Welcome to Management Process

This lesson addresses the various roles of the Life Cycle Logistician (LCL) when developing the initial product support strategy for a product. The LCL must play an active role in defining logistics test points as part of test and evaluation of a product. This includes performance attributes, which will aid the LCL in integrating the initial product support strategy into the acquisition strategy.

Objectives

Upon completion of this lesson, you should be able to:

- Describe characteristics and use of the Capability Development Document (CDD).
- Identify what logistics information should be documented in the Test and Evaluation Master Plan (TEMP).
- Define logistics test points as they relate to product supportability objectives.
- Identify the LCL's role in the definition of logistics test points.
- Recognize how the acquisition and support strategies are integrated with the initial product support strategy and the role the LCL will play in that integration.

This lesson will provide you with information regarding the LCL's role in the management process, associated with developing the initial product support strategy.

Introduction to the Capability Development Document (CDD)

The CDD captures the information necessary to deliver an affordable and supportable capability using mature technology within one or more increments of an acquisition strategy.

The CDD describes the operational performance attributes, including key performance parameters (KPPs), necessary for the acquisition community to design a proposed system and establish a program baseline. The CDD is an entrance criteria item that is necessary to proceed to a Milestone B acquisition decision. It defines the authoritative, measurable and testable capabilities needed by the warfighters to support the Engineering and Manufacturing Development phase of an acquisition program. The CDD must include a description of the DOTMLPF (Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities) and associated policy impacts and constraints.
The CDD is developed based on the following guidance and input:

- The analysis of alternatives (AoA) for Acquisition Category I/IA programs
- Associated integrated architectures
- Capability roadmaps
- Materiel Solution Analysis and Technology Development activities

The CDD is an agreement between the joint warfighting (Joint Requirement Oversight Council/Functional Review Boards) and acquisition communities regarding performance requirements for each increment of warfighting capability. It serves as the basis for the acquisition of a militarily useful and supportable increment of technology.

Popup Text

DOTMLPF

Doctrine, Organization, Training, Material, Leadership and education, Personnel, and Facilities

The LCL and the CDD

The LCL plays an essential role in the development of the CDD. The operational performance attributes of the capability must include supportability. Warfighters want to invest in capabilities that provide affordable military utility for their systems. In order to fulfill the program manager's responsibility for life cycle management, the CDD must delineate the attributes that will ensure the development of technologically sound, sustainable, and affordable increments of militarily useful capability.

The LCL must identify and describe key performance and related support parameters for inclusion in the CDD. These parameters are used as the basis for the design requirements for subsequent phases affecting availability, reliability, maintainability, interoperability, manpower, and deployment footprint. The CDD must describe the overall capability of the system to perform and endure in the required mission operational environment.

The following life cycle logistics factors should be considered in the CDD:

- System maintenance/support profiles and use case scenarios (support capability packages)
- Reliability and maintainability
- Support environment and locations for support
- Support and maintenance effectiveness
- Duration of support

CDD Outline

Below are the sections found in a CDD. The LCL provides input to most sections and needs to understand all sections in order to effectively integrate supportability issues and ensure that the supportability factors are aligned well with other aspects of the program. Select each section to read a description. Detailed procedures and instructions for the CDD can be found in the online JCIDS Manual, Appendix A to Enclosure G.

SYSTEM CAPABILITIES REQUIRED FOR THE CURRENT INCREMENT	FAMILY OF SYSTEM AND SYSTEM OF SYSTEM SYNCHRONIZATION	SUPPORTABILITY	ASSETS REQUIRED TO ACHEIVE INITIAL OPERATIONAL CAPABILITY (IOC)	SCHEDULE AND IOC AND FULL OPERATIONAL CAPABILITY (FOC) DEFINITIONS	OTHER DOTMLPF AND POLICY CONSIDERATIONS
SUMMARIES					OTHER SYSTEM ATTRIBUTES
CAPABILITY DISCUSSION					PROGRAM AFFORDABILITY

Popup Text

System Capabilities Required for the Current Increment

Description of each attribute including supporting rational. Each attribute is presented in output-oriented, measurable and testable terms. Tables summarizing specified KPPs, KSAs are also included.

Family of System and System of System Synchronization

Discussion of any supportability issues related to the Family of System (FoS) and System of System (SoS) synchronization.

Supportability

Information Technology and National Security Systems Supportability: Description and requirements for any supportability information exchange requirements related to IT and NSS.

Intelligence Supportability: Identification of all projected requirements for intelligence support throughout the expected acquisition life cycle.

Electromagnetic Environmental Effects (E3) and Spectrum Supportability Assets Required to Achieve Initial Operational Capability (IOC)

Identification and description of supportability capabilities and assets that are required to attain initial operational capability (IOC) to include initial spares, training and support equipment or performance-based service contracts/ arrangements to meet those requirements.

Technology Readiness Assessment: Discussion of the program's critical technology elements in accordance with the DoD Technology Readiness Assessment Deskbook. Specifically identify any critical technology elements linked to the program's key performance parameters.

Schedule and Initial Operational Capability (IOC) and Full Operational Capability (FOC)

Definitions

Description of supportability risk and constraints that will guide the development of the schedule for IOC and FOC.

Other DOTMLPF and Policy Considerations

Description of key logistics criteria, such as system reliability, maintainability, transportability, and supportability, that will help minimize the system's logistics footprint, enhance mobility and reduce the total ownership cost, identification of any basing needs (such as repair facilities), and description of any Title 10 or other policy issues that may impact supportability options. These are use as inputs to the "Other DOTMLPF and Policy Considerations" section.

Other System Attributes

Description of all supportability attributes that tend to be design, cost and risk drivers, such as Environment, Safety, and Occupational Health (ESOH),human Systems Integration, embedded instrumentation and wartime reserve mode (WARM) requirements.

Program Affordability

Input to the discussion of program affordability in terms of product support factors that impact affordability, especially in terms of the upfront investment in R&M and diagnostics and prognostics and the downstream life cycle cost avoidance.

Summaries

Analysis Summary: Summary of the supportability aspects of the AoA, market research or other analysis.

Concept of Operations Summary: Description of the support concept of operations, based on warfighter requirements.

Threat Summary: Summary of any threats that may impact supportability.

Program Summary: Summary for support strategy component of overall program strategy for reaching full capability and the relationship of this increment to future increments (i.e., how will support be tailored for evolving increments).

Capability Discussion

Description of supportability gaps in current war fighting capability, and how the current program will fill those gaps.

The CDD and Evolutionary Acquisition

As you may recall, Evolutionary Acquisition is the preferred DoD strategy for rapid acquisition of mature technology for the user. The evolutionary approach delivers capability in increments. The CDD is updated for each increment. The LCL must provide input for each update, based on lessons learned, technology risk and evolving warfighter requirements.

In an evolutionary acquisition, the capabilities delivered by a specific increment may provide only a part of the ultimate desired capability. Thus, the initial CDD must provide information regarding the strategy for achieving the full capability. Subsequent increments, leading to the full capability, are also described to give an overall understanding of the program preliminary approach.

CDDs for subsequent increments will update the overall approach to reflect:

- Lessons learned from the previous increment(s)
- Changes in the Joint Operating Concepts (JOpsC), integrated architectures, and other pertinent information
- Additionally, the AoA should be reviewed for its relevance to each CDD increment. If necessary, the AoA should be updated or a new one initiated.

Development of Support Performance Attributes in the CDD

The development of support performance attributes in the CDD plays a key role in the overall development and refinement of support related system requirements as illustrated below.

ICD, CDD, CPD, System Concept Selected, Technologies Selected ⟷ System Support and Maintenance Concept Selected, Technologies Selected

Drives

- System Operational Profiles and Use Case Scenarios (Mission Capability Packages)
- Utilization Rates
- Utilization Environment and Geographical Distribution
- System Effectiveness
- Operational Horizon and System Life Cycle

Drives

- System Maintenance/Support Profiles and Use Case Scenarios (Support Capability Packages)
- Reliability and Maintenance Rates
- Support Environment and Locations for Support
- Support and Maintenance Effectiveness
- Duration of Support

D

Long Description

Development of Support-Related System Requirements: Figure 3.2. from Designing and Assessing Supportability in DoD Weapon Systems: A Guide to Increased Reliability and Reduced Logistics Footprint, October 24, 2003.

There are two columns of information. One column is titled “ICD, CDD, CPD, System Concept Selected, and Technologies Selected”. The other column is titled System Support and Maintenance Concept Selected and Technologies Selected. The two column headers are connected by a double-headed arrow.

The ICD, CDD, CPD, System Concept Selected, and Technologies Selected drive:

- System operational profiles and use case scenarios (mission capability packages)
- Utilization rates
- Utilization environment and geographical distribution
- System effectiveness
- Operational horizon and system life cycle

The System Support and Maintenance Concept Selected and Technologies Selected drive:

- System maintenance/ support profiles and use case scenarios (support capability packages)
- Reliability and maintenance rates
- Support environment and locations for support
- Support and maintenance effectiveness Duration of support.

Knowledge Review

Which of the following documents provide the operational performance attributes, including key performance parameters (KPPs), necessary for the acquisition community to design a proposed system and establish a program baseline?

- [ ] DoD Acquisition Guidebook
- [ ] Test and Evaluation Management Plan (TEMP)
- [x] Capability Development Document (CDD)
- [ ] JROCM 161-06

Check Answer

The **Capability Development Document (CDD)** provides the operational performance attributes, including key performance parameters (KPPs), necessary for the acquisition community to design a proposed system and establish a program baseline.

Test and Evaluation (T&E): A Key Risk Management Tool

The performance attributes identified for the warfighting capability that will be developed must be measurable and testable. These attributes are the primary focus of the T&E process. T&E can be integrated throughout the defense acquisition process. It is structured to provide essential information to decision-makers, assess attainment of technical performance parameters, and determine whether systems are operationally effective, suitable, survivable, and safe for intended use.

The conduct of T&E, integrated with modeling and simulation, can facilitate learning, assess technology maturity and interoperability, facilitate integration into fielded forces, and confirm performance against documented capability needs and adversary capabilities as described in the System Threat Assessment.

The warfighting community's key question is "will the system meet mission requirements?" The process of test and evaluation enables the acquisition community to address this question as the program evolves and serves as an essential risk management tool. A primary contribution made by T&E is the detection and reporting of deficiencies that may adversely impact the performance capability or availability / supportability of a system.

Popup Text

System Threat Assessment

Describes the threat to be countered and the projected threat environment. The threat information must be validated by the Defense Intelligence Agency (DIA) for programs reviewed by the Defense Acquisition Board (DAB). (DAU Glossary, pg B-162)

Types of Test and Evaluation

When defining the logistics test points to include in the TEMP, the LCL needs to consider two major types of T&E: developmental test and evaluation and operational test and evaluation. A third type, live fire test and evaluation, is less relevant for supportability issues except in cases where the reliability of the sub-system/component requiring live fire evaluation is such that the mission performance cannot be met.

1. Developmental Test and Evaluation (DT&E)
2. Operational Test and Evaluation (OT&E)
3. Live Fire Test and Evaluation (LFT&E)

Additional information is available at the following sites:

DAU ACC 'Test & Evaluation'

Office of the Secretary of Defense, Operational Test and EvaluationDirectorate (DOT&E).

Popup Text

Developmental Test and Evaluation (DT&E)

Developmental Test and Evaluation (DT&E) supports the following:

1. The systems engineering process to include providing information about risk and risk mitigation;
2. Assessing the attainment of technical performance parameters;
3. Providing empirical data to validate models and simulations; and
4. Information to support periodic technical performance and system maturity evaluations.

Operational Test and Evaluation (OT&E)

OT&E is conducted to evaluate system operational effectiveness, suitability, and survivability in support of the full-rate production decision review.

Live Fire Test and Evaluation (LFT&E)

LFT&E permits the evaluation of system survivability in the context of vulnerability to realistic threat munitions and/or system lethality against realistic threat targets.

The Test and Evaluation Master Plan (TEMP)

So, what exactly is a Test and Evaluation Master Plan or TEMP? PMs for major defense acquisition programs, major automated information system programs and programs on the Office of the Secretary of Defense (OSD) T&E Oversight List are required to submit a plan that describes the total T&E planning from component development through operational T&E into production and acceptance. The program manager, with T&E WIPT providing support, is responsible for producing this document known as the TEMP.

The TEMP is an important document in that it contains the required type and amount of T&E events, along with their resource requirements. It is considered a contract between the PM, OSD, and the T&E activities. Testing for KPPs is an especially sensitive issue given that failure to meet thresholds for KPPs could be grounds for a program re-assessment.

The Test and Evaluation Master Plan (TEMP), Cont.

As the LCL, you play an essential role in defining logistics test points to include performance attributes to be tested, methods of testing, test conditions, metrics, sources of data, scenarios and test resource requirements. It is critical you identify the resource requirements in the TEMP for product support testing. This will include DT&E, OT&E and post deployment testing because the TEMP provides the long range plan for budgeting test resources.

The TEMP provides a roadmap for integrated simulation, test methodologies, plans, schedules, and resource requirements necessary to accomplish the T&E program. T&E planning should address measures of effectiveness/suitability (MOEs/MOSs) with appropriate quantitative criteria, test event or scenario description, resource requirements, and test limitations.

The TEMP is intended to be a summary document outlining DT&E and OT&E management responsibilities across all phases of the acquisition process. As such it only provides detailed information necessary to support the rationale for the type, amount and schedules of the testing planned. It must clearly delineate the T&E activities relationship to technical risk, operational and support issues and concepts, system performance, reliability, availability and maintainability, other logistics requirements and major decision points.

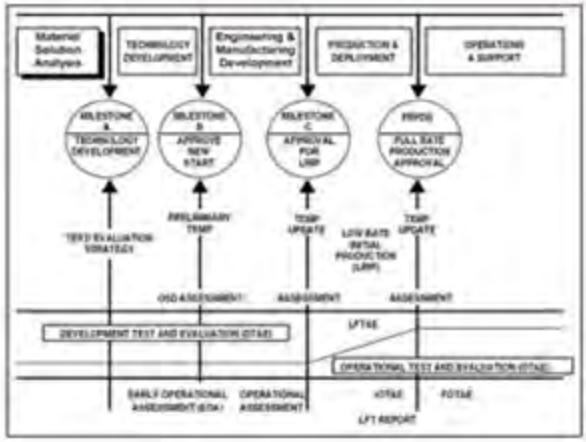
The Test and Evaluation Master Plan (TEMP), Cont.

As the CDD is being developed to support Milestone B, the PM's T&E working-level integrated product team (WIPT) concurrently transforms T&E requirements into a more comprehensive T&E strategy that is documented in the TEMP.

This process involves adding the following as they become available:

- Details such as specific, desired, operational capabilities or T&E events (DT&E, OT&E, and LFT&E) to the broad, initial T&E Strategy.
- Describing Critical Operational Issues.
- Refining the management structure and composition of the T&E WIPT.
- Identifying resource requirements more precisely.

The illustration shows the TEMP evolution in the acquisition process. Select the image to enlarge it.



D

Long Description

Figure 2-1. Testing and the Acquisition Process, from the Test and Evaluation Management Guide, DAU, January 2005. (Note: The figure was modified to reflect Materiel Solution Analysis vice Concept Refinement and Engineering & Manufacturing Development vice System Design & Demonstration)

Across the top of the chart are the phases of the acquisition life cycle. From left to right: Materiel Solution Analysis, Technology Development; Engineering & Manufacturing Development; Production & Deployment; and Operations & Support.

Between Materiel Solution Analysis and Technology Development is Milestone A, Technology Development. Between Technology Development and System Development & Demonstration is Milestone B, Approve New Start. Between Engineering & Manufacturing Development and Production & Deployment is Milestone C, Approval for Low-rate Initial Production. Between Production & Deployment and Operations & Support is Full-rate Production Approval.

There is Development Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E) throughout the life cycle. Through Milestone C, there is more DT&E than OT&E. After Milestone C, there is more OT&E than DT&E.

At most milestones, there is assessment.
At Milestone B, there is Early Operational Assessment (EOA) and OSD Assessment At Milestone C, there is Operational Assessment.

TEMP Format

The TEMP contains four sections, as shown below. Please select each of the sections to read about key elements of each.

- Part I - Introduction
- Part II - Test Program Management and Schedule
- Part III - Test and Evaluation Strategy
- Part IV - Resource Summary

Popup Text

Part I – Introduction

- Purpose
- Mission Description
- System Description
    - System Threat Assessment
    - Program Background
    - Key Capabilities (KPPs, KSAs, Interfaces, Certification Requirements, Systems Engineering Requirements)

Part II - Test Program Management and Schedule

- Management
- Data Base Requirements
- Integrated Test Program Schedule

Part III – Test and Evaluation Strategy

- Strategy
- Evaluation Framework
- Developmental Evaluation Approach
- Live Fire Evaluation Approach
- Operational Evaluation Approach
- Future Test and Evaluation

Part IV – Resource Summary

- Introduction
- Test Articles
- Operational Force Test Support

- Test Sites and Instrumentation
- Simulations, Models and Test Beds
- Test Support Equipment
- Special Requirements
- Threat Representation
- Test and Evaluation Funding Requirements
- Test Targets and Expendables
- Manpower/ Personnel Training
- Federal, State, Local Requirements
- Manpower/Personnel Training
- Test Funding Summary

Logistics Test Points in the TEMP

The purpose of product support T&E is to measure and assess the supportability of a developing system. This includes reliability, maintainability and availability in addition to any embedded diagnostics, prognostics or autonomic logistics information systems. Supportability T&E also identifies any deficiencies and potential corrections/improvements or work-arounds as data become available and to assess the operational suitability of the system throughout its life cycle.

The LCL must identify key logistics test points that will meet the information requirements for key logistics-related decision points as input to the TEMP. Logistics test points may be characterized into various support elements such as:

- Reliability, availability and maintainability;
- Support manpower issues;
- Logistics footprint;
- Embedded diagnostics and prognostics;
- Autonomic logistics information systems;
- System support package factors such as spares, test and support equipment, and technical data and publications.

Logistics Test Points in the TEMP, Cont.

The LCL should develop an outline of the key decision points on the path to developing and refining the product support strategy and plan. Then, based on this timeframe, assess the knowledge that would be needed to make decisions at each point. These knowledge requirements should guide the development of the logistics test points in the TEMP.

For example, R&M test results for various sub-systems and components would be needed in order to confirm the levels of maintenance proposed in the product support strategy. In efforts to reduce the logistics footprint, many systems are being supported by two levels of maintenance (organizational/field level and depot level – with no intermediate level capability). The demonstrated R&M of the systems must support the effective implementation of this strategy.

Test results on the ability of an autonomic logistics (AL) information system to meet specified performance thresholds would be needed to identify and manage any risk that may be associated with a product support enterprise that would depend upon the AL information to plan for and provide responsive support.

Popup Text

Autonomic Logistics

Autonomic Logistics (AL) is a seamless, embedded solution that integrates current performance, operational parameters, current configuration, scheduled upgrades and maintenance, component history, predictive diagnostics (prognostics) and health management, and service support for the [weapon system]. Essentially, AL does invaluable and efficient behind-the-scenes monitoring, maintenance and prognostics to support the aircraft and ensure its continued good health.

Source: Joint Strike Fighter (F-35) website

Knowledge Review

True or False. The primary contribution made by the T&E is the detection and reporting of deficiencies.

- [x] True
- [ ] False

Check Answer

The statement is **true**. The primary contribution made by T&E is the detection and reporting of deficiencies.

Knowledge Review

True or False. Live fire test and evaluation is not relevant for supportability issues.

- [ ] True
- [x] False

Check Answer

The statement is **false**. Live fire test and evaluation **is** relevant for supportability issues

Knowledge Review

True or False. The TEMP is an important document in that it contains the required type and amount of test and evaluation events, along with their resource requirements.

- [x] True
- [ ] False

Check Answer

The statement is **true**. The TEMP is an important document in that it contains the required type and amount of test and evaluation events, along with their resource requirements.

Knowledge Review

True or False. The TEMP is intended to be summary document outlining live fire T&E management responsibilities across all phases of the acquisition process.

- [ ] True
- [x] False

Check Answer

The statement is **false**. The TEMP is not intended to be summary document outlining live fire T&E management responsibilities across all phases of the acquisition process.

Supportability Objectives and Logistics Test Points

The following are examples of supportability objectives that the LCL should consider when defining logistics test points:

Developmental T&E

- Technical approach, logistics risks, and alternative supportability solutions
- Logistics-related technologies
- Technology Development Strategy (TDS) logistics assessment strategy expanded for TEMP
- Testability of potential logistics footprint elements
- Thresholds/ objectives for logistics parameters in CDD

Operational T&E

- Operational aspects of supportability technical solutions
- Measures and COI for future suitability assessments-input for TEMP
- Potential operational suitability of logistics systems and sustainment planning

Source: DAU Test and Evaluation Management Guide, January 2005, Figure 19-1. Logistics Supportability Objectives in the T&E Program

Knowledge Review

Below are examples of supportability objectives that should be considered when defining logistics test points. Which if the following examples is a part of Developmental T&E?

- [ ] Operational aspects of supportability technical solutions.
- [ ] Measures and COI for future suitability assessments-input for TEMP.
- [x] Technical approach, logistics risks, and alternative supportability solutions.
- [ ] Potential operational suitability of logistics systems and sustainment planning.

Check Answer

Technical approach, logistics risks, and alternative supportability solutions is a part of Developmental T&E.

Logistics Test Points and Reliability, Availability, and Maintainability (RAM) Requirements

Reliability, availability and maintainability (RAM) requirements will be the focus of key logistics test points. RAM requirements are:

- Based on operational requirements and life cycle cost considerations;
- Stated in quantifiable operational terms;
- Measurable during developmental and operational test and evaluation;
- Defined for all elements of the system to include support and training equipment and information systems.

Reliability is the ability of a system to perform its mission without failure, degradation, or demand on the support system. Reliability test results are a critical aspect of the LCL's logistics test points. The refinement of the product support strategy and plan must be guided by evolving knowledge with regards to inherent reliability of the system increment that will be supported.

More detailed information can be found in the DAU Test and Evaluation Management Guide, January 2005, Section 19.3, Conducting Logistics Support System T&E.

Logistics Test Points and RAM, Cont.

The reliability of the system and its components will also have a significant impact on the life cycle support cost. Several major types of reliability testing to consider are:

Environmental stress screening – a test or a series of tests during engineering development to identify weak parts or manufacturing defects

Reliability development/growth testing – a systematic engineering process of Test-Analyze-Fix-Test where equipment is tested under actual, simulated and accelerated environments

Reliability qualification testing – a test to verify that threshold reliability requirements have been met before items are committed to production

Production reliability acceptance testing – is intended to simulate in-service-use of the delivered item or production lot.

Review a short Video to further illustrate the point (transcript also available).

Popup Text

Transcript

3, 2, 1, 0. Trident D5 motors were tested to verify performance and to determine the effects of aging on major performance. This land attack
standard missile fired from the vertical launching system at desert ship detonates in an arena down range to evaluate target detector and warhead modifications. A series of Ram block one tests were executed during combined DT. Here an MM38 Exocet missile replicates an anti-ship attack. Warhead effectiveness is tested in remote areas and on our 4 mile long, supersonic test track. The slam ER warhead in this test penetrates a concrete door to destroy a protected aircraft. Then in another scenario it perforates another concrete wall. In other testing we evaluated JSOW 51 performance against a variety of area targets. We have been involved in JDEM and operational testing for the B1, B52, F-16 and FA-18. (Bombs go off)

Maintainability and Logistics Test Points

Maintainability is the ability of the item to be retained or restored to specified condition when maintenance is performed by personnel with specific skill levels, using prescribed procedures and resources. Performance thresholds will be the basis of assessments that may include test and evaluation of the following elements.

- Accessibility
- Visibility
- Testability
- Complexity
- Interchangeability

Popup Text

Accessibility

How easy it is to access the item for repair.

Visibility

Ability to see the item being repaired.

Testability

Ability to detect and isolate system faults to the faulty item.

Complexity

The level of difficulty encountered when failed or malfunctioning parts are removed and replaced with an identical part not requiring calibration.

Interchangeability

The degree in which standard parts are used to minimize unique applications.

Availability and Logistics Test Points

Measures of the availability of the warfighting capability is another performance attribute that has significant implications to product support. Availability is a measure of the degree an item is in an operable state and can be committed at the start of a mission when the mission is called for at an unknown (random) point in time.

The LCL may consider three types of availability measures based upon the maturity of the weapon system capability.

1. Achieved availability is a measure for the early prototypes developed by the system contractor when the system is not operating in its normal environment.
2. Inherent availability is measured with respect only to operating time and corrective maintenance, ignoring standby/ delay time and mean logistics delay time.
3. Operational availability is measured for mature systems that have been deployed in realistic operational environments and is the degree to which a piece of equipment works properly when it is required for a mission.

Availability and Logistics Test Points, Cont.

Your challenge as the LCL is to develop a T&E strategy that will support the evolving product support strategy. In a performance based logistics environment, the logistics enterprise is networked and linked to provide responsive integrated support that contributes all the necessary support elements to meet the operational availability performance parameters specified by the warfighting customers.

It may be useful for LCLs to consider a PBL war-game as a modeling & simulation (M&S) effort to test and evaluate the proposed support solution. Again, the timing of such an exercise needs to be aligned with decisions on the implementation of product support and the resources for conducting the wargaming exercise would have to be planned as part of the TEMP.

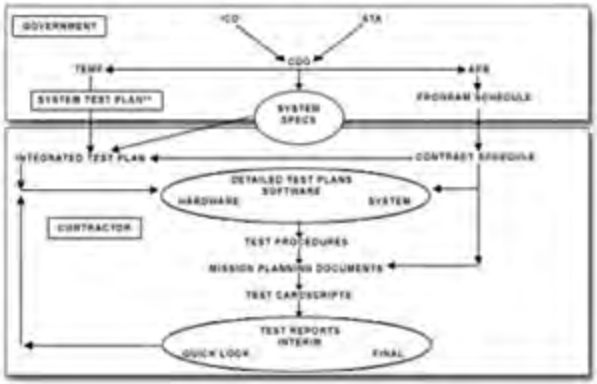
The LCL's Active Role in the Definition of Logistics Test Points

Playing an active role in defining logistics test points is a key LCL function. For example, consider a scenario with a performance-based logistics strategy that is based on a fixed dollar per hour flying support cost. The systems integrator is also serving as the product support integrator. Providing support should be priced, based on the contract performance specification for R&M with some agreed upon reliability growth factor. If T&E identifies some deficiencies in achieving the contract R&M, then the product support strategy can be used to incentivize the systems integrator to correct the deficiencies.

The LCL should also understand the overall testing process and provide logistics input when applicable. The figure on the right illustrates the test program documentation sources that may prove valuable to the LCL.

In summary, the LCL must play an active role in defining logistics test points in the TEMP to ensure that effective and sufficient testing will be conducted. The T&E serves as a risk identification and mitigation tool when designed and used effectively. T&E results provide critical information for trade-offs and decisions related to the development and refinement of a product support strategy and plan.

Click image for enlargement.



D

Long Description

Test Program Documentation from the Test and Evaluation Management Guide, DAU, January 2005. The ICD and the STA feed into the CDD. The CDD feeds the TEMP, the APB, and System Specs. The TEMP feeds the System Test Plan and the Integrated Test Plan. The APB feeds the Program Schedule, the Contract Schedule, and the Integrated Test Plan. The System Specs also feed the Integrated Test Plan. The Integrated Test Plan and the Contract Schedule feed Detailed Test Plans (hardware, software, and systems). The Detailed Test Plans feed Test Procedures which feed Mission Planning Documents which feed Test Card/ Scripts. (The Contract Schedule also feeds the Mission Planning Documents.) The Test Card/ Scripts feed Test Reports (quick look, interim, and final) which feeds back to the Detailed Test Plans. The Government is responsible for the ICD, STA, CDD, TEMP, APB, System Test Plan, System Specs, and Program Schedule. The Contractor is responsible for the Integrated Test Plan, Contract Schedule, Detailed Test Plans, Test Procedures, Mission Planning Documents, Test Card/ Scripts, and Test Reports.

Knowledge Review

What requirements will be the LCL's focus for key logistics test points?

- [x] Reliability, availability and maintainability
- [ ] Reliability, cost and availability
- [ ] Availability, testability, development
- [ ] Maintainability, accessibility, visibility

Check Answer

Reliability, availability and maintainability are the requirements that will be the LCL's focus for key logistics test points.

The Acquisition Strategy

One of the key documents in the Technology Demonstration phase is the Acquisition Strategy. DAG Section 2.3 describes the Acquisition Strategy as a comprehensive, integrated plan that identifies the acquisition approach, and describes the business, technical, and support strategies that management will follow to manage program risks and meet program objectives. The acquisition strategy results from extensive planning and preparation and a thorough understanding of both the specific acquisition program and the general defense acquisition environment between the Milestone Decision Authority, program manager (PM), and the functional communities engaged in and supporting DoD acquisition.

A well-developed strategy minimizes the time and cost required to satisfy approved capability needs, and maximizes affordability throughout the program life-cycle. Consistent with DoD Directive 5000.01, the program manager shall be the single point of accountability for accomplishing program objectives for Life Cycle Management (LCM), including sustainment. The program manager should organize an IPT to assist in development and coordination of the acquisition strategy.

The Acquisition Strategy, Cont.

As the PM's logistics expert, the LCL plays an essential role in the development and refinement of the acquisition strategy throughout the life cycle of the capability delivery. Whereas in the past, an acquisition strategy was only relevant through the end of system production with the exception of planned upgrades and modifications, in today's acquisition environment of evolutionary acquisition coupled with the program manager's responsibility for LCM, the acquisition strategy is a living document for the life of a program.

As you may recall, the focus of the LCL in this phase is to develop the initial product support package framework, options, and requirements for the long-term performance based support concept. You will use the results of your efforts to develop the applicable sections of the Acquisition Strategy.

Integrating the Product Support Strategy and the Acquisition Strategy

In your role as the LCL, it is critical you understand the function of the Product Support Strategy and what it accomplishes. Select each element to learn more.

- Function
- Inclusions
- Development

Popup Text

Function

The product support strategy defines the supportability planning, analyses, and trade-offs conducted to determine the optimum support concept for a material system and strategies for continuous affordability improvements throughout the product life cycle. The support strategy continues to evolve toward greater detail, so that by Milestone C, it contains sufficient detail to define how the program will address the fielding and support requirements that meet readiness and support objectives, lower life cycle costs, reduce risks, reduces logistics footprint and avoid harm to the environment and human health.

Inclusions

It is important to recognize that a product support strategy includes both designing in supportability and supporting the system as it is fielded and as it evolves through different increments of capability. Thus the product support strategy may include developing incentives for improving reliability and maintainability as well as defining support concepts and options for supporting the system once fielded.

Development

The initial product support strategy is developed based on the performance attributes and KPPs specified in the capability development document with consideration of:

- Any specified boundary conditions or constraints (including product support boundaries)
- The maturity of technology
- Technology risk
- The planned increments of capability (if it is an evolutionary acquisition)
- Cost estimates

Integrating the Product Support Strategy and the Acquisition Strategy, Cont.

The LCL is engaged in providing input to the Acquisition Strategy from day one for the first increment in capability delivered to the warfighter until the last increment of capability is retired. Integrating the initial product support strategy with the overall acquisition strategy is the first step that can set an effective framework for the life cycle task of acquisition logistics.

However, it is important to understand the framework for the total Acquisition Strategy. There are elements outside the product support strategy that also require logistics input, feedback and alignment.

As detailed in the DAG, there are many factors including life cycle sustainment planning that are considered in the Acquisition Strategy.

Key Acquisition Strategy Elements

The LCL will need to be familiar with key Acquisition Strategy elements in order to effectively integrate the product support strategy. Select an item from the list below to read more information.

Please click here to go to Defense Acquisition Guidebook, Chapter 2.3 for a complete listing and description of Acquisition Strategy elements.

- Requirements
- Program Structure
- Acquisition Approach
- Risk Management
- Program Management
- Design Considerations
- Support Strategy
- Business Strategy
- Test & Evaluation

Popup Text

Requirements

I. Summary description of the requirement that the acquisition is intended to satisfy
II. Description of approved or in-process source documents (ICD, CDD, CPD, etc.)

Program Structure

i. Top level schedule of program - program phases, milestones, review, funding profile, etc.
ii. Program description - how the program began, program to-date, adn current status

Acquisition Approach

i. Single step or evolutionary approach to acquisition
ii. Key guiding principles/ tenets of acquisition approach

Risk Management

i. Summary of risk assessment of acquisition approach alternatives
ii. Program technical performance risk
iii. Program schedule risk
iv. Program cost risk

Program Management

i. Philosophy/ approach
ii. Program resources - to include program staffing, advance procurement, overall CAIV and TOC issues
iii. Information sharing and DoD oversight - integrated digital environment
iv. Defense Contract Management Agency - technical representatives at contractor facilities
v. Government property in possession of contractors
vi. Simulation based acquisition

vii. Tailoring and streamlining - innovative acquisition practices; requests for relief or exemption
viii. Software intensive programs - software development approach-independent review

Design Considerations

i. Technology transition - technology readiness levels
ii. Open systems
iii. Interoperability
iv. IT supportability
v. Protection of critical program information and anti-tamper measures

Support Strategy

i. Approach to product support
ii. Affordability improvements
iii. Sources of support
iv. Human systems integration
v. Environmental safety & occupational health
vi. Demilitarization & disposal planning
vii. Life cycle support oversight
viii. Post deployment evaluation

Business Strategy

i. Competition
ii. International co-operation
iii. Contract approach

Test and Evaluation

i. Summary of integrated approach

ii. Highlights of critical test issues

Knowledge Review

Which of the following best describes the Acquisition Strategy?

- [ ] The Acquisition Strategy is only relevant through the end of system production.
- [ ] The Acquisition Strategy applies only to system production.
- [x] In today's acquisition environment of evolutionary acquisition coupled with the program manager's responsibility for LCM, the Acquisition Strategy is a living document for the life of a program.
- [ ] None of the answers are correct.

Check Answer

The Acquisition Strategy is best described as "**In today's acquisition environment of evolutionary acquisition coupled with the program manager's responsibility for LCM, the Acquisition Strategy is a living document for the life of a program.**"

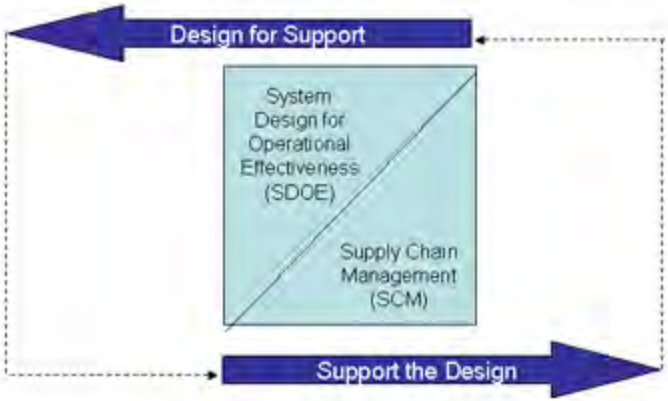
System Operational Effectiveness SOE's Influence on Integrating the Product Support and Acquisition Strategies

In order to effectively develop and integrate the product support strategy into the overall acquisition strategy, it is useful to re-visit the SOE framework.

As you may recall, the product support strategy has two elements:

1. The inherent designed-in features of supportability (R&M, autonomic logistics information systems, diagnostics/prognostics, test and support equipment)
2. The processes designed and implemented to provide sustainment.

The integration of the product support strategy in the acquisition strategy must reflect these two elements.



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Long Description

The graphic illustrates how System Design for Operational Effectiveness (SDOE) and Supply Chain Management (SCM) support the concepts of Design for Support (via SDOE) and Support the Design (via SCM). These are continuous, linked processes. There is a box in the middle divided by a line connecting the lower left to the upper right. The upper left represents SDOE; the lower right represents SCM. A large arrow indicating “Design for Support” sits above SDOE; a large arrow indicating “Support the Design” sits below SCM. The head of the Design for Support arrow is linked to the tail of the Support the Design arrow by a thin dotted arrow. The head of the Support the Design arrow is linked to the tail of the Design for Support arrow by a thin dotted arrow. These four arrows form a continuous loop.

Inherent Design and Support of the Design

As the LCL, you must insure that the product support strategy reflects these two major areas – inherent design and support of the design. The overall acquisition strategy has many segments that directly relate to product support. Thus, it is important that supportability issues are integrated within many sections of the acquisition strategy.

For example:

- The capability needs section should reflect the warfighter support performance attributes that are critical to delivering a militarily useful warfighting capability.
- The program structure section should reflect the key milestones and decision points related to product support.
- The acquisition approach discussion of key tenets or guiding principles should include supportability.
- The risk management section should include the supportability risk management approach and tools that should be similar if not identical to the overall program approach to risk management.

Inherent Design and Support of the Design, Cont.

Here are a few more examples to consider:

- The resource management section should include a discussion of how product support will be structured and managed for the life cycle of the program, in addition to highlighting key supportability issues related to CAIV, TOC, IDE and any advance procurement.
- The business strategy section should reflect key issues associated with refining and implementing the product support strategy to include a discussion of the requirement, schedule and resources required for business case analyses to support PBL decisions.
- The T&E section should reflect a summary of the key critical logistics test points identified in the TEMP.

The LCL's Active Role in Integrating Product Support into the Acquisition Strategy

In summary, the LCL's role in integrating the initial product support strategy into the Acquisition Strategy is another step in implementing acquisition policy that places supportability on an equal footing with cost, schedule and performance. In order to perform this task effectively it is necessary to understand and integrate supportability issues throughout the acquisition strategy.

Note that the Life Cycle Sustainment Plan (LCSP) is now a stand-alone document and no longer part of the Acquisition Strategy, though it remains imperative that they are closely aligned.

While acquisition strategies have always addressed the issues, risks, schedules and costs associated with delivering the weapon system, the responsibility for support performance was transferred to the service logistics organizations. The logistics support enterprise was tasked with ensuring support even though the inherent supportability of the item was not under their purview. LCLs now have the opportunity to not only design best value support solutions, but perhaps more importantly, have an opportunity to ensure that inherent supportability is actively managed in the program acquisition.

Knowledge Review

Why does the LCL need to play an active role in defining logistic test points in the test and evaluation master plan (TEMP)?

- [ ] To ensure that costs do not exceed what were expected.
- [x] To ensure that effective and sufficient testing will be conducted.
- [ ] To ensure that contractors are providing the proper level of service.
- [ ] To ensure that the product is cost effective.

Check Answer

The LCL needs to play an active role in defining logistic test points in the test and evaluation master plan (TEMP) **to ensure that effective and sufficient testing will be conducted.**

Management Processes Summary

You have completed Management Processes and now should be able to:

- Describe characteristics and use of capability development document (CDD).
- Identify what logistics information should be documented in the test and evaluation master plan (TEMP).
- Define logistics test points as they relate to product supportability objectives.
- Identify the LCL's role in the definition of logistics test points.
- Recognize how the acquisition and support strategies are integrated with the initial product support strategy and the role the LCL will play in that integration.

Lesson Completion

You have completed the content for this lesson.

To continue, select another lesson from the Table of Contents on the left.

If you have closed or hidden the Table of Contents, click the Show TOC button at the top in the Atlas navigation bar.