

WSSVSM

Weapon System Sustainment Value Stream Model

$$f(t) = \mu e^{-\mu t}$$

$$P(x|\mu) = \frac{e^{-\mu} \mu^x}{x!}$$

$$EBO = \sum_{r=s}^{\infty} (x-s) * P(x|\mu)$$

Weapon System
Availability Optimization
for Sustainment Professionals

It's Your World

Make the Right Investment

Sustainment professionals such as maintenance, logistics, and acquisition personnel face the continual challenge of providing long-term weapon system availability. There are many paths to that goal. Do we increase component reliability? What is the effect of reducing depot or field cycle time? Are we providing the best distribution of spare and repair parts at the organizational, intermediate, and depot levels? How can we best meet budget goals and availability requirements? Are policy changes affecting cannibalization, lateral supply, or transportation necessary? What are the implications of altering funding for depot overhauls and component repair?

As sustainment and acquisition logistics professionals, we rely on our experience and a variety of focused modeling tools that address a part of the total problem; these are often supply-based solutions, spares optimization solutions, or “tactical” solutions that suggest which platforms to deploy but don’t offer long-term, high-leverage solutions that could provide the required weapon system availability for the right cost.

Your world is larger and more detailed. It encompasses not only the critical aspects of inventory management, but also the integration of other process improvements for reliability, maintenance, and transportation.

WSSVSM

It's Your Sustainment Modeling Solution

Department of Defense (DoD) sustainment value streams are complex. They include all internal and external processes and functions that provide for the procurement of weapon systems and the sustainment of efficient and effective materiel readiness for weapon systems. This entails both design and logistics support throughout the weapon system life cycle.



WSSVSM simulates all facets of the sustainment value stream that drive availability at the weapons system level.

WSSVSM is a DoD-owned prototype tool that extends existing modeling capabilities, allowing sustainment professionals to zero in on availability degraders throughout the weapon system sustainment value stream and predict the effect of changes within the value stream on weapon system availability.

It can also quantify the return on investment for reliability improvements and continuous process improvement of depot operations for those critical components that contribute most to weapon system down time.

WSSVSM

Three Proven Analysis Tools Working Together

The WSSVSM prototype is a comprehensive, data-driven solution that is initialized with:

- Weapon system parts indenture data including maintenance and reliability characteristics
- Logistics and maintenance operating structure
- Fleet and scenario parameters

Architecturally, WSSVSM is the integrated product of three very powerful and proven logistics solutions, each forming an underlying module of the total solution.

System Evaluator

The System Evaluator is D-SCORE, or DoD Sustainment Chain Operational Readiness Evaluator. It simulates DoD's entire sustainment value stream, from the operational level through intermediate-level maintenance to wholesale supply and depot maintenance. It has a unique capability to evaluate alternative logistics process improvements in terms of resulting costs and weapon system readiness.

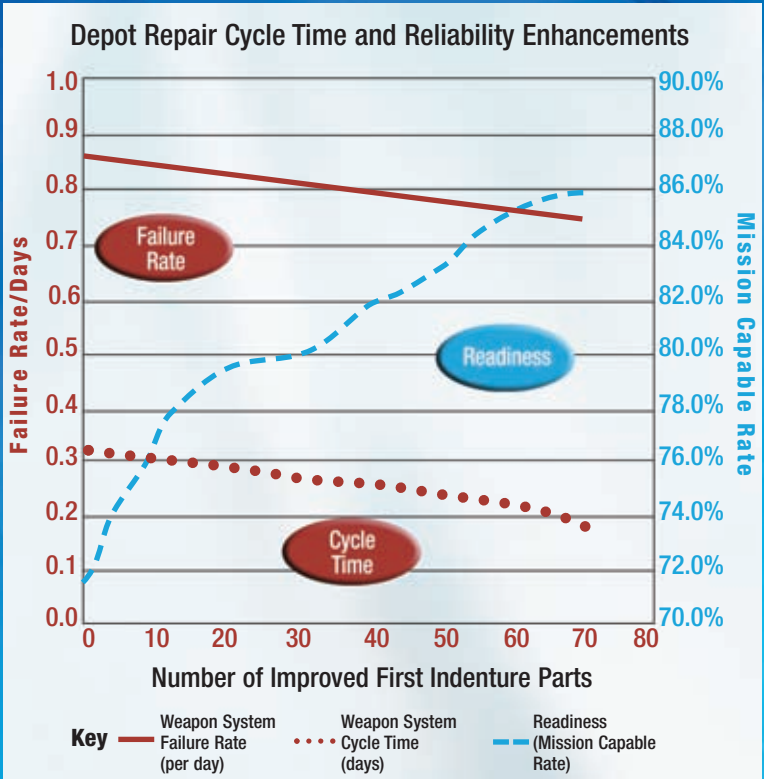
Reliability Evaluator

The Reliability Evaluator (PRO-OPTA) is an extremely powerful partner to the System Evaluator. It assesses the reliability and availability of a weapon system through the development of a fault tree from data provided to it by the System Evaluator. The Reliability Evaluator uses genetic algorithms supported by underlying cost curves to inductively identify the optimal LRUs and subordinate parts for improvement, approximate fixed costs of implementation, and follow-on parts procurement costs.

Spares Optimizer

The Spares Optimizer—Aircraft Sustainability Model (ASM)—is a multi-echelon, multi-indenture optimization model that computes optimal spares inventory levels to meet weapon system availability targets. Its underlying logic and principles have been applied to both aircraft and ground systems. The Spares Optimizer module allows analysts to further quantify availability improvements and potential spares savings resulting from improved reliability or cycle times.

WSSVSM provides results that sustainment professionals can use to measure the effectiveness of alternate availability improvement scenarios. Iterative runs compared within the application can effectively isolate the knee of the curve where we get best value.



If you need to quantify the full effect of desired changes or need to look at the whole sustainment value stream, then WSSVSM might be for you.

WSSVSM

- Reengineering for reliability
- Improving cycle time
- Restructuring maintenance
- Right-sizing inventory
- Changing policy

For further information on how WSSVSM can help you, contact:

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