Life Cycle Sustainment Plan

Short Course

LCSP-Short-Course- 08-19-11
Lesson Objectives

Help Program Managers and Product Support Managers to understand:

• LCSP’s purpose
• Who should be involved in LCSP development
• How the LCSP evolves
• What the LCSP must contain
He Who Fails To Plan, Plans To Fail

The PSM has to address a majority of a program’s life cycle & its costs

Operations & Support
60-75% of Life Cycle Cost!
The Truth

Without a plan any path will get you there
To:

• Provide the user with a sustainable system and product support that meets specified performance effectiveness and affordability requirements.

• Continually measure, assess, and report program execution in terms of performance, schedule, sustainment, and cost outcomes.

• Establish budgetary requirements and for tracking execution success over time for both new and legacy programs.
LCSP Is A Living Document (1 of 3)

LCSP:

- Describes the approach and resources necessary to develop and integrate sustainment requirements into the system’s design, development, testing and evaluation, fielding, and operations.
- Is tailored to meet program needs, documenting the current program plan in the following areas:
  - Maintenance and sustainment concepts
  - How the sustainment metrics will be achieved and sustained throughout the life cycle
  - How sustainment is addressed as an integral part of the program’s acquisition strategy and system design process
• Additional areas include:
  – Assigned responsibilities and management approach for achieving effective and timely acquisition, product support, and availability throughout the life cycle
  – Funding required and budgeted by year and appropriation for the sustainment cost elements including operating and support costs
  – Schedule for developing and fielding the product support package
    • Identifying and selecting sources of repair or support
• Provides foundation for OSD Milestone recommendations:
  – Sustainment risk areas and mitigation plans
  – Product support implementation status
  – Program maturity
  – Results and recommendations from DoD Component Logistics Assessments
Key LCSP Questions

- What is the Product Support Strategy?
- How is the program implementing a Performance-Based Product Support Strategy?
- What metrics are used?
- How are the sustainment functions covered?
  - What type contract(s) will be used to procure the Product Support Package?
- Where is the program in implementation?
  - What’s been done?
  - What’s going to happen next?
The LCSP Is Not

• It is not a rehash of policy or guidance
  – It is the program’s plan for accomplishing policy and associated guidance
  – It focuses on **specifically how** the program will implement it
    • Who will do what
    • When
    • How (specific tools/processes)
    • How much it will cost

• It is not just something put together for milestone reviews
  – It is the program’s management tool for communicating the plan

• It is not static
  – It is a living document describing the sustainment approach and resources necessary across the life cycle
  – The LCSP must document the **current** program plan relative to sustainment

Guidance already documented in the DAG
Why LCSPs?

Programs need plans to integrate and communicate efforts across the enterprise

- How sustainment metrics will be achieved
- What the enterprise can expect & when

LCSP Outline Provides Consistent Format Based On Lessons Learned
PM Product Support Responsibilities

Requirements → PLAN → Product Support Package → Outcome

LCSP-Short-Course- 08-19-11
Sustainment Strategy

Achieved by **integrating** the product support elements to field the Product Support Package
The logistics elements and any sustainment process contracts/agreements to attain and sustain the maintenance and sustainment concepts needed for materiel availability.

- Technical Data
- Computer Resources Support
- Training Courses/Materiel
- Manpower and Personnel
- Support Equipment
- Supply Support
- Facilities
- PHS&T
- Maintenance and Repair Capabilities

Achieved via the integrated product support elements including:
- Product Support Management
- Supportability Analysis
  - Design interface
  - Sustaining Engineering
Both Teams Are Playing Football

...but they are not playing the same game.

LCSP

The program’s management tool to align and help integrate the product support stakeholders efforts for formulating, implementing, and executing the sustainment strategy.
Key Enterprise Players

- **Combat & Joint Operational Commands**
  - Operational constraints (boundaries) and what willing to pay to sustain

- **Program & Acquisition Communities**
  - Contract, Design, & Milestone Reviews

- **Financial Community**
  - Budgets tied to outcomes

- **Sustainment Community**
  - What they can expect & what the program can expect

PM Product Support Responsibilities

Requirements

PLAN

Outcome

Product Support Package
Key Sustainment Players

• Combat & Joint Operational Commands
  - Operational constraints (boundaries) and what willing to pay to sustain

• Program & Acquisition Communities
  - Contract and Design, & Milestone Reviews

• Financial Community
  - Budgets tied to outcomes

• Sustainment Community
  - What they can expect & what the program can expect

LCSP development and execution involves the
  • Users
  • Product Support Integrator(s)
  • Product Support Providers
Performance Based Strategy

“No battle plan ever survives contact with the enemy”
Or
The plan is the first casualty of any battle

Field Marshall
Helmuth Carl Bernard von Moltke

Monitoring performance is key performance based product support attribute:
– Estimates and test results during design
– Actuals during operations

then taking the appropriate corrective actions when needed
Life Cycle Sustainment Outcome Metrics

- Availability (KPP)
- Material Reliability (KSA)
- Ownership Cost (KSA)
- Mean Downtime

Goals Determined By Warfighter Needs

Program Metric To Address Affordability

These life cycle sustainment outcome metrics are universal across all programs and are essential to effective and affordable sustainment planning.
Metrics Are Not Enough

We have to evaluate to know how well we are doing

- Measures
- Targets
- Incentives

If things go wrong (and they will)

we have to have alternatives and plan accordingly
When Do We Need an LCSP?

The PM must have a plan for how sustainment requirements will be achieved at program inception.

- An early plan is critical since many of the major system design and architecture trades that determine a majority of a program’s Life Cycle Costs are conducted prior to PDR.
Too many questions and too many unknowns

We know enough to:
• Establish a baseline for trades
• Narrow down & plan for the alternatives

“A good plan today is better than a perfect plan tomorrow”

George Patton
Integrated Thought Starts Early

- Early program documents containing product support implications, concepts, and identify sustainment issues, risks, and opportunities include:
  - Analysis of Alternatives
  - Concept of Operations
  - Life Cycle Cost Estimate
  - Technology Development Strategy
  - Technical Data Rights Strategy
  - Reliability, availability, and maintainability aspects in the System Engineering Plan
  - Sustainment metrics in the Capability Development Document (CDD)
The LCSP Evolves

Materiel Solution Analysis
Technology Development
Engineering and Manufacturing Development
Production & Deployment
Operations & Support

Acquisition

 IOC
 FRP Decision Review

Post IOC Reviews

Sustainment

Establish sustainment concept & execution plan framework
Set metrics goals/thresholds & test methods

Establish notional maintenance concept and metrics
Identify key technologies
Analysis process & estimating LCC drivers

Support structure & Product Support Package requirements defined
PSP & metric verification methods established
Detailed development & fielding plans established

Product Support Package elements refined
Detailed site fielding plans refined
Sustaining Engineering
Logistics assessments

Fielding plans adjusted
Metrics tracked & adjustment plans established

LCSP-Short-Course- 08-19-11
5/20/11
Materiel Solution Analysis Phase

**LCSP Focus:**

- Framing the baseline product support strategy
- Analytical process for determining:
  - Affordable metrics
  - Cost and availability degraders
- Key sustainment technologies requiring development

- Establish notional maintenance concept and metrics
- Identify key technologies
- Analysis process & estimating LCC drivers
Technology Development Phase

LCSP Focus

- Baseline product support strategy
- Analytical process for determining affordable metrics goals & thresholds:
  - System & subsystem level
  - Supply chain
- Ensuring the supportability design feature requirement are incorporated in the overall design specifications
  - Sustainment metrics test methods

- Establish sustainment concept & execution plan framework
- Set metrics goals/thresholds & test methods
Engineering & Manufacturing Development Phase

LCSP Focus

- Product Support Package (PSP) & supply chain
  - Detailed element requirements
  - Detailed PSP element development & implementation
  - Performance verification methods
  - Fielding plans
Production & Deployment Phase

LCSP Focus

- Analytical and management processes for:
  - Refining Product Support Package elements
  - Cost and availability degraders
- Fielding plan details
- Logistics assessments
  - How sustainment performance will be measured, managed, assessed and reported
LCSP Focus

• Sustaining Engineering processes for refining Product Support Package elements
• Logistics assessments on how the system and supply chain are performing
• Adjustments required for program or funding changes
LCSP Must Address

• The outcome-based product support strategy
  – Analytical tools in determining the product support strategy
  – Use of competition to meet the best-value long-term outcomes for the Warfighter & Taxpayer
  – Enterprise opportunities across programs & Services

• The cost, schedule and management approach
  – The product support arrangements

• The assessment approach
  – Product support strategy reviews
  – Adjusting resource allocations, performance requirements & Warfighter needs

• The sustainment related requirements
LCSP Is Not An Island

- Needs to be consistent & integrated with critical program documents
  - Acquisition Program Baseline (APB)
  - Systems Engineering Plan (SEP)
  - Capability Development Document (CDD)
  - Technology Development Strategy (TDS)
  - Test and Evaluation Master Plan (TEMP)
  - Program Management Document (PMD)
  - Technical Data Rights Strategy

Other documents are also required to support the LCSP or to help ensure the product support strategy is achieved.
Program Documents Relationship

- Don’t duplicate other documents
- Reference & only include key information to put the sustainment strategy into context
- Summary aspects
  - Acquisition Strategy: System quantities and schedules
  - Evolutionary Acquisition: Planned future increments including interdependencies with other programs.
  - Integrated Master Schedule (IMS): Major reviews, major tests, and fielding schedules.
  - Program Costs: Program budget.
• Selected sustainment strategy drivers
  – **Program Description**: Technical performance capabilities, operational environment, and interdependencies with other systems.
  – **CDD**: Design requirements
  – **Production Strategy, Methods and Issues**: Special production and manufacturing considerations impacting sustainment.
  – **CARD**: Operating assumptions.

<table>
<thead>
<tr>
<th>Requirement (KPP, KSA, Derived requirement)</th>
<th>Documentation</th>
<th>Threshold / Objective</th>
<th>RFP/Contract</th>
<th>TES / TEMP</th>
<th>IOC</th>
<th>FOC</th>
<th>Full Fielding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability (KPP)</td>
<td>CDD (May 24, 2014): 6.2.6.1</td>
<td>66% / 82%</td>
<td>RFP (Jun 16, 2014) Para 7.2</td>
<td>TES (2 Jun 2015): 3.2</td>
<td>100%</td>
<td>100%</td>
<td>72%</td>
</tr>
<tr>
<td>Reliability (KSA)</td>
<td>CPD (Aug 16, 2016): 6.2.6 MTBF-I: 6.3.2.1</td>
<td>False Alarm: 6.3.22 MTBM: 6.3.2.5</td>
<td>37.8% / 61.6%</td>
<td>2% / 1%</td>
<td>2 hrs / 4 hours</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Maintainability</td>
<td>CPD (Aug 16, 2016): 6.3.3.4 BIT: 6.3.3.4</td>
<td>Scheduled Maintenance: 6.2.6.3 Fault Reporting: 6.3.3.4.2</td>
<td>100% critical faults at system start (T = O)</td>
<td>10% less than antecedent / 20% less</td>
<td>300 minutes per month</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Mobility</td>
<td>CPD (2016): Palletization 4 pallets per 3 ship formation / 2 pallets per 2 ship formation</td>
<td>5 pallets</td>
<td>4 pallets</td>
<td>4 pallets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commonality</td>
<td>CPD (2016): Support Equipment &lt;=2 new / None</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>CPD (2016): Aircrew Training 14.3.1 60 hr crew differences tng / 40 hr</td>
<td>60-</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


1 Introduction

<table>
<thead>
<tr>
<th>Revision Number</th>
<th>Date</th>
<th>Change and Rationale</th>
<th>Approved By</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7</td>
<td>April 2008</td>
<td>Addressed results from CDR and changes in due to avionics reliability issues – see comments in xxx</td>
<td>APEO(L)</td>
</tr>
<tr>
<td>0.8</td>
<td>June 2008</td>
<td>Updated Section 10.2 with results from approved PBAs with NAVICP</td>
<td>APEO(L)</td>
</tr>
<tr>
<td>0.9</td>
<td>October 2008</td>
<td>Addressed PS WIPT (including Service and OSD) comments – many changes – see Comment Resolution Matrix (CRM)</td>
<td>APEO(L)</td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2  Sustainment Performance Requirements
  2.1  Sustainment Performance Requirements
  2.2  Testing and Demonstrating Sustainment Requirements

3  Product Support Strategy
  3.1  Strategy Considerations
  3.2  Sustainment Relationships
4  Product Support Arrangements
   4.1  Contracts
   4.2  Performance Based Agreements

5  Product Support Package Status
   5.1  Program Review Results
   5.2  Logistics Assessment Results
Outline (4 of 7)

6  Sustainment Alignment with Regulatory/Statutory Requirements

7  Integrated Schedule

8  Funding
9 Management

9.1 Organization
9.1.1 Government Program Office Organization
9.1.2 Program Office Product Support Staffing Levels
9.1.3 Contractor(s) Program Office Organization
9.1.4 Product Support Team Organization

9.2 Management Approach
9.2.1 Product Support Manager Roles and Responsibilities
9.2.2 Sustainment Risk Management
10 Supportability Analysis

10.1 Design Interface
   10.1.1 Design Analysis
   10.1.2 Technical Reviews

10.2 Product Support Element Determination

10.3 Sustaining Engineering
11 Additional Sustainment Planning Factors

12 LCSP Annexes

Specific annexes will vary based on life-cycle phase

- Product Support Business Case Analysis
- Logistics Assessment & Corrective Action Plan
- Service Specific Requirements
- Preservation and Storage of Unique Tooling
- Core Logistics Analysis
- Source of Repair Analysis
- System Disposal Plan

Services can require additional information to meet their needs
## LCSP Tables

### Facts, not words

<table>
<thead>
<tr>
<th>Name</th>
<th>Organizations</th>
<th>Products / Timeframe</th>
<th>Responsibilities/Authority and Functions</th>
<th>Metrics &amp; Incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAVICP Bob Smith 215-xxxx-xxxx</td>
<td>ISR Sustainment Contract Contractor A</td>
<td>products covered: <em>ISR Avionics, ISR Ground Stations</em>&lt;br&gt;<strong>Timeframe:</strong> Jan 2013 to Dec 2018 4 yr base with potential for 3 additional option years Date of signed BCA and signatory</td>
<td><strong>Responsibilities:</strong>&lt;br&gt;- Integrate all design and product support efforts ISR equipment including configuration management.&lt;br&gt;- Sustainment Coverage includes: 1. Maintenance beyond organizational level 2. Supply support 3. Publications 4. Training of organizational personnel 5. Transportation between contractor and 1st designation</td>
<td><strong>Metrics:</strong>&lt;br&gt;- AM target of 95% with min of 6% cost decrease each year&lt;br&gt;- Contract extension if met <strong>Responsibilities/Authority and Functions</strong>&lt;br&gt;- Design and logistics management responsibilities</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Name</th>
<th>Organizations</th>
<th>Products / Timeframe</th>
<th>Responsibilities/Authority and Functions</th>
<th>Metrics &amp; Incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAVAIR TBD</td>
<td>X XX</td>
<td>Products Covered: <em>ZZZ</em>&lt;br&gt;<strong>Timeframe:</strong> Expect a 5 year contract RFP to be issued Feb 2012 Contract award expected Jan 2013</td>
<td><strong>Responsibilities:</strong> XXX&lt;br&gt;<strong>Functions:</strong> Sustainment Coverage includes:&lt;br&gt;- YYYY&lt;br&gt;- YYYY</td>
<td><strong>Metrics:</strong> XXX</td>
</tr>
</tbody>
</table>
Approving The LCSP

SUBMITTED BY

Name: ____________________________  Date: ____________
Product Support Manager

REVIEW

Name: ____________________________  Date: ____________
Program Contracting Officer
Name: ____________________________  Date: ____________
Program Lead Engineer

CONCURRENCE

Name: ____________________________  Date: ____________
Program Executive Officer or Equivalent
Name: ____________________________  Date: ____________
Sustainment Command Representative

COMPONENT APPROVAL (ACAT IC)

Name: ____________________________  Date: ____________
DoD Component Acquisition Executive (CAE) or designated representative

PROGRAM NAME – ACAT LEVEL
LIFE-CYCLE SUSTAINMENT PLAN
VERSION ___
SUPPORTING MILESTONE ___
[APPROPRIATE PHASE NAME]
[DATE]

OFFICE OF THE SECRETARY OF DEFENSE (OSD) APPROVAL

Name: ____________________________  Date: ____________
Assistant Secretary of Defense Logistics & Materiel Readiness
(for ACAT ID Programs)
[or designated LCSP approval authority]
Lesson Summary

• The LCSP is used to succinctly convey the plan for formulating, implementing, and executing the sustainment strategy.

• A template is available to help programs generate their LCSPs. It provides:
  – Structure
  – Mandated information
  – Examples
    • Data only notional examples

• As the LCSP and its template are living documents will evolve based on lessons learned.