpha Tests · 62
Analysis · 11, 57, 59, 61, 62
AP · 62
Asset · 57, 58, 59, 61, 63
Asynchronous · 6, 28, 29, 57, 58, 59, 61, 63

B

Best Practice · 63
Beta Test · 63
Blended · 27, 57, 58, 59, 61, 63
Blog · 44, 57, 58, 59, 61, 63

C

CBT · 24, 28, 62, 64
Chunking · 63
Coast Guard Learning Network · 5, 8, 9, 14, 58, 63
Collaborative · 6, 8, 36, 64
Communities of Practice · 6, 44, 64, 65
Computer-based Training · 64
Context · 64
Contextualization · 64
COTS · 61, 64
Courseware · 1, 5, 6, 7, 11, 28, 29, 36, 39, 46, 52, 55, 57, 58, 59, 61, 63, 64, 65, 66, 70

D

Design · 1, 11, 13, 14, 24, 32, 35, 37, 55, 64, 65, 69
Designer · 64

Developer · 57, 65
Development · 1, 5, 11, 28, 39, 52, 54, 55, 57, 58, 60, 61, 65, 66

E

e-Gov Initiatives · 65
e-Learning · 1, 5, 7, 46, 52, 54, 55, 58, 65
Electronic Performance Support System · 7, 38, 65
Electronic Tool · 65
EPSS · 6, 13, 38, 39, 40, 42, 43, 46, 57, 58, 59, 61, 65, 67, 69
e-tool · 19, 26, 31, 32, 41, 42, 52, 55, 64, 65, 69, 71
e-tools · 6, 13, 14, 24, 26, 29, 38, 39, 52, 54, 70
Evaluation · 11, 34, 43, 62, 66
Expanding Menus · 24
Expertise Exchange · 57, 58, 59, 61, 65

F

FEA · 66
Federal Enterprise Architecture · 66
Flesch-Kincaid · 50, 66
Fog Index · 50, 66

G

GIF · 15, 51, 66
GOTS · 61, 66
Government Program Manager · 6, 13, 15, 19, 26, 29, 42, 66

H

HTML · 28, 65, 66
HTTP · 9, 28, 39, 62, 66

I

Interactive · 6, 21, 55, 66, 67
Interactive Electronic Technical Manual · 67
Interactivity · 21, 22, 60, 67
Interface · 24, 40, 67

J

J2EE · 67, 72
Java · 67
Job Aid · 7, 57, 58, 59, 61, 67
JPEG · 51, 67
JPG · 15, 67

L

Layered Interface · 24
LCMS · 28, 39, 52, 68
Learning Content Management System · 28, 39, 68
Learning Management System · 8, 28, 44, 67, 68
Learning Network · 8, 9, 46, 54, 55, 58, 68
LMS · 8, 28, 39, 52, 55, 67, 68
Look-and-Feel Preview · 68

M

Maintenance Plan · 11, 68
Media Object · 68
Media Selection · 68
Menu · 26, 29, 31, 41
Menus · 24, 50, 65
Metadata · 68
Metatag · 68
Motivation · 67
MP3 · 15, 51, 68
MPG · 51, 68

O

Objectives · 11, 13, 38, 62, 69, 71

P

PDA · 5, 7, 57, 58, 59, 61, 63, 69
Performer · 11, 69
Personal Data Assistant · 69
Pilotable Course · 69
Program · 6, 9, 13, 15, 19, 26, 28, 29, 31, 32, 39, 41, 42, 49, 52, 66, 69
Prototyping · 69, 70

S

School · 7, 13, 38, 49, 70
SCO · 70
SCORM · 9, 28, 70
Sequencing · 70
SOP · 43, 62, 70
Sponsor · 49, 70
Standard Operating Procedure · 70
Static Medium · 70
Step · 70
Storyboard · 33, 35, 42, 70
Subject Matter Expert · 70
SWF · 15, 51, 70

T

Tablet · 39, 57, 58, 59, 61, 71
TAC · 52, 54, 55, 71
Task · 71
Technical Performance · 38, 71
Telephone/Web Blends · 7, 71
Training Advisory Council · 54, 71
Training/Performance Provider · 71

V

Video Teleconferencing · 71
Visual Sentence · 72
VTC · 71

W

WAV · 15, 72
WBT · 21, 24, 28, 39, 55, 72

Wearable Computer · 72
Web Services · 72
Web-based · 5, 6, 7, 28, 72
Web-based Training · 72

Wiki · 44, 57, 58, 59, 61, 72
Wireless · 65, 72
WMA · 15, 51, 68, 72