Top 10 Performance Logistics Metrics Applied at Upgrade/Repair Site Visit Evaluation of Available Equipment Usage

01/06/2017

Key components of any performance logistics programme implementation is establishing sound set of metrics. Since main purpose of programme is 'buying performance,' what constitutes performance must be defined in manner where achievement of performance can be tracked, measured, & assessed.

Identification of top-level metrics achieves this objective. An effective programme implementation depends on metrics accurately reflecting User Goals established as effective measure of support provider performance.

Logistics Response Time is period of time from logistics demand signal sent to satisfaction of that logistics demand. 'Logistics demand' refers to systems, components, or Upgrade/repair resources such as labour required for system logistics support.

Performance Logistics Metrics must support desired outcomes we have highlighted. Performance measures must be tailored by DoD to reflect specific Service definitions & unique circumstances of support logistics arrangements.

One of most critical elements of Performance Logistics strategies is to tailor metrics so operational success of system approaches are realised and reliability of metrics align well with support provider scope of responsibilities. Support providers must be fully responsible for meeting metrics defined in established contracts resulting from programme actions.

So there must be consistency between scope of product support responsibilities and identified metrics. If Task initiatives do not perform all functions contributing to operational availability, consideration must be given to identifying appropriate metrics to hold support providers accountable.

While objective metrics should form bulk of performance evaluation, some elements of product support requirements might be more appropriately evaluated subjectively by DoD. This approach allows some flexibility for adjusting to potential support contingencies. For example, there may be different field-level unit priorities to be balanced with overall objective measures of performance.

Equipment Upgrade/Repair Simulation conclusions/ recommendations must address quantitative/qualitative logistics costs/benefits as well as risks associated with expected unknown areas which have not been quantified, such as changes in purchasing/provision of spare parts supply lines at installations.

Affected supply line processes must be identified & specific metrics to be used for assessments. Utilising existing logistics & past site visit operational information to define sustainment baselines is required as well. Identify affected purchasing process parameters affected & specific metrics to be used for assessments.

Next Steps and Challenges for Equipment Upgrade/Repair Simulations include Capacity for applications described in this report to derive relevant metrics, most of which currently consider only subset of missions & focus on equipment-specific planning factors.

Future work will expand application to include other missions and will include additions or process advance of existing features—for example, addition of a consistency metric for relative support task importance selection would be great idea. In accounting for multiple missions, we face two significant challenges.

The first challenge is how to deal with common support tasks when considering multiple missions. It may be the case establishment of just single command centre is all required to accommodate multiple missions, but equipment needed to support each mission may differ based on metric construction. In other words, although the support task is "common," there may be unique, mission-specific requirements for accomplishing it.

Second challenge concerns sequencing tasks and assigning metrics to reflect relative importance at the support task level versus the mission level. A typical example might be transport of equipment to new staging area subsequent to support.

If mission A is designated more important than mission B, does that mean that all support tasks associated with mission A have absolute priority? If not, how do we provide User with the ability to designate metrics exceptions at the task level?

Equipment availability is system performance parameter to provide insight into probability item or system will be available to be committed for specified requirement. Depending on application utilised by User, availability can be defined to include reliability, maintainability and logistic support information. For administrative purposes, ability to quantify availability metrics in terms of all contributing elements is essential.

This Report provides for discussion of steady state operational availability metrics to be used by

DoD in determining aircraft fleet requirements. The availability model embodies scheduled/unscheduled maintenance and allows for assessment of "Impact Proximity" using in-service equipment upgrade/repair Job Site information.

Metrics are sensitive to fleet size, aircraft flying rate, frequency of grounding events, aircraft maintainability, scheduled inspection frequency & scheduled inspection duration. The predictive capability of availability metrics provides for smart upgrade/repair support capability decision making.

We have illustrated an application of using in-service upgrade/repair assessments to construct supply line risk availability model based on limited sets of metrics. This capability can be of great value in predicting availability and performing impact assessment on those parameters, which affect availability.

We created Logistics Scorecards with application allow users to drill down from higher, aggregated metrics to lower detailed metrics, enabling quick diagnosis of low performance supply line elements. For example, users could start by first implementing strategic, executive scorecard metrics in fashion aligned with existing capabilities.

Implementation of automation processes could follow, through use of new, innovative application tools & addition of more tactical, operational scorecard metrics. As application users are able to take more capabilities on board in area of supply line performance metrics, characteristics of future automation of the process can be implemented over time.

The discussion provided here details existence of multiple designed approaches for applying availability metrics in use today. But techniques used here allow for separation of scheduled/unscheduled upgrade/repair Simulation parameters for support within a single availability metrics model.

There is no reason why approach presented here can not be used by all DoD Services to promote utility of in-service equipment availability applications. Or, DoD can keep chugging along, reporting short-term operational success, while simultaneously short changing interests of Field-level Troops by not applying adequate resources towards product quality/innovation & sustainment requirements.

DoD must Identify specific metrics critical for product support meeting schedule expectations of installations. Ensure definitions are provided within assumptions & appropriate measures identified following site visit investigation. Recent site visits have uncovered instances of using too many evaluation metrics.

Growth in number of total metrics must be minimised to ensure reasonable amount of effort is required to obtain & assess information to ensure reasonable conclusions/recommendations arrive quickly to Job Sites.

Impacts must be assessed using primary upgrade/repair metrics to include Operational availability, materiel readiness, total cost/benefit of in-house supply line provisions & mission downtime. Identify & define any potential automated decision processes, planned integration & installation expectations in key Simulation assumptions.

Linking metrics to existing DoD measures of performance and reporting systems is key consideration. Many existing logistics metrics can be related to top field-level performance outcomes.

Although actual performance logistics strategies, as implemented, sometimes delineate metrics at levels lower than top field level-level measures e.g., system availability, it is important initial identification of performance outcomes be consistent with metric areas outlined below:

1. **Operational Availability:** Percent of time system is available for mission or ability to sustain operations tempo

2. **Operational Reliability:** Measure of system in meeting mission success objectives such as sortie, tour, launch, destination reached, or other metric specific to service/system

3. **Operational Maintainability:** Time required to return failed repairable system to service—usually sum of model sets describing diagnosis, repair, inspection, reporting & evacuation

4. **Cost/Benefit per Unit Usage:** Total operating cost divided by the appropriate unit of measurement for assigned system such as flight hour, launch, transit distance, or other metric specific to service/system

5. **Logistics Footprint:** Job Site size or ‘presence’ of deployed logistics support required to deploy, sustain/move system such as large equipment caches, labour, & transit assets

6. **Logistics Response Time:** Period between work order submission & completion to vary with complexity, Job Site size/generation standards

7. **Work order plans:** Percentage of work orders scheduled in period to be completed/closed & work order backlog track/trend.

8. **Automated Supply line Support:** Frequent, recurring Job tickets tagging label schemes

to indicate instances field-level to derive support value from product

9. **Supplier structure quality:** New products introduction defined as percentage of new products introduced to field-levels hitting time, volume & quality targets

10. **Quick transport functions:** Calculate relationship between number of on-time pick-ups to total number of deployments in period must indicate performance & product support service levels