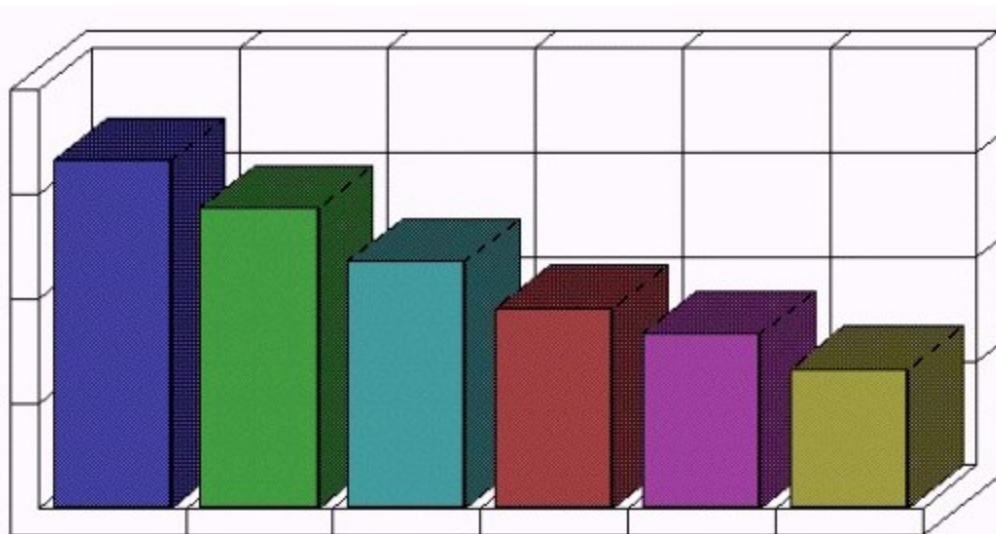


## Welcome to Metrics

This lesson addresses the various metrics the Life Cycle Logistician (LCL) should know and understand when developing a Life Cycle Sustainment Plan (LCSP).



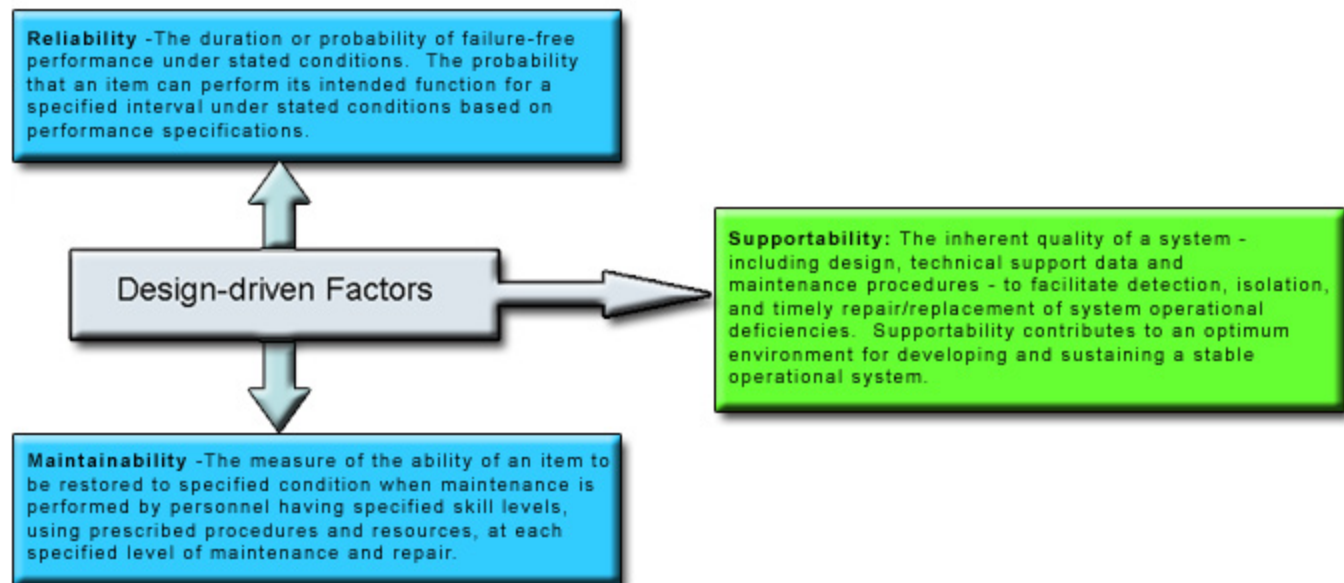
## Objectives

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

- Identify the types of metrics that apply to creating a Life Cycle Sustainment Plan (LCSP)
- Recognize the metrics management requirements.
- Identify the four perspectives in a "Balanced Scorecard" approach to metrics.

## The Focus of Product Support Metrics

Product support metrics will focus on supportability; however, supportability will be significantly driven by system design factors. The LCL should select product support metrics that recognize the impacts of reliability and maintainability factors, as well as focus on measuring the degree to which supportability is achieved.



## **Long Description**

From a box titled "Design-driven Factors" three arrows emanate and point to three boxes titled: Reliability, Supportability, and Maintainability. The Reliability box reads: The duration or probability of failure-free performance under stated conditions. The probability that an item can perform its intended function for a specified interval under stated conditions based on performance specifications. The Supportability box reads: The inherent quality of a system - including design, technical support data, and maintenance procedures - to facilitate detection, isolation, and timely repair/ replacement of system operational deficiencies. Supportability contributes to an optimum environment for developing and sustaining a stable, operational system. The Maintainability box reads: The measure of the ability of an item to be restored to specified condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each specified level of maintenance and repair.

### **Supportability Metrics and the Life Cycle Sustainment Plan (LCSP)**

LCLs use supportability metrics to assess the degree to which the combination of system design characteristics and planned/executed product support capabilities and related resources meet, exceed, or fail to satisfy system peacetime and wartime requirements.

When selecting supportability metrics, LCLs should select a workable number of performance measures covering key individual elements within the total product support enterprise.

For example: Repair cycle time is a support system performance characteristic independent of the hardware system. Mean time between failure and mean time to repair are reliability and maintainability characteristics, respectively, of the system hardware, but their ability to impact operational support of the total system also makes them useful supportability metrics.

It is essential that selected supportability metrics relate the individual product support elements to provide a comprehensive, balanced assessment of the total system's operational readiness status. Good metrics can provide an indication of the health of products, projects, portfolios, and the related processes that support them.

### Criteria for Selecting and Using Supportability Metrics

The goal of using metrics is to learn what we have. When we know what we have, we can see how to make changes to improve the product or process. LCLs should ensure that supportability metrics are selected and used based on the following criteria:

- Implemented within the organization(s) that controls the process producing the metric
- Accepted as meaningful by the customer, e.g., user, procuring agency, and by stakeholders and managers Linked to goals and objectives established for acquisition life cycle processes and tasks
- Measuring something useful (valid) and measuring it consistently over time (reliable)
- Useful in defining a trend(s)
- Defined clearly and unambiguously
- Economically and accurately collectable
- Clear as to the cause and effect relationship between what is measured and the intended use of the information
- Timely

## Measurement is Essential

Including the proper metrics in the LCSP will:

- Link performance to the organizational vision and objectives
- Provide support to justify and propel transformational activities
- Enable tracking, managing and achieving process improvement goals
- Facilitate effective decision making
- Drive course corrections over time as requirements change



*What gets measured gets done!*

## Knowledge Review

Which of the below statements are "True" concerning Product Support Metrics?

- ☒ The LCL should select product support metrics that recognize the impacts of reliability and maintainability factors.
- ☐ Supportability is not significantly driven by system design factors.
- ☐ Product support metrics will focus on supportability only.
- ☐ All explanations are applicable.

Check Answer

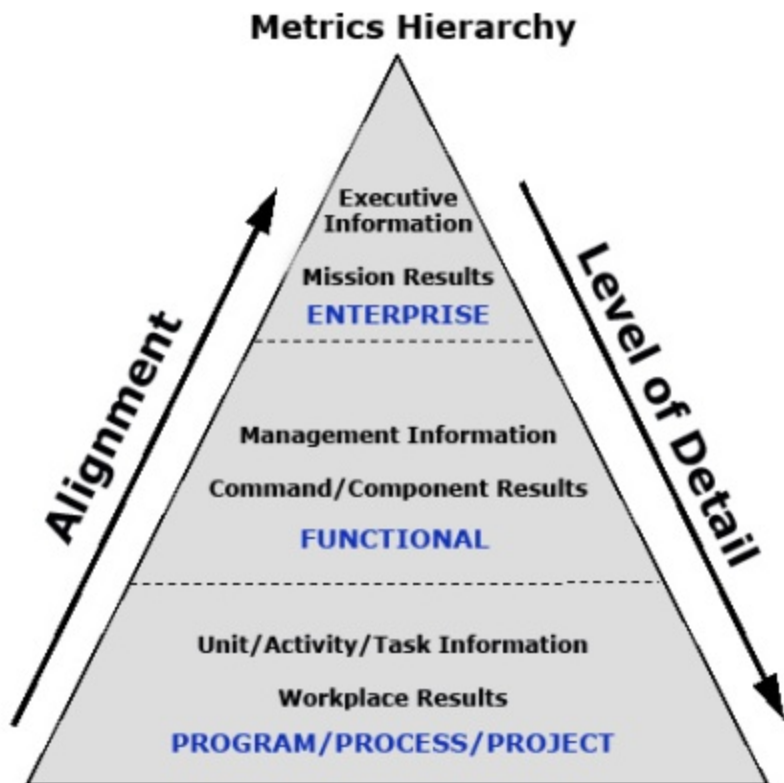


With regard to Product Support Metrics, **the LCL should select product support metrics that recognize the impacts of reliability and maintainability factors.**



## Management Requirements

Product support metrics should accommodate the management requirements of all support process participants, stakeholders, and decision makers. Product support metrics management begins at the program level but is aligned to organizational and enterprise metrics requirements to support program decisions and executive reviews.



### **Long Description**

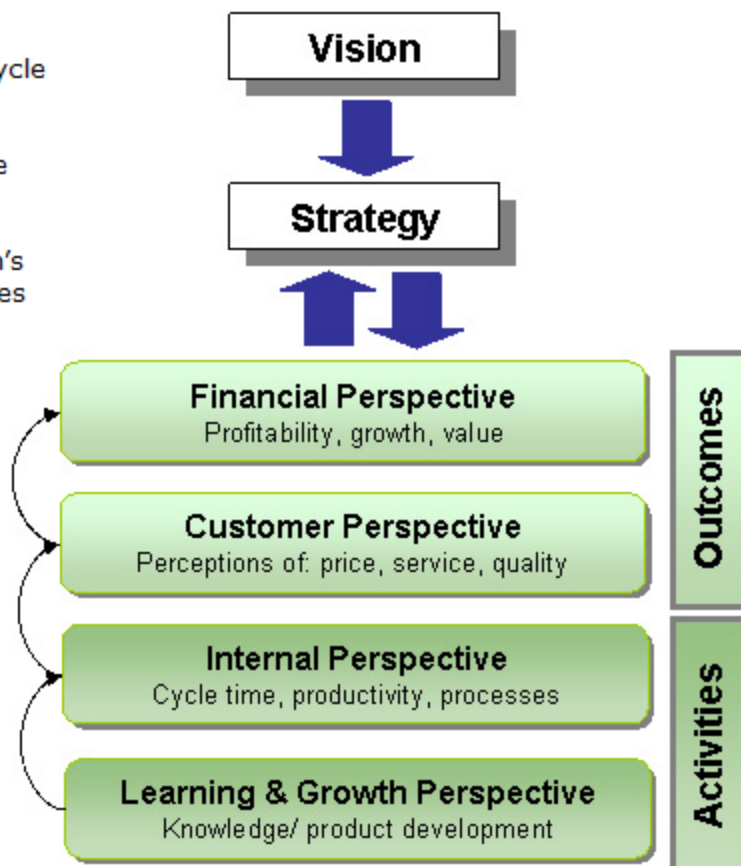
Metrics Hierarchy represented by a triangle divided into three levels: at the top is the Enterprise Level, in the middle is the Functional Level, and at the bottom is the Program/ Process/ Project Level. The Enterprise Level provides executive information about mission results. The Functional Level provides management information about command/ component results. The Program, Process, Project Level provides unit/ activity/ task information about workplace results. There are more metrics at the lower levels but they provide more detail about higher-level measurements. The metrics must be aligned from the bottom up.

## Balanced Scorecard Approach

LCLs can take a "Balanced Scorecard" approach when selecting metrics for inclusion in the Life Cycle Sustainment Plan.

The Balanced Scorecard strategy is based on the organization's jointly held strategic vision, identification of key strategic activities and outcomes (objectives). The Life Cycle Logistician's theory about what activities drive which outcomes is based on four business perspectives:

- Financial
- Customer
- Internal
- Learning & growth



[D](#)

### **Long Description**

Visual representation of balanced metric. Vision from the top drives strategy. Strategy then drives the selected metrics across Outcomes (the Financial and Customer business perspectives) and Activities (the Internal and Learning & Growth business perspectives). Learning & Growth metrics (example: knowledge/product development) are linked to the Internal metrics (example: cycle time, productivity, processes) which are linked to the Customer metrics (example: perceptions of price, service, and quality) which are linked to the Financial metrics (example: profitability, growth, and value). The metrics across the four business perspectives provide feedback about the strategy that drove their selection.

## Balanced Metrics

In selecting a balanced set of product support metrics, the LCL should do the following:

LINK METRICS  
TO STRATEGY

DEVELOP  
MEASURES  
FOCUSED ON  
ENTERPRISE-  
WIDE  
PERFORMANCE

EMPHASIZE  
BALANCED AND  
COMPREHENSIVE  
METRICS

CREATE  
"ENABLEMENT"  
RELATIONSHIPS

TAKE A BROAD  
VIEW

ACCEPT  
PERFORMANCE  
GAPS IN SOME  
AREAS

## **Popup Text**

### **Link Metrics to Strategy**

Operational metrics must support the organization's strategic goals.

### **Develop Measures Focused on Enterprise Wide Performance**

Metrics should provide insight into larger processes that are fed to strategy.

### **Emphasize Balanced and Comprehensive Metrics**

Customer, internal process, financial and innovation / learning perspectives enable the pursuit of comprehensive and synergistic program improvements.

### **Create “Enablement” Relationships**

Operational performance should be tied to technology usage, capabilities, and best practices.

### **Take a Broad View**

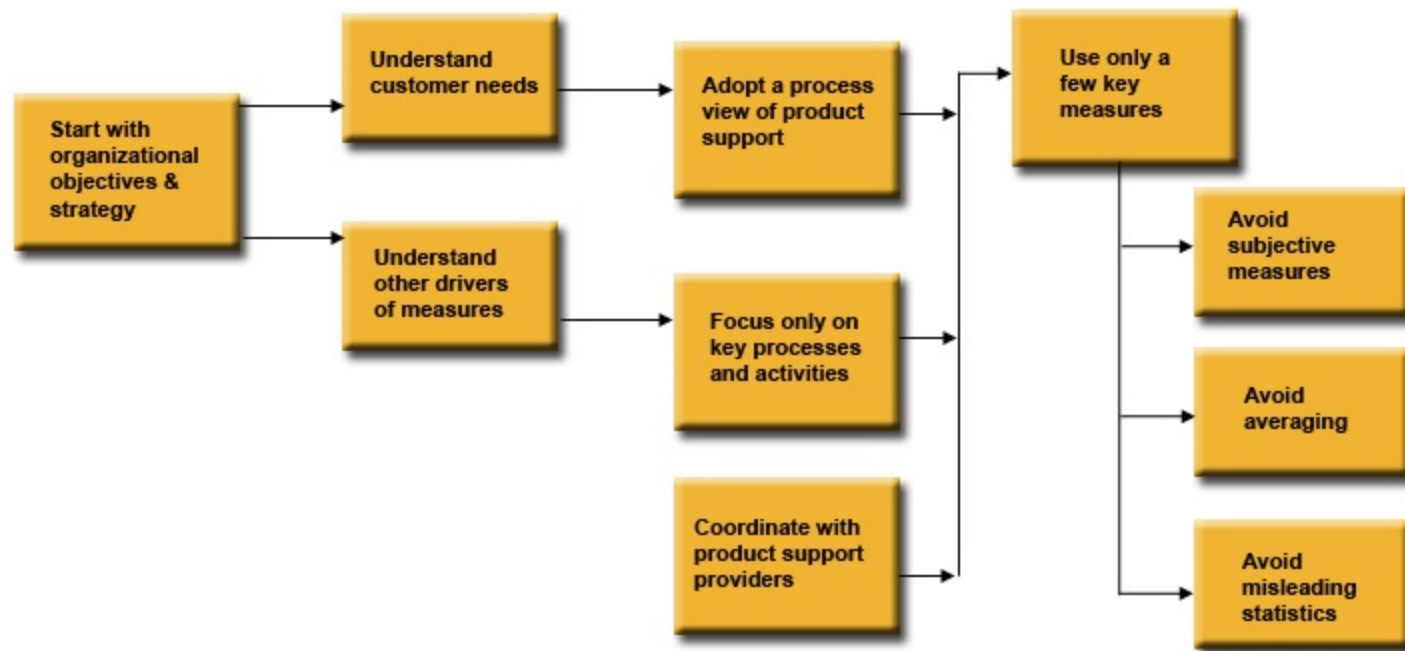
Innovative practices can be adapted from best practices from relevant industry experience.

### **Accept Performance Gaps in Some Areas**

Organizations must carefully choose the metrics where it makes sense for them to excel.

## Relating Metrics to Product Support Processes

The LCL should adopt an effective approach for ensuring that selected metrics complement the full range of product support processes. This approach should follow basic rules for product support measurement.



### **Long Description**

Flow chart showing basic rules for product support measurement. Start with organization objectives and strategy. This leads to understanding customer needs and understanding other drivers of measures. Understanding customer needs drives the adoption of a process view of support. Understanding other drivers of measures drive the focus to be only on key processes and activities. Adoption a process view of product support and focusing only on key processes and activities, in conjunction with coordinating with product support providers drives the use of only a few key measures. When using these few key measures: avoid subjective measures; avoid averaging; and avoid misleading statistics.



### **Developing Relevant Product Support Metrics**

Developing a good metric is a systematic process, using the following steps.

Click on each area for further explanation.

STEP 1  
IDENTIFY YOUR  
PURPOSE

STEP 2  
THE CUSTOMER

STEPS 3-5  
METRICS

STEP 6  
ANALYSIS

STEP 7  
PRESENTATION

## **Popup Text**

### **Step 1 Identify Your Purpose**

Align your purpose with your organization's mission.

### **Step 2 The Customer**

Begin with your customer. Who is your customer? What are their expectations?

### **Steps 3-5 Metrics**

Step 3: Define what it is that you want to measure. Your job is to define the who, what, when, why and how in sufficient detail to permit consistent, repeatable, and valid measurement to take place.

Step 4: Examine existing measurement systems and generate new metrics if necessary. Look for existing measurements. Do they measure processes, or are they focused on outputs - products or services for external customers?

Step 5: Rate your metric. Is the who, what, when, why and how defined in sufficient detail to permit consistent, repeatable and valid measurement to take place?

### **Step 6 Analysis**

Collect and analyze metric data over time. Baseline your process. Start acquiring metric data, from the existing metrics or from the new ones you have generated. As the data accumulates over time, look for trends.

### **Step 7 Presentation**

Communicate the metric. When you have completed the first six steps, you are ready to present the information your metric has generated. Develop a presentation approach that will clearly and concisely

communicate how you are performing based on a standard and where you plan to go.

### Determining Supportability Metrics

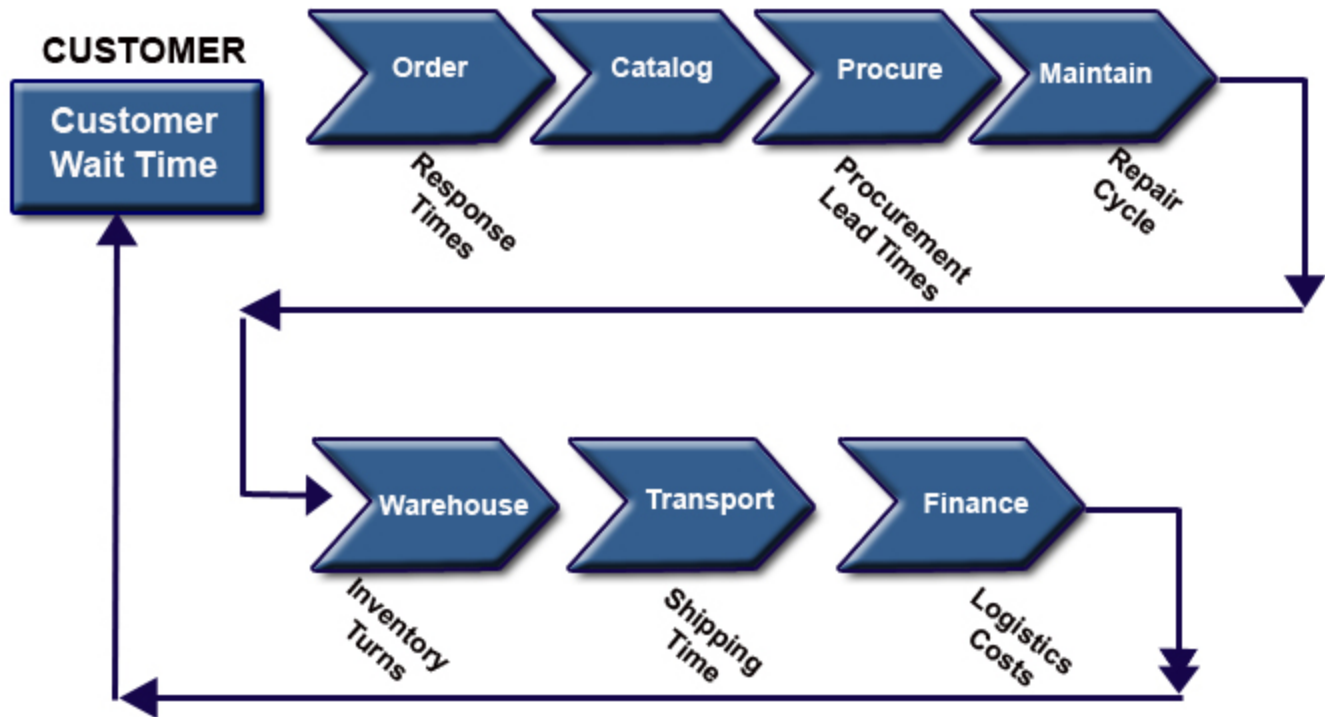
Supportability metrics should relate to the primary support objectives. These become specific logistics objectives of the product support process. Supportability metrics should address areas such as:

- Operations and maintenance manpower and man-hour constraints
- Personnel skill level constraints
- Operating and support costs constraints
- Target percentages of system failures (downing events) correctable at each maintenance level
- Mean down time in the operational environment
- Turn around (cycle) time in the support and operational environment
- Standardization and interoperability requirements
- Life cycle costs
- Stock levels and positioning of material
- Repair levels and maintenance approaches



### Purpose of Product Support Metrics

Product support metrics should measure key processes and the overall enterprise objectives.



[D](#)

### **Long Description**

A chart representing sample key processes and overall enterprise objectives. The key processes of Order, Catalog, Procure, Maintain, Warehouse, Transport, and Finance are indicated in that order by interconnected arrows. All are focused on the Customer. The enterprise objective for Order is Response Time. The enterprise objective for Procure is Procurement Lead Time. The enterprise objective for Maintain is Repair Cycle Time. The enterprise objective for Warehouse is Inventory Turns. The enterprise objective for Transport is Shipping Time. The enterprise objective for Finance is Logistics Cost. The enterprise objective with regard to the Customer is Customer Wait Time.

**Commercial Product Support Metrics**

Examples of commercial product support metrics are listed in the following chart. LCLs should adopt metrics that fit program objectives.

Product Support Metrics	Attributes				
	Customer-Facing			Internal-Facing	
	Reliability	Responsiveness	Flexibility	Costs	Assets
Perfect Order Fulfillment	✗				
Order Fulfillment Cycle Time		✗			
Supply Chain Flexibility			✗		
Supply Chain Adaptability			✗		
Maintenance Responsiveness		✗			
Product Support Operating Cost				✗	
Cost of Goods Sold				✗	
Budget v. Actual Expenditures				✗	
Return on Fixed Assets Investments					✗
Return on Working Capital					✗

### **Long Description**

This is a chart that shows the attributes of various product support metrics. Perfect Order Fulfillment is reliable, while order fulfillment cycle time and maintenance responsiveness are very responsive. Both supply chain flexibility and adaptability are very flexible. Internal-Facing costs are applicable to the product support operating cost, cost of goods sold, and the budget vs. actual expenditures. Return of fixed assets and working capital are considered assets.



### DoD-Oriented Product Support Metrics

LCLs should adopt metrics that balance product support objectives such as performance, cost, and customer satisfaction. View the warfighter, logistics process, and resource planning below for examples.

Click on each area for further explanation.

Warfighter

Logistics  
Process

Resource  
Planning

## **Popup Text**

### **Warfighter**

- Force Readiness
- Mission Capable Rates
- Not Mission Capable Supply / Maintenance Rates
- Force Sustainment
- Materiel Support
- Delivery On-Time Rates by Area

### **Logistics Process**

- Logistics Chain Reliability
- Perfect Order Fulfillment
- Backorders
- On-Time Orders
- Variability of Order Fulfillment Times
- Inventory Turns
- Demand Forecast Accuracy

### **Resource Planning**

- Logistics Chain Cost-Effectiveness
- Total Logistics Chain Cost
- Total Cost of Supply / Maintenance / Transportation
- Value of Inventory
- Working Capital Cost Recovery Rates
- Logistics Chain Cost-Effectiveness
- Total Logistics Chain Cost

### **Using Product Support Metrics as a Management Tool**

LCLs should institutionalize product support metrics as a long term tool to help manage their program. Some key actions include:

- Use hard and soft metrics – Balance between quantitative and a few quality/judgment oriented metrics.
- Less is more – Beware of too much complexity. Start small and measure just a few key things, then expand.
- Avoid the trap of unintended consequences – One of the frustrating aspects of product support metrics is that measuring one kind of outcome and working to improve performance against it can cause unintended problems with other outcomes. (e.g., don't focus on cost at the expense of performance.)
- Measure internally and externally – Sometimes it's easy to measure only what's in your own four walls and overlook measures from the outside world. Keep an eye on enterprise-wide measures.

### **Using Product Support Metrics as a Management Tool, Cont.**

Some additional actions include:

- Close the loop – Validate your metrics data. Close the loop and measure the outcome relative to the original forecast.
- Make metrics matter – Link results with both the planning process and individual incentives. Integrating metrics into the way the program is run is another way to make metrics matter for everyone.
- Don't let metrics go stale – Ensure metrics are relevant to current needs. Review frequently and change metrics as necessary.
- Use metrics to learn – Use metrics trends to help focus on process improvement.
- Make metrics readily visible – Keep the metrics scorecard visible to everyone in the organization.

## Knowledge Review

Which of the below statements are "True" concerning Metrics Management?

- ☐ Product support metrics should accommodate the management requirements of the decision makers only.
- ☐ Product support metrics management ends at the program level.
- ☒ Product support metrics should accommodate the management requirements of all support process.
- ☐ All explanations are applicable

Check Answer



Regarding Metrics Management, **product support metrics should accommodate the management requirements of all support process is a true statement.**

### Knowledge Review

Which of the following is an attribute of the concept "Link metric to Strategy" of Balanced Scorecard?

- ☒ Operational metrics must support the organization's strategic goals.
- ☐ Metrics should provide insight into larger processes that are tied to strategy.
- ☐ Customer, internal process, financial and innovation/ learning perspectives enable.
- ☐ All of the attributes are correct.

Check Answer



**Operational metrics must support the organization's strategic goals** is an attribute of the concept "Link metric to Strategy" of Balanced Scorecard.

## **Metrics Summary**

You have completed Metrics and should now be able to:

- Identify the types of metrics that apply to creating a Life Cycle Sustainment Plan.
- Recognize the metrics management requirements.
- Identify the four perspectives in a "Balanced Scorecard" approach to metrics.

## 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.