

# Life Cycle Sustainment Plan



MANDATED FORMAT FOR ALL  
LIFE-CYCLE SUSTAINMENT PLANS

PROGRAM NAME – ACAT LEVEL

LIFE-CYCLE SUSTAINMENT PLAN

VERSION \_\_\_\_

SUPPORTING MILESTONE \_  
AND  
[APPROPRIATE PHASE NAME]

[DATE]

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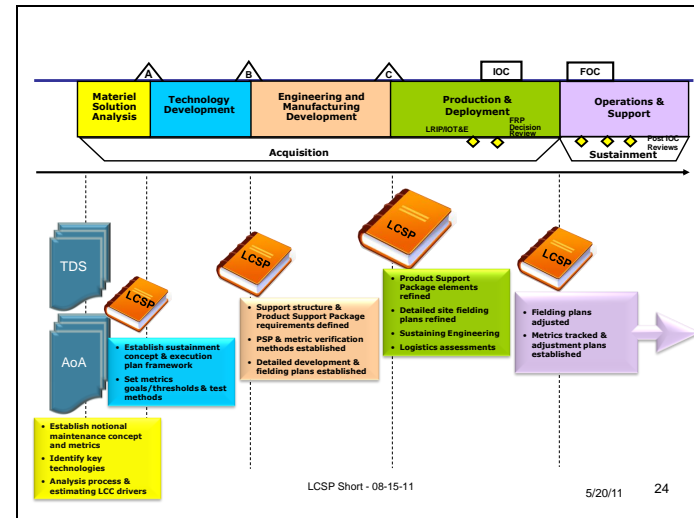
OFFICE OF THE SECRETARY OF DEFENSE (OSD) APPROVAL

Assistant Secretary of Defense  
Logistics & Materiel Readiness  
(for ACAT ID Programs)

[or designated LCSP approval authority]

\_\_\_\_\_

Date



## Short Course

LCSP-Short-Course- 08-19-11

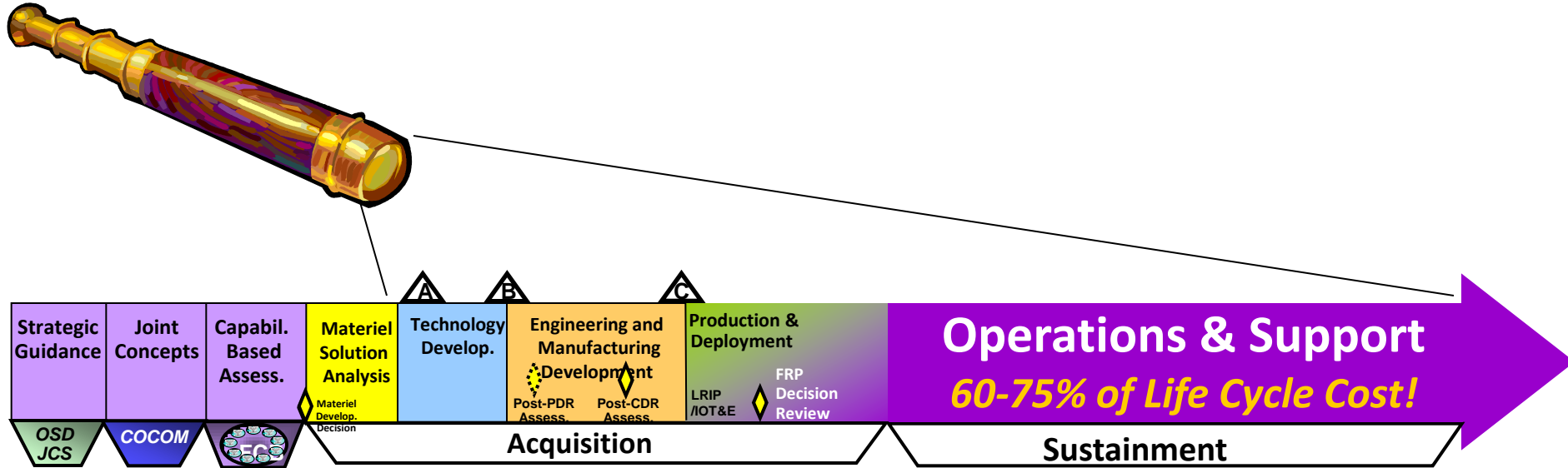
# Lesson Objectives

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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**

# The Truth

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Without a plan any path will get you there

# LCSP Documents PMs Plan

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## 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)

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## 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

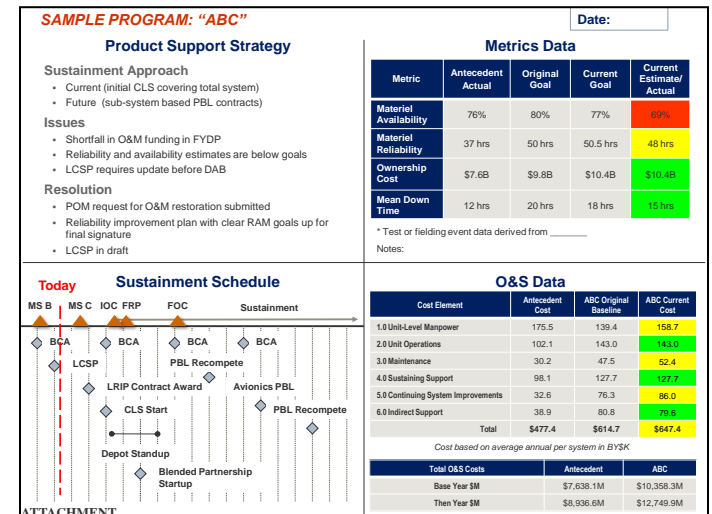
# LCSP Is A Living Document (2 of 3)

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- 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

# LCSP Is A Living Document (3 of 3)

- 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

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- 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?

Who

What

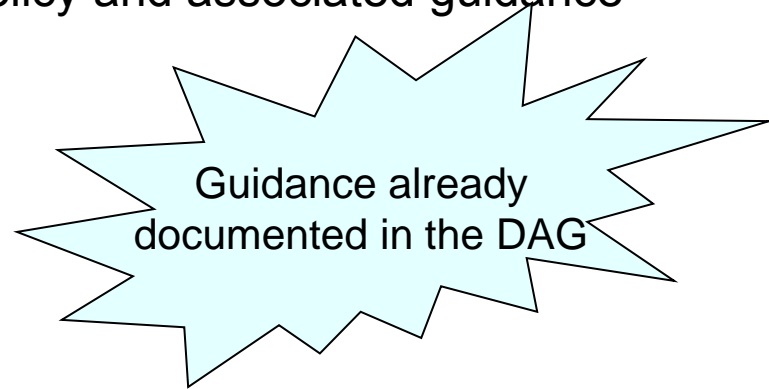
When

How

# The LCSP Is Not

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- 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



# Why LCSPs?

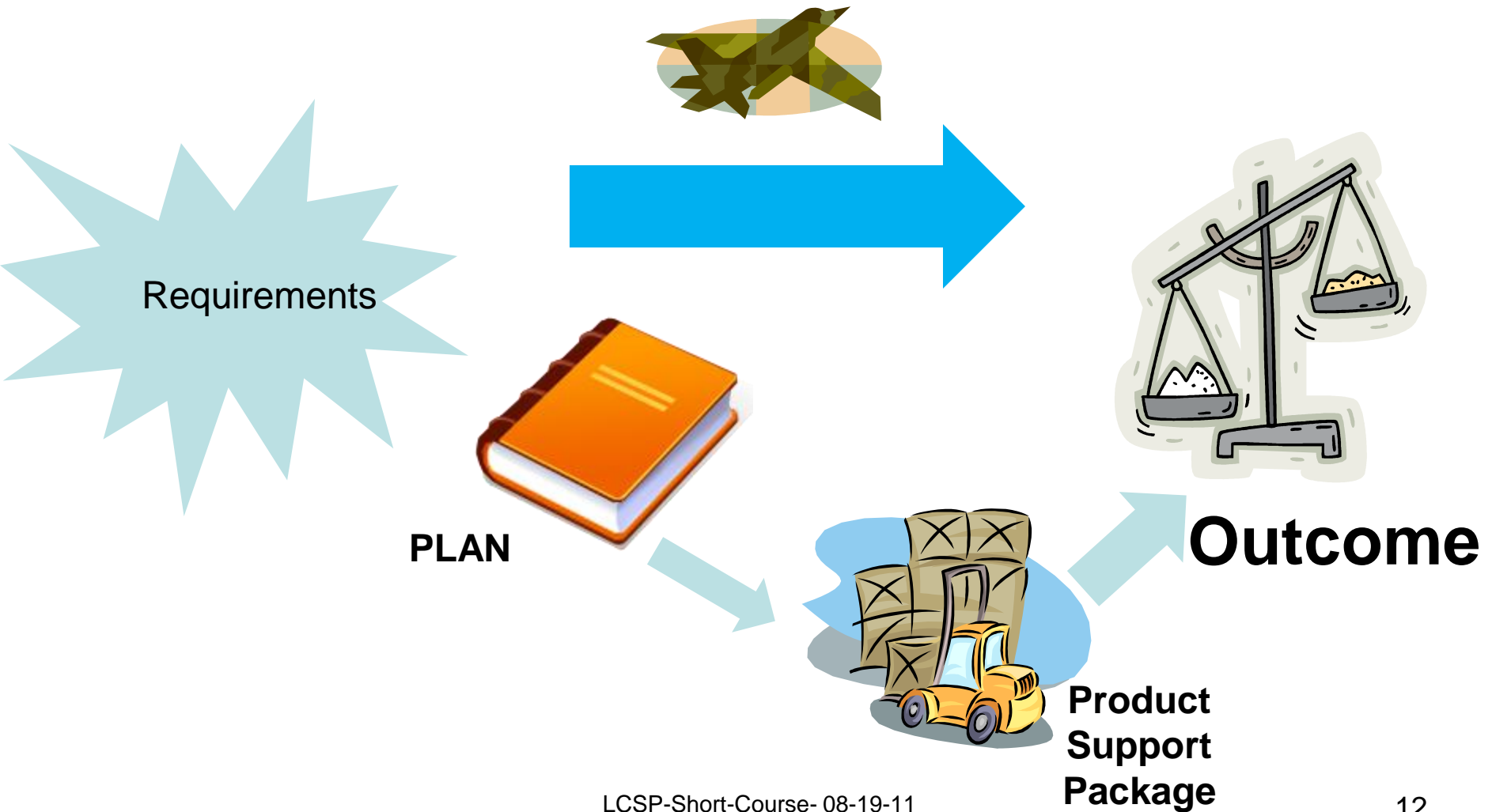
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## **Programs need plans to integrate and communicate efforts across the enterprise**

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

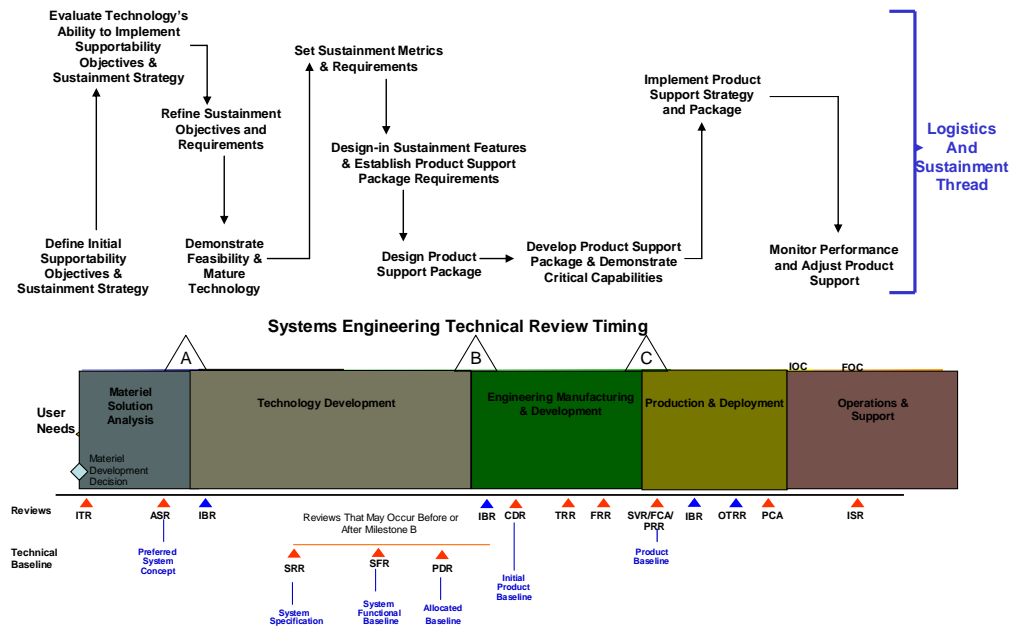
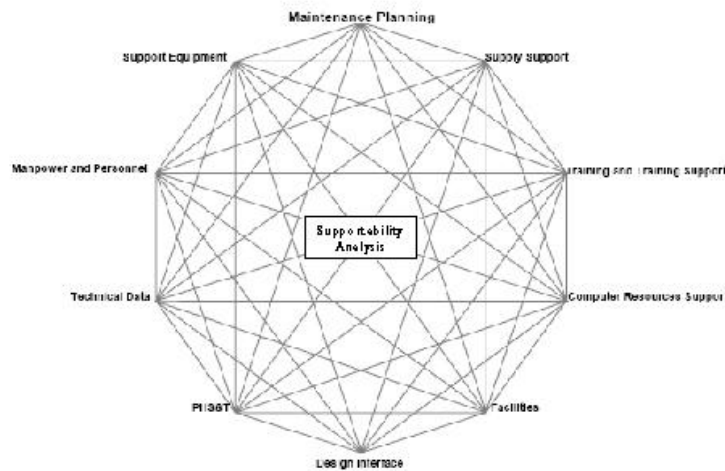
LCSP Outline Provides Consistent Format Based On Lessons Learned

# PM Product Support Responsibilities



# Sustainment Strategy

Achieved by **integrating** the product support elements to field the Product Support Package

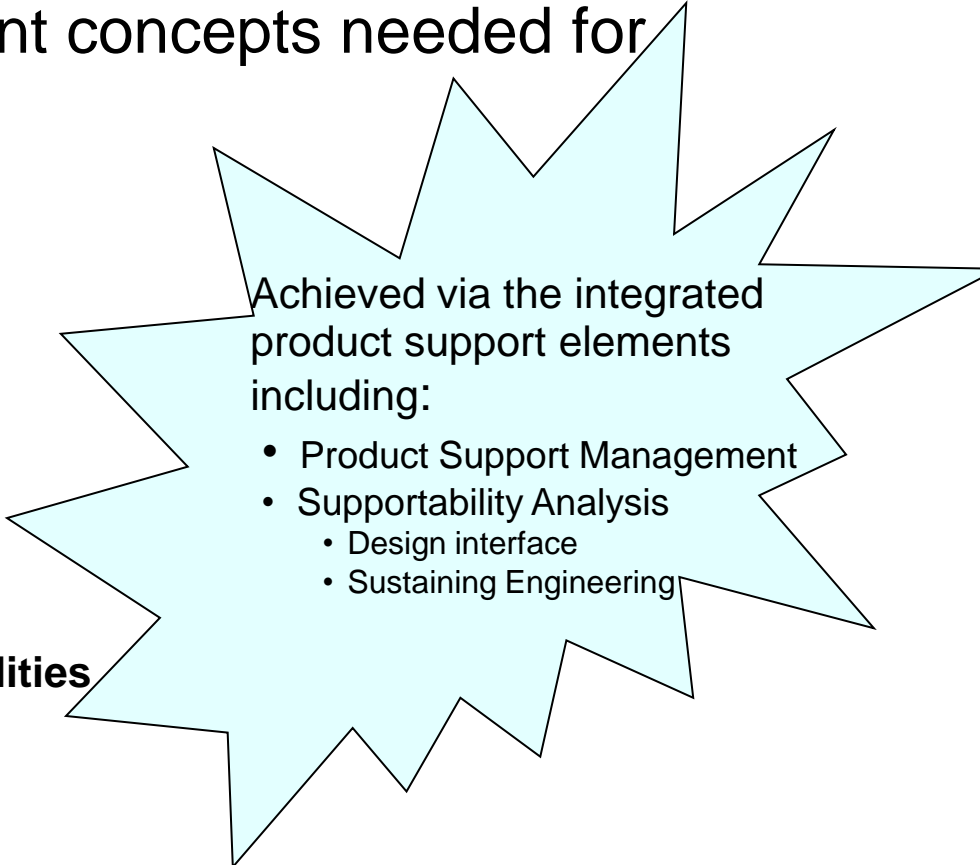


# Product Support Package

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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

# LCSP

The program's management tool to align and **help** integrate the product support stakeholders efforts for formulating, implementing, and executing the sustainment strategy

## Both Teams Are Playing Football

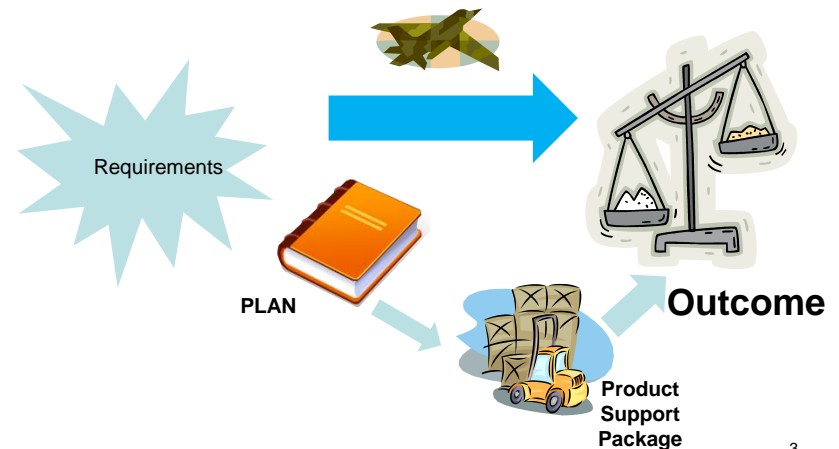


...but they are not playing the same game.

# 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





# Key Sustainment Players

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- **Combat & Joint Operational Commands**
  - Operational constraints (boundaries) and what willing to pay to sustain
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LCSP development and execution involves the

- Users
- Product Support Integrator(s)
- Product Support Providers

# Performance Based Strategy

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**“No battle plan ever survives contact with the enemy”**

Or

**The plan is the first casualty of any battle**



Field Marshal  
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

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



**These life cycle sustainment outcome metrics are universal across all programs and are essential to effective and affordable sustainment planning.**

# Metrics Are Not Enough

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**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?

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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

# No Way – Too Soon

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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

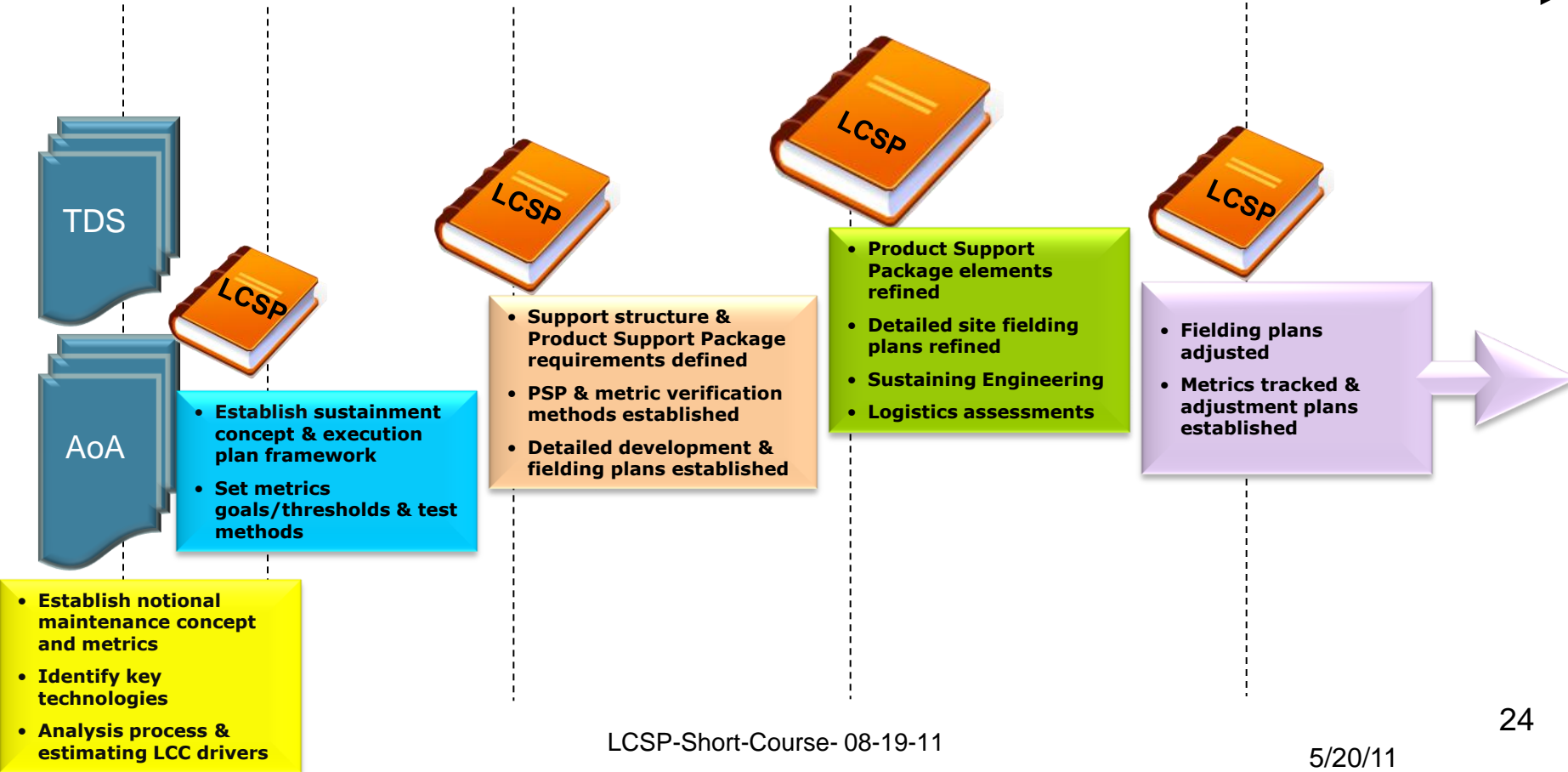
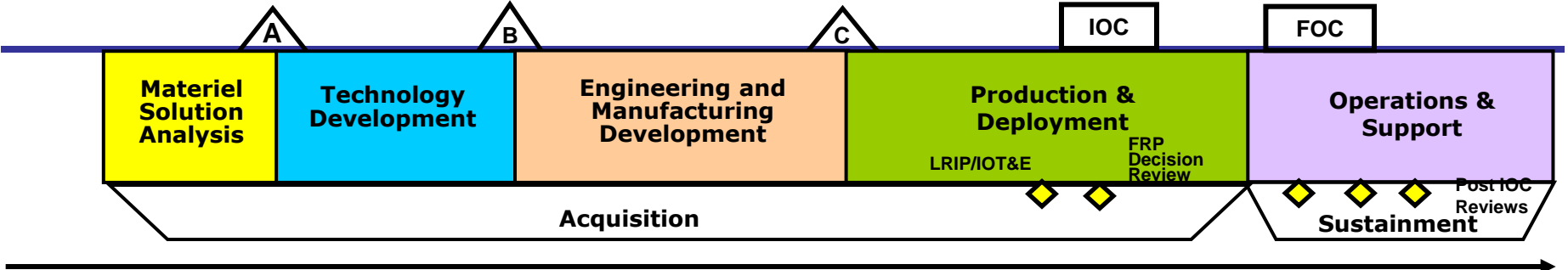


# Integrated Thought Starts Early

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- 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





# Material Solution Analysis Phase

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

## LCSP Focus:

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

# Technology Development Phase

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## LCSP Focus

- Baseline product support strategy
- Analytical process for determining affordable metrics goals & thresholds:
  - System & subsystem level
  - Supply chain
- Ensuring the supportability design feature requirements 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

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

## LCSP Focus

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

# Production & Deployment Phase

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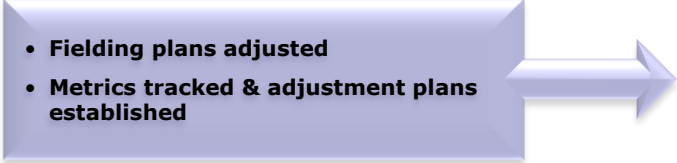
- Product Support Package elements refined
- Detailed site fielding plans refined
- Sustaining Engineering
- Logistics assessments

## 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

# Operations & Support Phase

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- 
- Fielding plans adjusted
  - Metrics tracked & adjustment plans established

## 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

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- 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

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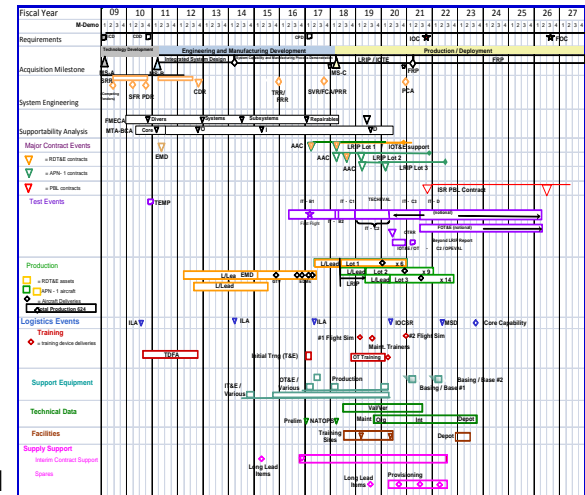
- Needs to be consistent & integrated with critical program documents
  - Acquisition Program Baseline (APB)
  - Systems Engineering Plan (SEP)
  - Capability Development Document (CDD)
  - Technology Development Strategy (TDS)
  - Test and Evaluation Master Plan (TEMP)
  - Program Management Document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

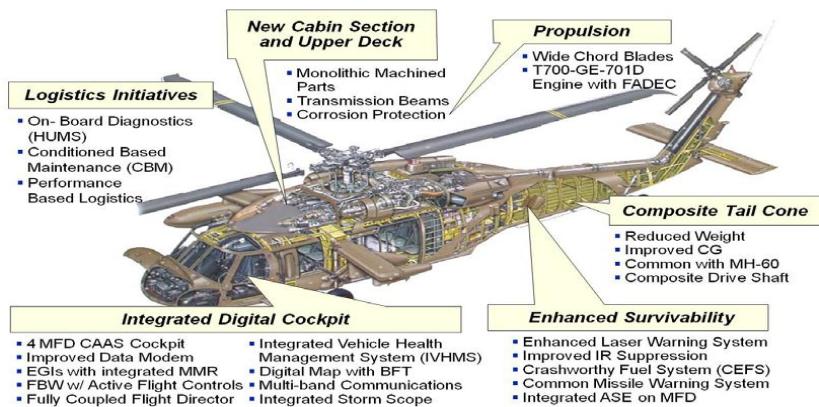
- Don't duplicate other documents
- Reference & only include key information to put the sustainment strategy **into context**
- Summary aspects
  - **Acquisition Strategy:** System quantities and schedules
  - **Evolutionary Acquisition:** Planned future increments including interdependencies with other programs.
  - **Integrated Master Schedule (IMS):** Major reviews, major tests, and fielding schedules.
  - **Program Costs:** Program budget.





# Program Document Extracts

- 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.



Requirement (KPP, KSA, Derived requirement)	Documentation	Threshold / Objective	RFP/ Contract	TES / TEMP	IOC	FOC	Full Fielding
Availability (KPP)	CDD (May 24, 2014): 6.2.6.1	66% / 82%	RFP (Jun 16, 2014) Para 7.2	TEMP (2 Jun 2015): 3.2	100%	100%	72%
Reliability (KSA)	CPD (Aug 16, 2016): 6.2.6 MTBF-I: 6.3.2.1 False Alarm: 6.3.2.2 MTBM: 6.3.2.5	37.8% / 61.6% 2% / 1% 2 hrs / 4 hours			37% 2% 2 hrs	48.7% 2% 2 hrs	51% 2% 3 hrs
Maintainability	CPD (Aug 16, 2016) BIT: 6.3.3.4  Scheduled Maintenance: 6.2.6.3  Fault Reporting: 6.3.3.4.2	100% critical faults at system start (T = O)  10% less than antecedent / 20% less  100 stored faults / 300 stored faults			100%  300 minutes per month 100	100%  240 min per month 100	100%  240 min per month 100
Mobility	CPD (2016) Palletization	4 pallets per 3 ship formation / 2 pallets per 2 ship formation			5 pallets	4 pallets	4 pallets
Commonality	CPD (2016) Support Equipment	<=2 new / None			2	2	2
Training	CPD (2016) Aircrew Training 14.3.1	60 hr crew differences tng / 40 hr			60-	N/A	N/A

# LCSP Outline

- LCSP Template structured to:
  - Consistently organize critical information.
  - Provide the minimal information requirements.
  - Provide Programs and DoD Components flexibility to provide addition information.

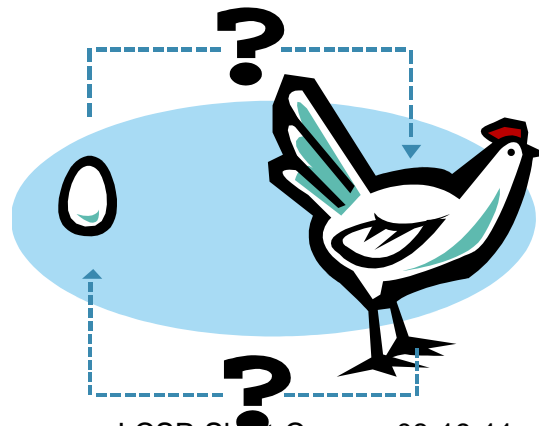
## 1 Introduction

Revision Number	Date	Change and Rationale	Approved By
0.7	April 2008	Addressed results from CDR and changes in due to avionics reliability issues – see comments in xxx	APEO(L)
0.8	June 2008	Updated Section 10.2 with results from approved PBAs with NAVICP	APEO(L)
0.9	October 2008	Addressed PS WIPT (including Service and OSD) comments – many changes – see Comment Resolution Matrix (CRM)	APEO(L)
Etc.			

# Outline (2 of 7)

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- 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



# Outline (3 of 7)

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## 4 Product Support Arrangements

4.1 Contracts

4.2 Performance Based Agreements



## 5 Product Support Package Status

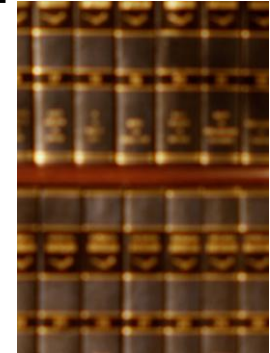
5.1 Program Review Results

5.2 Logistics Assessment Results

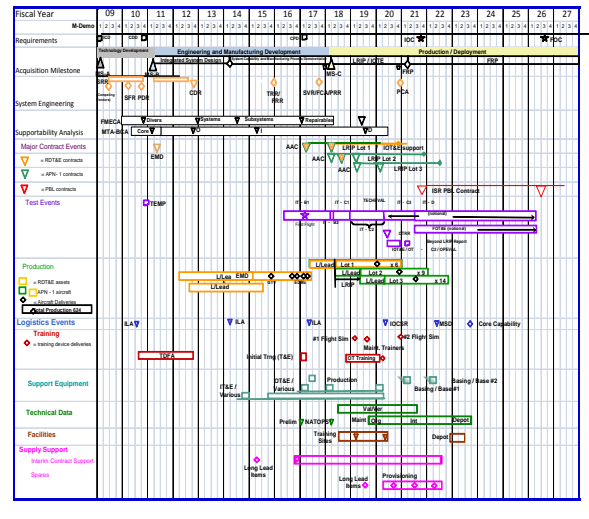


# Outline (4 of 7)

## 6 Sustainment Alignment with Regulatory/Statutory Requirements



## 7 Integrated Schedule



## 8 Funding

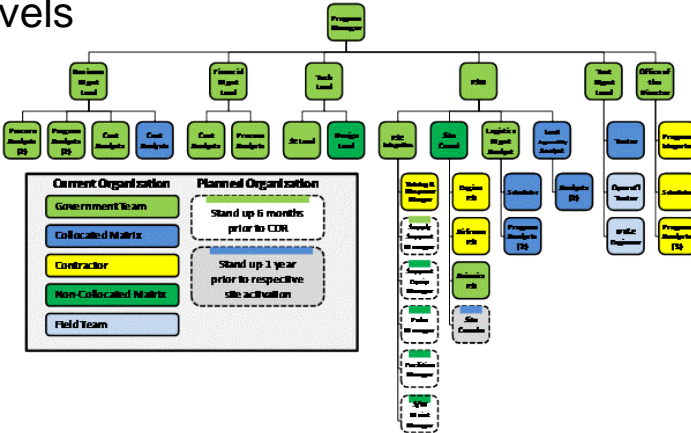


# Outline (5 of 7)

## 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



# Outline (6 of 7)

## 10 Supportability Analysis

### 10.1 Design Interface

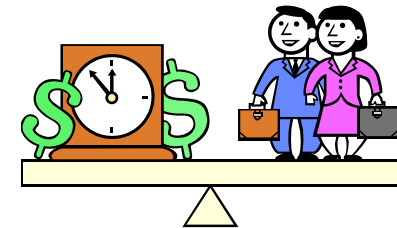
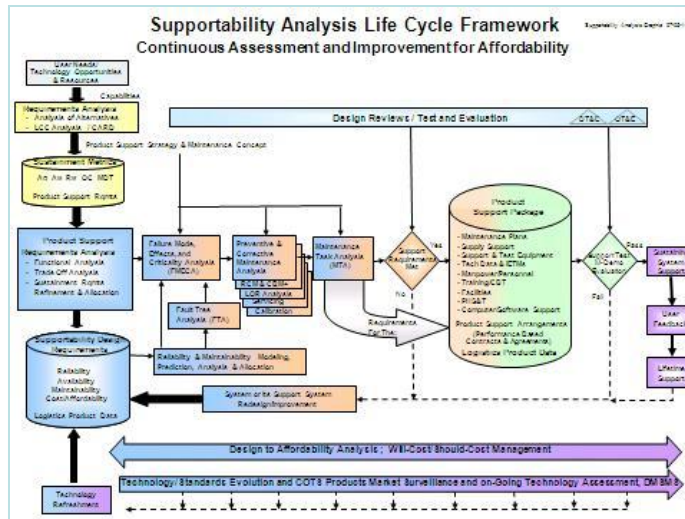
#### 10.1.1 Design Analysis

#### 10.1.2 Technical Reviews



### 10.2 Product Support Element Determination

### 10.3 Sustaining Engineering



# Outline (7 of 7)

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## 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**



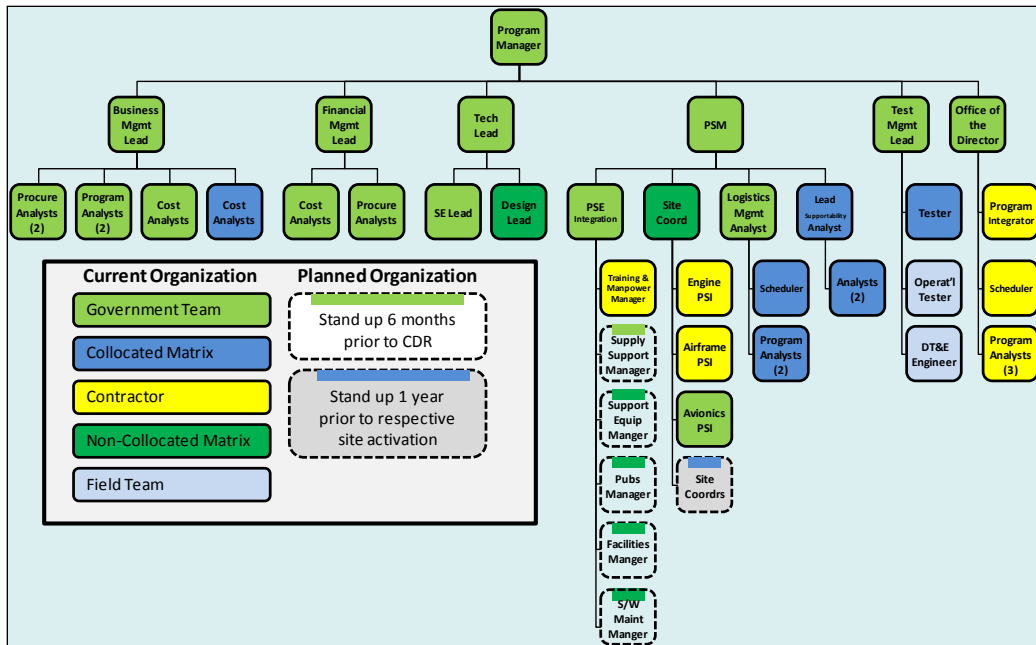
# LCSP Tables

## Facts, not words

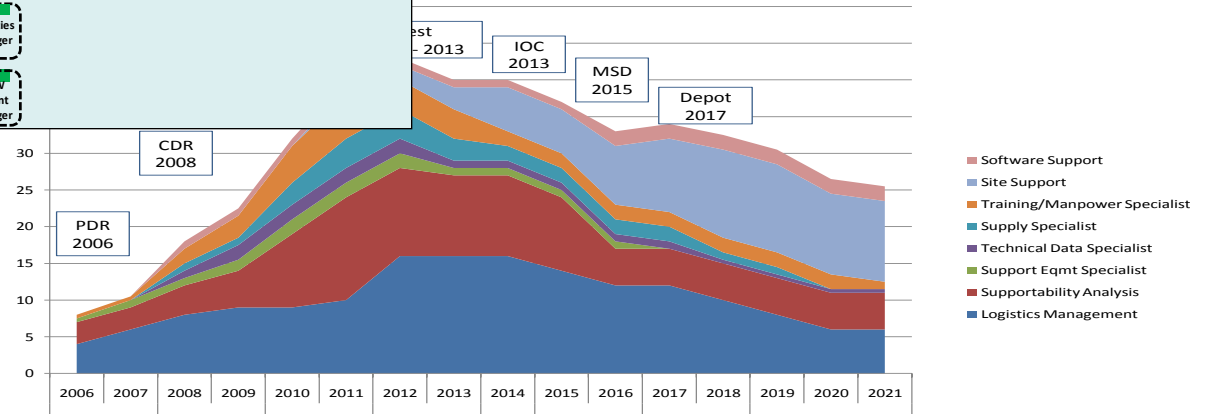
Product Support Related Contracts May 20, 2009					Sustainment Matrix																					
Name	Organizations	Products / Timeframe	Responsibilities/Authority and Functions	Metrics & Incentives	Function	Maintenance									Software Support/Maint	Supply Support	Transportation (PHS&T)	Supportability Analysis	Configuration Control *	Technical Data	Training					
						Level 1 O-1 O-2 O-3 C	Level 2 I-1 I-2 I-3 C	Level 3 Depot C	O	C	O	C	O	C								O	C	O	C	O
<b>ISR Sustainment Contract</b>  <b>CLIN:</b> WWW  <b>Type:</b> FFFAW	NAVICP Bob Smith 215-xxx-xxxx  Contractor A	<b>Products Covered:</b> • ISR Avionics • ISR Ground Stations  <b>Time frame:</b> Jan 2013 to Dec 2018 4 yr base with potential for 3 additional option years  Date of signed BCA and signatory	<b>Responsibilities:</b> Integrate all design and product support efforts ISR equipment including configuration management.  <b>Functions:</b> Sustainment Coverage includes <ul style="list-style-type: none"> <li>Maintenance beyond organizational level</li> <li>Supply support</li> <li>Publications</li> <li>Training of organizational personnel</li> <li>Transportation between contractor and 1<sup>st</sup> designation</li> </ul>	<b>Metrics:</b> - AM target of 95% with min of 6% cost decrease each year <ul style="list-style-type: none"> <li>Contract extension if met</li> </ul>	icing/Inspections	O	O	O																		
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XXX	NAVAIR	<b>Products Covered:</b> • ZZZ  <b>Timeframe:</b> Expect a 5 year contract • RFP to be issued Feb 2012 • Contract award expected Jan 2013	<b>Responsibilities:</b> XXX  <b>Functions:</b> Sustainment Coverage includes <ul style="list-style-type: none"> <li>YYY</li> <li>YYY</li> </ul>	XXX																						
<b>CLIN:</b> WWW  <b>Type:</b> FFFAW	TBD																									

# LCSP Figures

A picture is worth a 1,000 words



Support Yearly Headcount Profile (May 20, 2007 Estimate)



# Approving The LCSP

SUBMITTED BY			
_____	_____	_____	_____
Name		Date	
Product Support Manager			
REVIEW			
_____	_____	_____	_____
Name	Date	Name	Date
Program Contracting Officer		Program Manager	
_____	_____	_____	_____
Name	Date	Name	Date
Program Lead Engineer		Program Financial Manager	
CONCURRENCE			
_____	_____	_____	_____
Name	Date	Name	Date
Program Executive Officer or Equivalent		Sustainment Command Representative	
COMPONENT APPROVAL (ACAT IC)			
_____	_____		
Name	Date		
DoD Component Acquisition Executive (CAE) or designated representative			

<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <b>MANDATED FORMAT FOR ALL LIFE-CYCLE SUSTAINMENT PLANS</b> </div>						
<b>PROGRAM NAME – ACAT LEVEL</b>						
<b>LIFE-CYCLE SUSTAINMENT PLAN</b>						
<b>VERSION ____</b>						
<b>SUPPORTING MILESTONE _</b>						
<b>AND</b>						
<b>[APPROPRIATE PHASE NAME]</b>						
<b>[DATE]</b>						
<p>.....</p> <b>OFFICE OF THE SECRETARY OF DEFENSE (OSD) APPROVAL</b>						
<table style="width: 100%; border: none;"> <tr> <td style="width: 70%; border: none;">_____</td> <td style="width: 30%; border: none;">_____</td> </tr> <tr> <td style="border: none;">Assistant Secretary of Defense Logistics &amp; Materiel Readiness (for ACAT ID Programs)</td> <td style="border: none;">Date</td> </tr> <tr> <td colspan="2" style="border: none;">[or designated LCSP approval authority]</td> </tr> </table>	_____	_____	Assistant Secretary of Defense Logistics & Materiel Readiness (for ACAT ID Programs)	Date	[or designated LCSP approval authority]	
_____	_____					
Assistant Secretary of Defense Logistics & Materiel Readiness (for ACAT ID Programs)	Date					
[or designated LCSP approval authority]						

# Lesson Summary

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- 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.