

# CHANGE REQUEST COVER SHEET

**Change Request Number:** 11-37A

**Date Received:** 7/27/2011

**Title:** Critical Performance Parameters

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**Phone:** 202-267-7601

**Policy OR Guidance:** Guidance

**Section/Text Location Affected:** T&E Guidelines

**Summary of Change:** The CPRs change request corrects inconsistencies in the definition and use of what was previously known as key performance parameters (KPPs) in AMS policy and guidance.

**Reason for Change:** CPRs provides decision authorities with insight into a programs progress towards its end state. CPR status information identifies program risks and issues, providing opportunities to make informed adjustments.

**Development, Review, and/or Concurrence:** AEB Verification and Validation Working Group

**Target Audience:** Acquisition workforce

**Potential Links within FAST for the Change:** None

**Briefing Planned:** No

**ASAG Responsibilities:** None

**Potential Links within FAST for the Change:** None

**Links for New/Modified Forms (or) Documents (LINK 1)**

**Links for New/Modified Forms (or) Documents (LINK 2)**

**Links for New/Modified Forms (or) Documents (LINK 3)**

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**Section 3.1.1 : Initial Investment Analysis**

**Old Content:** Test and Evaluation Process Guidelines:

**Section 3.1.1 : Initial Investment Analysis**

The initial PRD establishes the operational framework and performance requirements for satisfying a mission need. During development of the PRD, each requirement is assessed for testability. Requirements found not to be testable are often further refined or decomposed into testable requirements, and the results are provided to the service organization. Test professionals also review COIs and Critical Performance Parameters (CPPs) to ensure they are complete, testable, and traceable to system or operational requirements. COIs are key operational effectiveness or suitability issues expressed as questions about system concerns, such as capabilities, practicability, and environmental effects. COIs are examined in tests during the SI phase to determine a product's capability to perform its mission. CPPs are top-level system performance parameters that are expressed as specific, quantified values.

The Acquisition Program Baseline (APB) establishes the performance, cost, and schedule boundaries for implementing the solution. The PRD contains the appropriate CPPs and COIs. Test professionals develop a high-level test strategy and estimate test costs for each candidate solution for inclusion in the Business Case Analysis Report (BCAR). They also review vendor performance data and demonstrations of COTS/NDI products that may satisfy the mission need.

Feasibility analyses and demonstrations address the refinement of the PRD and assess human factors and the evaluation of procedural impacts. The evaluation of a specific technology can reduce risk and collect data necessary to support investment decisions.

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The Acquisition Program Baseline (APB) establishes the performance, cost, and schedule boundaries for implementing the solution. The PRD contains appropriate critical performance requirements and COIs. Test professionals develop a high-level test strategy and estimate test costs for each candidate solution for inclusion in the Business Case Analysis Report (BCAR). They also review vendor performance data and demonstrations of COTS/NDI products that may satisfy the mission need.

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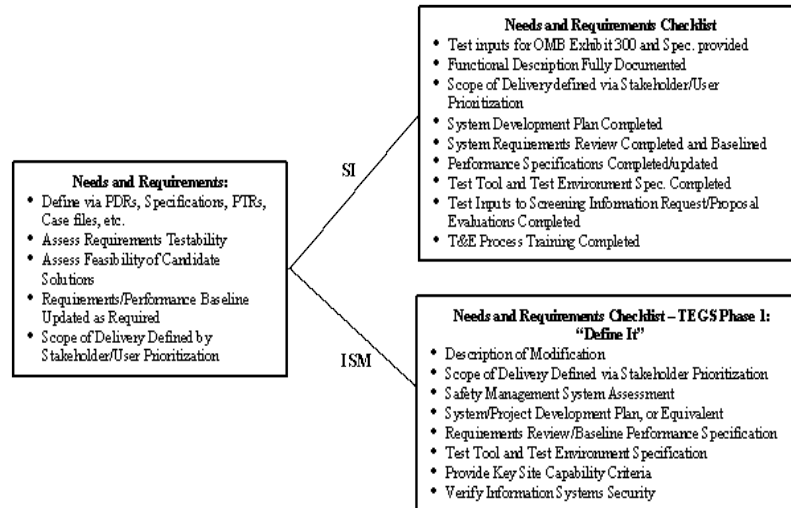
### **Section 3.2.1.1 : SI Needs and Requirements**

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Early SI phase test activities focus on the definition of test-related program needs and requirements. This definition provides the basis for developing the schedule, resources, and scope of all testing activities throughout the acquisition management lifecycle. The key documents and elements that require inputs from the test activity are the Acquisition Program Baseline, COIs/CPPs, statement of work, and specification. These test activities address

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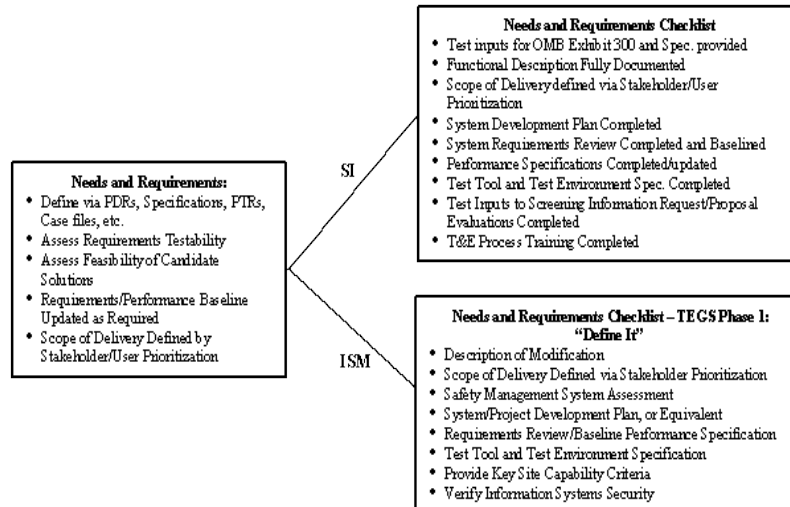


**Figure 3.2-3: SI/ISM Needs and Requirements Checklist**

**New Content: Test and Evaluation Process Guidelines:**

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#### **Section 3.2.4.1 : SI Operational Test**

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#### **Section 3.2.4.1 : SI Operational Test**

The primary objective of OT is to demonstrate that a new product is operationally effective and operationally suitable for use in the NAS and that the NAS infrastructure is ready to accept the product. These tests focus on demonstrating that operational requirements have been met and all COIs and CPPs have been satisfied. OT is conducted at WJHTC or a field site using field personnel.

The major components of OT are integration tests, performance tests, effectiveness tests, and suitability tests. Integration testing performed during OT verifies product interfaces with existing elements of the NAS and the NAS can operate with the new product at the required performance levels. Interface testing with future NAS elements may be provided through the use of simulators, where warranted.

Effectiveness testing performed during OT evaluates the degree to which a product accomplishes its mission when used by representative personnel in the expected operational environment. This testing includes capacity and NAS loading, degraded mode operations, safety, security, and transition switchover. Field personnel often operate the equipment for some of these tests because they are the most representative operators; it also helps them become familiar with the system. This approach reduces the learning curve and minimizes disruption during installation in the field. Effectiveness and suitability T&E may continue at the key site (or key sites) if a complete assessment cannot be accomplished at WJHTC. OT effectiveness testing also assesses COIs.

OT suitability testing evaluates the degree to which a product intended for field use satisfies its availability, compatibility, interoperability, reliability, maintainability, safety, and human factors requirements. In addition, logistics supportability, documentation, certification criteria, installation, and operating procedures, and transition and training requirements, are validated. OT suitability testing also includes an assessment of the COIs.

For designated programs, after the successful conclusion of OT, the Vice President of the implementing service organization declares the product ready for IOA via the IOA readiness declaration (IOARD). The IOARD addresses the IOA prerequisites/requirements as detailed in the T&E section of the ISPD. (See Appendix C-11 for a sample IOARD template.)

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### **Section 6.1 : ACQUISITION PROGRAM BASELINE**

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The Acquisition Program Baseline establishes the performance baseline and operational framework for the investment program. CPPs that will be used by the IDA to monitor the program are recorded in OMB Exhibit 300 (designated programs only). This document is developed as part of investment analysis and is approved as part of the investment decision. The IDA and designated reviewers approve the Acquisition Program Baseline. The operational requirements and COIs, which must be resolved as a basis for the in-service decision, are also identified in the Program Requirements Document. FAST provides detailed information on the T&E content of the PRD and ISPD.

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### **Section 6.1.1 : Program Requirements Document**

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The Program Requirements establishes the performance baseline and operational framework required by the sponsoring line of business. Air Traffic Organization Vice Presidents (or non-Air Traffic Organization Directors of organizations with the mission need) and the operating service organization(s) approve the PRD and all changes to it. The PRD identifies the operational requirements and COIs that must be resolved as a basis for the ISD. The FAST template for the PRD provides detailed information on the document's T&E content.

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### **Section 7.3 : OPERATIONAL TEST**

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Operational test (OT) encompasses test and evaluation of a product or service's operational requirements. The primary objective of OT is to validate that a new or modified product or service is operationally effective and suitable for use in the National Airspace System and the NAS infrastructure is ready to accept the product or service.

Operational effectiveness and suitability testing includes user participation and may consist of the following test categories:

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- a) Reliability
- b) Maintainability
- c) Availability
- d) Supportability
- e) Degraded operations
- f) Stress and NAS load testing of all interoperable subsystems
- g) Human factors evaluations
- h) Safety requirements validation and testing to identify new safety hazards
- i) Security
- j) Site adaptation
- k) Transition switchover
- l) Certification criteria

OT validation derives its test requirements from critical operational issues (COIs) and critical performance parameter (CPP) requirements specified in the program requirements document of the product or service under test. COIs focus on overall capability to support the operational mission. CPPs are requirements deemed essential to the successful performance of the product or service in meeting mission need.

A COI is decomposed into measures of effectiveness (MOEs) and measures of suitability (MOSs), both of which are analyzed to identify measures of performance (MOPs). The MOPs contain testable parameters which form the basis of OT test requirements. These OT test requirements form the foundation for test procedures by consolidating them into logical and comprehensive test run components. The V&V repository provides detailed information on the development and decomposition of COIs, MOEs, MOSs, and MOPs.

The data from OT is also used to support independent operational assessment.

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### **E1.1 List of Acronyms**

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#### **E1.1 List of Acronyms**

APB	Acquisition Program Baseline
AMS	Acquisition Management System
CCD	Configuration Control Decision
CDR	Critical Design Review
CM	Configuration Management
CMTF	Contractor Master Test Plan
COI	Critical Operational Issue
CONOPs	Concept of Operations
COO	Chief Operating Officer
COTS	Commercial Off-The-Shelf
CPP	Critical Performance Parameters
DR&A	Data Reduction and Analysis
DT	Development Test
FAA	Federal Aviation Administration
FAST	FAA Acquisition System Toolset
FAT	Factory Acceptance Test
FF	Field Familiarization
FQT	Functional Quality Test
GFE	Government Furnished Equipment
HDR	Hardware Discrepancy Report
HF	Human Factors
HW	Hardware
IAR	Interim Assessment Report
IDA	Investment Decision Authority
IOC	Initial Operating Capability
IOA	Independent Operational Assessment

IOARD	IOA Readiness Declaration
ISD	In-Service Decision
ISM	In-Service Management
ISPD	Implementation Strategy and Planning Document
ITT	Integrated Test Team
JRC	Joint Resources Council
MOE	Measure of Effectiveness
MOP	Measure of Performance
MOS	Measure of Suitability
NAS	National Airspace System
NCP	NAS Change Proposal
NDI	Non-Developmental Item
OCD	Operational Capability Demonstration
OCT	Operational Capability Test
OMB	Office of Management and Budget
ORD	Operational Readiness Date
OSD	Operational Suitability Demonstration
OT	Operational Test
P3I	Pre-Planned Product Improvements
PAT	Production Acceptance Test
PDR	Preliminary Design Review
PR	Program Requirements
PTR	Program Trouble Report
R&D	Research and Development
SAT	Site Acceptance Test
SI	Solution Implementation
SOW	Statement of Work
SSD	System Support Directive
SSM	System Support Modification
SW	Software
T&E	Test and Evaluation
TEGS	Test and Evaluation Gold Standard
TIM	Technical Interchange Meeting
TSB	Test Standards Board
TWG	Test Working Group
V&V	Validation and Verification
VRTM	Verification Requirements Traceability Matrix
WJHTC	William J. Hughes Technical Center

**New Content: Test and Evaluation Process Guidelines:**

**E1.1 List of Acronyms**

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CDR	Critical Design Review
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CONOPs	Concept of Operations
COO	Chief Operating Officer
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CPR	Critical Performance Requirement
DR&A	Data Reduction and Analysis
DT	Development Test
FAA	Federal Aviation Administration
FAST	FAA Acquisition System Toolset
FAT	Factory Acceptance Test
FF	Field Familiarization
FQT	Functional Quality Test
GFE	Government Furnished Equipment
HDR	Hardware Discrepancy Report
HF	Human Factors
HW	Hardware
IAR	Interim Assessment Report
IDA	Investment Decision Authority
IOC	Initial Operating Capability
IOA	Independent Operational Assessment
IOARD	IOA Readiness Declaration
ISD	In-Service Decision
ISM	In-Service Management
ISPD	Implementation Strategy and Planning Document
ITT	Integrated Test Team
JRC	Joint Resources Council
MOE	Measure of Effectiveness
MOP	Measure of Performance
MOS	Measure of Suitability
NAS	National Airspace System
NCP	NAS Change Proposal
NDI	Non-Developmental Item
OCD	Operational Capability Demonstration
OCT	Operational Capability Test
OMB	Office of Management and Budget
ORD	Operational Readiness Date
OSD	Operational Suitability Demonstration
OT	Operational Test
P3I	Pre-Planned Product Improvements
PAT	Production Acceptance Test
PDR	Preliminary Design Review
PR	Program Requirements
PTR	Program Trouble Report
R&D	Research and Development
SAT	Site Acceptance Test
SI	Solution Implementation



SOW	Statement of Work
SSD	System Support Directive
SSM	System Support Modification
SW	Software
T&E	Test and Evaluation
TEGS	Test and Evaluation Gold Standard
TIM	Technical Interchange Meeting
TSB	Test Standards Board
TWG	Test Working Group
V&V	Validation and Verification
VRTM	Verification Requirements Traceability Matrix
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COTS	Commercial Off-The-Shelf
<del>CPP</del> CPR	Critical Performance <del>Parameters</del> <u>Requirement</u>
DR&A	Data Reduction and Analysis
DT	Development Test
FAA	Federal Aviation Administration
FAST	FAA Acquisition System Toolset
FAT	Factory Acceptance Test
FF	Field Familiarization
FQT	Functional Quality Test
GFE	Government Furnished Equipment
HDR	Hardware Discrepancy Report
HF	Human Factors
HW	Hardware
IAR	Interim Assessment Report
IDA	Investment Decision Authority
IOC	Initial Operating Capability
IOA	Independent Operational Assessment
IOARD	IOA Readiness Declaration
ISD	In-Service Decision
ISM	In-Service Management
ISPD	Implementation Strategy and Planning Document
ITT	Integrated Test Team
JRC	Joint Resources Council

MOE	Measure of Effectiveness
MOP	Measure of Performance
MOS	Measure of Suitability
NAS	National Airspace System
NCP	NAS Change Proposal
NDI	Non-Developmental Item
OCD	Operational Capability Demonstration
OCT	Operational Capability Test
OMB	Office of Management and Budget
ORD	Operational Readiness Date
OSD	Operational Suitability Demonstration
OT	Operational Test
P3I	Pre-Planned Product Improvements
PAT	Production Acceptance Test
PDR	Preliminary Design Review
PR	Program Requirements
PTR	Program Trouble Report
R&D	Research and Development
SAT	Site Acceptance Test
SI	Solution Implementation
SOW	Statement of Work
SSD	System Support Directive
SSM	System Support Modification
SW	Software
T&E	Test and Evaluation
TEGS	Test and Evaluation Gold Standard
TIM	Technical Interchange Meeting
TSB	Test Standards Board
TWG	Test Working Group
V&V	Validation and Verification
VRTM	Verification Requirements Traceability Matrix
WJHTC	William J. Hughes Technical Center

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### **E1.3 Definitions**

**Old Content:** Test and Evaluation Process Guidelines:

#### **E1.3 Definitions**

Acceptance Testing	Formal testing conducted to determine whether a system satisfies its acceptance criteria and to enable the customer to determine whether to accept the system.
Analysis	Method of verification that compares hardware or software designs with known scientific and technical principles, technical data or procedures and practices to validate that the proposed design meets with technical requirements.
Anomaly or Failure	Inability of a software or hardware to meet its specified test or operational requirements.
Baseline	A specification or product that has been formally reviewed and agreed upon, that thereafter serves as the basis for further development, and that can be changed only through formal change control procedures.

Build Baseline	Software components that have been compiled and formally reviewed and agreed upon, that thereafter serves as the basis for further development, and that can be changed only through formal change control procedures.
Case File	A proposal recorded on FAA Form 1800-2 for any change to a baseline document or any deviation from national standards that needs technical concurrence. Prelude to an NCP.
Case File Number	A number assigned through MIS by the preparing organization in accordance with NAS-MD-001. (Example: CFOS500-VSCS-010 CF = Case File, OS500 = organization, VSCS = system, 010 = next number in sequence)
Computer Software Configuration Item (CSCI)	An aggregation of software that is designated for configuration management and treated as a single entity in the configuration management process.
Configuration	The arrangement of a computer system or network as defined by the nature, number, and the chief characteristics of its functional elements. The functional or physical characteristics (or both) of systems hardware/software.
Configuration Control	An element of configuration management, consisting of the evaluation, coordination, approval or disapproval, and implementation of changes to configuration items after formal establishment of their configuration identification.
Configuration Management	A discipline applying technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a configuration item, control changes to those characteristics, record and report change processing and implementation status, and verify compliance with specified requirements.
Critical Operational Issue (COI)	A key operational effectiveness or operational suitability issue that must be examined during operational test to determine the system's capability to perform its mission.
(COI) Resolved	A decision based on test data that the COI requirement has been met. (e.g., COI: Is the system safe? The COI is resolved if the answer is yes.)
Critical Performance Parameter (CPP)	A critical system performance requirement and its associated threshold and objective values. CPPs are specified in the Program Requirements Document.
Development Test (DT)	A series of tests designed to verify that system technical and performance requirements specified in the contract and system specification have been met. Development tests are usually performed by the contractor and witnessed by the FAA.
Field Familiarization	Tests conducted at each site by Air Traffic and Technical Operations personnel to verify that the site is ready to switch over to the new system.
Field Site Acceptance Test	Tests performed at operational sites to validate performance prior to operational use.
First Article System	A prototype system upgraded after production award.
First Article Test	Testing of the first subsystem built by the developer. Qualification testing and acceptance testing demonstrations to show compliance with the specification requirements and the SOW.
Function	The purpose for which something is designed or exists (a major element of a system baseline).
Initial Operating Capability (IOC)	IOC is the declaration by site personnel that the system is ready for conditional operational use in the NAS and denotes the end of field familiarization at that site.
Independent Operational Assessment (IOA)	A assessment of a new system's operational effectiveness and operational suitability performed by an IOA team on systems designated for IOA by the COO.
Interface Control Document (ICD)	The documentation necessary to identify functional and physical characteristics between and within configuration items provided by developers used to resolve problems concerning the specified interfaces.
Joint Resources Council (JRC)	The FAA's body responsible for making corporate level decisions. Membership consists of Associate Administrators representing all lines of business of the agency, the FAA Acquisition Executive, the Director of the Office of Financial Services, and Legal Counsel.
Key Site	Field site(s) where OT, and IOA for designated programs, is conducted. A first operational NAS site where T&E activity is conducted to verify that HW/SW

	modification meets user needs. It is the actual environment where the equipment is used.
Measure of Effectiveness (MOE)	First-level, qualitative decomposition of an operational effectiveness component associated with a COI.
Measure of Performance (MOP)	Quantitative values that characterize MOEs or MOSs. These values are measurable by a test process.
Measure of Suitability (MOS)	First-level, qualitative decomposition of an operational suitability component associated with a COI.
NAS Change Proposal (NCP)	Proposed changes to the system baseline.
National Airspace System (NAS)	The common network of U.S. airspace; air navigation facilities, equipment and services; airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures; technical information; and manpower and material. Included are system components shared jointly with the military.
Needs and Requirements Defined	New needs identified during in-service management of a product's lifecycle generally originate from the operational environment. Needs which cannot be satisfied at the local level or validated and entered into the national requirement process.
Operational Capability Test/Demonstration (OCT/OCD)	A test performed by the FAA to determine whether a COTS/NDI product meets stipulated NAS requirements.
Operational Effectiveness	The degree to which a product accomplishes its mission when used by representative personnel in the expected operational environment.
Operational Readiness Date (ORD)	The operational readiness date occurs at the end of the operational suitability demonstration (OSD)
Operational Suitability	The degree to which a product intended for field use satisfies its availability, compatibility, transportability, interoperability, reliability maintainability, safety, human factors, logistics supportability, documentation, personnel, and training requirements.
Operational Suitability Demonstration (OSD)	When a system achieves IOC, it enters an OSD. The OSD is a time period during which the system is operated under intense scrutiny.
Operational Test (OT)	A series of tests designed to demonstrate that a new system is operationally effective and operationally suitable for use in the NAS and that all technical and performance requirements specified in the Acquisition Program Baseline.
Packaging	A proposition or an offer presented to a CCB for approval, consisting of several items (software or hardware) to be fixed or included in a system baseline.
Peer Review	A review of a product, following defined procedures, by peers of the producers of the product for the purpose of identifying defects and improvements.
Performance Measurements	Verify that the system is operating within performance requirements as outlined in performance criteria. Quantifies the system impact of new functionality.
Plan	A detailed scheme, program, or method worked out beforehand for the accomplishment of an object. A proposed or tentative project or purpose.
Preliminary Design	An informal design that precedes or introduces the main design.
Preliminary Design Review/Critical Design Review (PDR/CDR)	Used by the developers to finalize a new design and insure initial user "buy-in" to the design/development/implementation approach.
Procedure	Subordinate to a process. A set of activities or steps taken to achieve a given purpose. Any specific combination of machines, tools, methods, materials, and/or people employed to develop a work product. Could be used by multiple persons in one group either separately, interleaved, recursively, or concurrently. Some activities transform inputs into outputs needed for other activities.
Process	A description of a course of action to be taken to perform a given task from start to

	finish.
Product	The complete set, or any of the individual items of the set, of computer programs, procedures, and associated documentation and data designated for delivery to a customer or end user.
Production Acceptance Test (PAT)	Contractor-conducted testing performed on each end item before it leaves the factory to verify that the end item conforms to applicable specifications, is free from manufacturing defects, and is substantially identical to the qualified system.
Project	An undertaking requiring concerted effort, which is focused on developing and maintaining a specific product. Typically a project includes its own funding, cost, accounting, and delivery schedule.
Project Lifecycle	The period of time that begins when a project plan is conceived and ends when the product produced is no longer in use by the customer.
Program Trouble Report (PTR)	(Sometimes referred to as problem trouble report) Method used to document and report a software anomaly that occurs on a system. It includes a full description of the problem, the operational impact, if any, and the method of recovery and or operational workaround used to recover from the problem.
Project Planning	Determining a method of action or procedure to implement a large or major undertaking, usually one involving considerable money, personnel, and equipment.
Quality	(1) The degree to which a system, component, or process meets specified requirements. (2) The degree to which a system, component, or process meets customer or user needs or expectations.
Quality Assurance	(1) A planned and systematic pattern of all actions necessary to provide adequate confidence that a work product conforms to established technical requirements. (2) A set of activities designed to evaluate the process by which work products are developed and/or maintained.
Site Acceptance Test (SAT)	Testing conducted at a field facility, by the vendor, that demonstrates that the system is installed and integrated with other site equipment and is operating properly.
Site Program Bulletin	A directive used to authorize field release of changes to existing software programs, new software packages, and associated documentation.
Stability Testing	Verification that the system operates properly over an extended time period (typically run continuously for 48 to 72 hours). To be realistic, a typical “load” on the system is usually applied.
Subsystem	A combination of sets, groups, etc., that performs an operational function within a system and is a major subdivision of the system.
System	A collection of components organized to accomplish a specific function or set of functions.
System Baseline	A set of hardware, software, and documentation configuration items that define a configuration that is adapted or suited to support the function for which the system is designed or exists.
System Development Plan	The collection of plans that describe the activities to be performed for the system release on a project. It governs the management of the activities to be performed.
System Requirement	A condition or capability that must be met or possessed by a system or system component to satisfy a condition or capability needed by a user to solve a problem.
System Requirements Review	A review conducted jointly by users and developers to insure that requirements are documented, understood and prioritized.
System Support Directive	A directive used to authorize field release of changes to existing hardware/software, new hardware/software, and associated documentation. The SSD replaces EEMs, SPBs, etc.
Task	(1) A sequence of instructions treated as a basic unit of work. (2) A well-defined unit of work in the process that provides management with a visible checkpoint into the status of the project. Tasks have readiness criteria (preconditions) and completion criteria (post-conditions).
Test	Method of verification that measures equipment’s performance under specific

	configurations and after the controlled application of known stimuli. Results are measured, compared against previous success criteria and then evaluated to determine the degree of compliance.
Test Environment	Simulated operational environment used during system test to revalidate existing performance and verify new functionality/system fixes. Typical parameters/limitations when testing in a simulated operational environment include system size/configuration (# of peripherals, interfaces, etc.), system loading (#/types of stimulus put into system under test), etc.
Test Tools	Automated HW/SW support equipment that allows the re-verification of existing baseline performance and the T&E of new functions/fixes. The thoroughness of the tools and the amount of automation of the tools directly affect the level of verification that can be done in a reasonable timeframe.
Validation	Validation demonstrates whether a product or product component will fulfill its specified purpose when placed in any aspect of its intended environment such as operation, training, manufacturing, maintenance, or support services. The methods employed to accomplish validation can be applied to work products as well as to the product or product components.
Verification	Verification ensures that work products (i.e., requirements, designs, and prototypes) meet their specified requirements. Verification is inherently an incremental process since it occurs throughout the development of the product and work products – beginning with initial requirements, progressing through subsequent changes, and culminating in verification of the completed product.

## **New Content: Test and Evaluation Process Guidelines:**

### **E1.3 Definitions**

Acceptance Testing	Formal testing conducted to determine whether a system satisfies its acceptance criteria and to enable the customer to determine whether to accept the system.
Analysis	Method of verification that compares hardware or software designs with known scientific and technical principles, technical data or procedures and practices to validate that the proposed design meets with technical requirements.
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	item, control changes to those characteristics, record and report change processing and implementation status, and verify compliance with specified requirements.
Critical Operational Issue (COI)	A key operational effectiveness or operational suitability issue that must be examined during operational test to determine the system's capability to perform its mission.
(COI) Resolved	A decision based on test data that the COI requirement has been met. (e.g., COI: Is the system safe? The COI is resolved if the answer is yes.)
Critical Performance Requirement (CPP)	A solution's CPRs and associated values are specified in the program requirements document. CPRs are primary requirements that represent attributes or characteristics considered essential to meeting the mission need the program is seeking to satisfy.
Development Test (DT)	A series of tests designed to verify that system technical and performance requirements specified in the contract and system specification have been met. Development tests are usually performed by the contractor and witnessed by the FAA.
Field Familiarization	Tests conducted at each site by Air Traffic and Technical Operations personnel to verify that the site is ready to switch over to the new system.
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System Baseline	A set of hardware, software, and documentation configuration items that define a configuration that is adapted or suited to support the function for which the system is designed or exists.
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Test Environment	Simulated operational environment used during system test to revalidate existing performance and verify new functionality/system fixes. Typical parameters/limitations when testing in a simulated operational environment include system size/configuration (# of peripherals, interfaces, etc.), system loading (#/types of stimulus put into system under test), etc.
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Verification	Verification ensures that work products (i.e., requirements, designs, and prototypes)

	meet their specified requirements. Verification is inherently an incremental process since it occurs throughout the development of the product and work products – beginning with initial requirements, progressing through subsequent changes, and culminating in verification of the completed product.
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## **Red Line Content: Test and Evaluation Process Guidelines:**

### **E1.3 Definitions**

Acceptance Testing	Formal testing conducted to determine whether a system satisfies its acceptance criteria and to enable the customer to determine whether to accept the system.
Analysis	Method of verification that compares hardware or software designs with known scientific and technical principles, technical data or procedures and practices to validate that the proposed design meets with technical requirements.
Anomaly or Failure	Inability of a software or hardware to meet its specified test or operational requirements.
Baseline	A specification or product that has been formally reviewed and agreed upon, that thereafter serves as the basis for further development, and that can be changed only through formal change control procedures.
Build Baseline	Software components that have been compiled and formally reviewed and agreed upon, that thereafter serves as the basis for further development, and that can be changed only through formal change control procedures.
Case File	A proposal recorded on FAA Form 1800-2 for any change to a baseline document or any deviation from national standards that needs technical concurrence. Prelude to an NCP.
Case File Number	A number assigned through MIS by the preparing organization in accordance with NAS-MD-001. (Example: CFOS500-VSCS-010 CF = Case File, OS500 = organization, VSCS = system, 010 = next number in sequence)
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Configuration Management	A discipline applying technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a configuration item, control changes to those characteristics, record and report change processing and implementation status, and verify compliance with specified requirements.
Critical Operational Issue (COI)	A key operational effectiveness or operational suitability issue that must be examined during operational test to determine the system's capability to perform its mission.
(COI) Resolved	A decision based on test data that the COI requirement has been met. (e.g., COI: Is the system safe? The COI is resolved if the answer is yes.)
Critical Performance Parameter <u>Requirement</u> (CPP)	<del>A critical solution's system performance requirement and its values are associated specified in threshold and objective values the program requirements document. CPPs are specified primary requirements that represent attributes or characteristics considered essential to meeting the Program Requirements mission need Document the program is seeking to satisfy.</del> <u>A critical solution's system performance requirement and its CPRs and associated values are associated specified in threshold and objective values the program requirements document. CPPs are specified primary requirements that represent attributes or characteristics considered essential to meeting the Program Requirements mission need Document the program is seeking to satisfy.</u>
Development Test (DT)	A series of tests designed to verify that system technical and performance requirements specified in the contract and system specification have been met. Development tests are usually performed by the contractor and witnessed by the FAA.
Field Familiarization	Tests conducted at each site by Air Traffic and Technical Operations personnel to verify that the site is ready to switch over to the new system.

Field Site Acceptance Test	Tests performed at operational sites to validate performance prior to operational use.
First Article System	A prototype system upgraded after production award.
First Article Test	Testing of the first subsystem built by the developer. Qualification testing and acceptance testing demonstrations to show compliance with the specification requirements and the SOW.
Function	The purpose for which something is designed or exists (a major element of a system baseline).
Initial Operating Capability (IOC)	IOC is the declaration by site personnel that the system is ready for conditional operational use in the NAS and denotes the end of field familiarization at that site.
Independent Operational Assessment (IOA)	A assessment of a new system's operational effectiveness and operational suitability performed by an IOA team on systems designated for IOA by the COO.
Interface Control Document (ICD)	The documentation necessary to identify functional and physical characteristics between and within configuration items provided by developers used to resolve problems concerning the specified interfaces.
Joint Resources Council (JRC)	The FAA's body responsible for making corporate level decisions. Membership consists of Associate Administrators representing all lines of business of the agency, the FAA Acquisition Executive, the Director of the Office of Financial Services, and Legal Counsel.
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Measure of Performance (MOP)	Quantitative values that characterize MOEs or MOSs. These values are measurable by a test process.
Measure of Suitability (MOS)	First-level, qualitative decomposition of an operational suitability component associated with a COI.
NAS Change Proposal (NCP)	Proposed changes to the system baseline.
National Airspace System (NAS)	The common network of U.S. airspace; air navigation facilities, equipment and services; airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures; technical information; and manpower and material. Included are system components shared jointly with the military.
Needs and Requirements Defined	New needs identified during in-service management of a product's lifecycle generally originate from the operational environment. Needs which cannot be satisfied at the local level or validated and entered into the national requirement process.
Operational Capability Test/Demonstration (OCT/OCD)	A test performed by the FAA to determine whether a COTS/NDI product meets stipulated NAS requirements.
Operational Effectiveness	The degree to which a product accomplishes its mission when used by representative personnel in the expected operational environment.
Operational Readiness Date (ORD)	The operational readiness date occurs at the end of the operational suitability demonstration (OSD)
Operational Suitability	The degree to which a product intended for field use satisfies its availability, compatibility, transportability, interoperability, reliability maintainability, safety, human factors, logistics supportability, documentation, personnel, and training requirements.
Operational Suitability Demonstration (OSD)	When a system achieves IOC, it enters an OSD. The OSD is a time period during which the system is operated under intense scrutiny.
Operational Test (OT)	A series of tests designed to demonstrate that a new system is operationally effective

	and operationally suitable for use in the NAS and that all technical and performance requirements specified in the Acquisition Program Baseline.
Packaging	A proposition or an offer presented to a CCB for approval, consisting of several items (software or hardware) to be fixed or included in a system baseline.
Peer Review	A review of a product, following defined procedures, by peers of the producers of the product for the purpose of identifying defects and improvements.
Performance Measurements	Verify that the system is operating within performance requirements as outlined in performance criteria. Quantifies the system impact of new functionality.
Plan	A detailed scheme, program, or method worked out beforehand for the accomplishment of an object. A proposed or tentative project or purpose.
Preliminary Design	An informal design that precedes or introduces the main design.
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Process	A description of a course of action to be taken to perform a given task from start to finish.
Product	The complete set, or any of the individual items of the set, of computer programs, procedures, and associated documentation and data designated for delivery to a customer or end user.
Production Acceptance Test (PAT)	Contractor-conducted testing performed on each end item before it leaves the factory to verify that the end item conforms to applicable specifications, is free from manufacturing defects, and is substantially identical to the qualified system.
Project	An undertaking requiring concerted effort, which is focused on developing and maintaining a specific product. Typically a project includes its own funding, cost, accounting, and delivery schedule.
Project Lifecycle	The period of time that begins when a project plan is conceived and ends when the product produced is no longer in use by the customer.
Program Trouble Report (PTR)	(Sometimes referred to as problem trouble report) Method used to document and report a software anomaly that occurs on a system. It includes a full description of the problem, the operational impact, if any, and the method of recovery and or operational workaround used to recover from the problem.
Project Planning	Determining a method of action or procedure to implement a large or major undertaking, usually one involving considerable money, personnel, and equipment.
Quality	(1) The degree to which a system, component, or process meets specified requirements. (2) The degree to which a system, component, or process meets customer or user needs or expectations.
Quality Assurance	(1) A planned and systematic pattern of all actions necessary to provide adequate confidence that a work product conforms to established technical requirements. (2) A set of activities designed to evaluate the process by which work products are developed and/or maintained.
Site Acceptance Test (SAT)	Testing conducted at a field facility, by the vendor, that demonstrates that the system is installed and integrated with other site equipment and is operating properly.
Site Program Bulletin	A directive used to authorize field release of changes to existing software programs, new software packages, and associated documentation.
Stability Testing	Verification that the system operates properly over an extended time period (typically run continuously for 48 to 72 hours). To be realistic, a typical “load” on the system is usually applied.
Subsystem	A combination of sets, groups, etc., that performs an operational function within a

	system and is a major subdivision of the system.
System	A collection of components organized to accomplish a specific function or set of functions.
System Baseline	A set of hardware, software, and documentation configuration items that define a configuration that is adapted or suited to support the function for which the system is designed or exists.
System Development Plan	The collection of plans that describe the activities to be performed for the system release on a project. It governs the management of the activities to be performed.
System Requirement	A condition or capability that must be met or possessed by a system or system component to satisfy a condition or capability needed by a user to solve a problem.
System Requirements Review	A review conducted jointly by users and developers to insure that requirements are documented, understood and prioritized.
System Support Directive	A directive used to authorize field release of changes to existing hardware/software, new hardware/software, and associated documentation. The SSD replaces EEMs, SPBs, etc.
Task	(1) A sequence of instructions treated as a basic unit of work. (2) A well-defined unit of work in the process that provides management with a visible checkpoint into the status of the project. Tasks have readiness criteria (preconditions) and completion criteria (post-conditions).
Test	Method of verification that measures equipment's performance under specific configurations and after the controlled application of known stimuli. Results are measured, compared against previous success criteria and then evaluated to determine the degree of compliance.
Test Environment	Simulated operational environment used during system test to revalidate existing performance and verify new functionality/system fixes. Typical parameters/limitations when testing in a simulated operational environment include system size/configuration (# of peripherals, interfaces, etc.), system loading (#/types of stimulus put into system under test), etc.
Test Tools	Automated HW/SW support equipment that allows the re-verification of existing baseline performance and the T&E of new functions/fixes. The thoroughness of the tools and the amount of automation of the tools directly affect the level of verification that can be done in a reasonable timeframe.
Validation	Validation demonstrates whether a product or product component will fulfill its specified purpose when placed in any aspect of its intended environment such as operation, training, manufacturing, maintenance, or support services. The methods employed to accomplish validation can be applied to work products as well as to the product or product components.
Verification	Verification ensures that work products (i.e., requirements, designs, and prototypes) meet their specified requirements. Verification is inherently an incremental process since it occurs throughout the development of the product and work products – beginning with initial requirements, progressing through subsequent changes, and culminating in verification of the completed product.