Analyzer

Analyzer delivers value and provides analysis to support informed decicions

Pennant

Analyzer

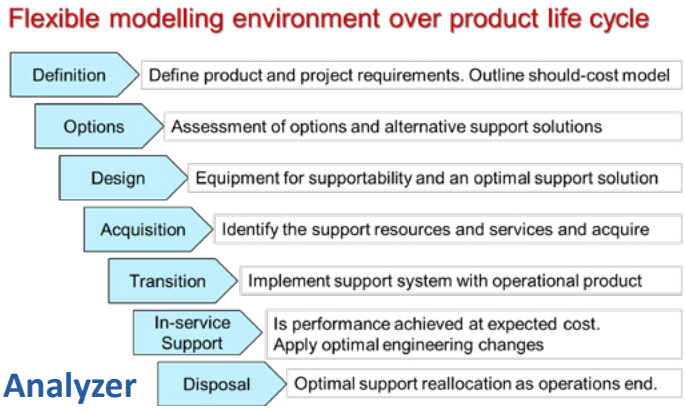
With the need to make good decisions when designing and managing a Product Support solution, and a business drive to reduce ownership costs, the challenge of cost-effective equipment support is pushed to the limits. A tool of choice in these circumstances is Analyzer.

Is this really achievable?

Yes, it is! Proper analysis and systematic processes are applied in an advanced modelling environment to develop Performance Based Supportability.

Analyzer™ uses recognized processes and analytical methods to develop, store and evaluate information about operational equipment and the support environment.

The Analyzer primary functions include Life Cycle Cost (LCC) Optimization, Level of Repair Analysis (LORA), Spares Optimization, and Availability Modelling. It is a key tool for managers, decision-makers, engineers, ILS teams and other staff involved in system design, system acquisition, proposal writing, support solution optimisation, in-service support management and through-life support



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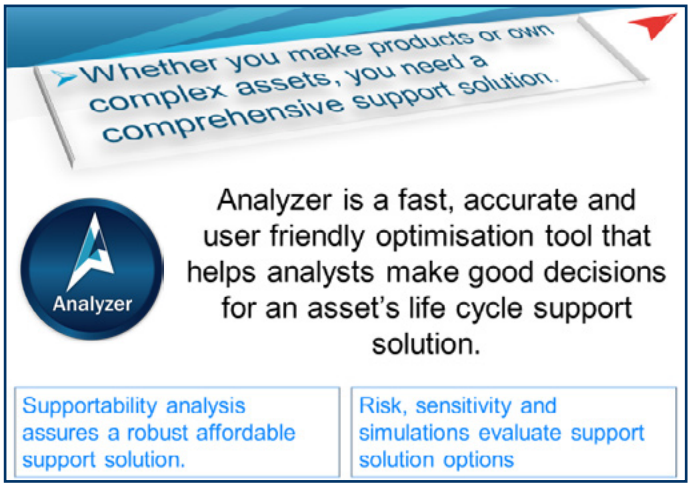
Analyzer can determine the best repair policy for equipment and reduce the cost of owning spare parts. Cost estimation and prediction supports decisions based on Life Cycle Costs. Analyzer delivers value and provides analytical and decision support at all points of a product's life-cycle.



Analyzer is either a stand-alone decision modelling tool or integrated with OmegaPS LSAR to provide a tool that works with the many international standards of supportability data (e.g. MIL-STD-1388-2B, SAE GEIA-STD-0007, DEF-STAN-0060, DEF-AUST 5692, S3000L) additionally, Analyzer can be aligned with any of your bespoke standards through data exchange.

Analysis Modes

Analyzer is an integrated, engineering approach to supportability analysis. Its use of a central database and data management simplifies data entry and ensures consistency of system definitions. The integrated data module and GUI are used by each of the modelling modes of Analyzer.

The LCC Model

Analyzer was designed to determine the Life Cycle Cost (LCC) of an operation and support scenario. The basic cost breakdown structure for R&D, Acquisition, In-Service and Disposal is developed with emphasis placed on the support activity costs during the In-service phase. The cost of allocated spares recommended by the Sparing model is taken into consideration. The LCC model determines cost variance over the life cycle. The basic model calculations can be extended with user defined cost classes and customized costs. Cost results are analyzed by using Sensitivity or Trade-off analyses and by applying cost Risk analysis.

The application of project-based cost breakdown structures aligns the LCC results with other project costs. Output reports and MS Excel results integrate with project reporting methods.

The Sparing Model

Sparing determines the optimal allocation of the quantity of repairable and consumable spares within a defined logistics support organization, recommending minimum inventory requirements to meet desired availability goals for least spares cost. It handles replaceable units that will drive the Prime Equipment effectiveness and consumables stocking policies for inventory distribution, reorder points and reorder quantities.

Mission Analysis mode assumes equipment will be sent on a mission for a specified duration and that only on-site maintenance will be possible. This module provides a list of the spares required to maintain the equipment at a specified "Measure of Effectiveness", such as availability.

Effectiveness is a function of many different factors such as repair capability, stock on hand, and supply delay time. For example, the supply department may be trying to meet their goal of satisfying 90% of all orders received, whereas operations may be trying to ensure that 75% of a fleet is operational on any given day. The measure of effectiveness to choose is the one that best demonstrates whether the desired system goal is being met. Analyzer has five to apply:

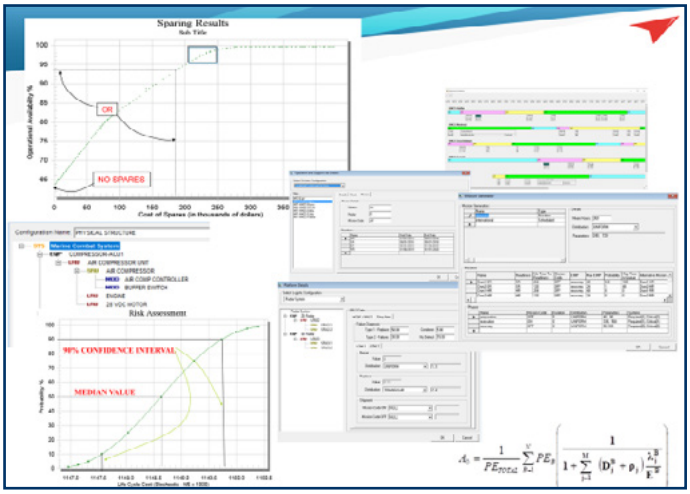
- Expected System Delay Time;
- Expected Number of System Backorders;
- Operational Availability;
- Intermittent Availability;
- Probability of Mission Accomplishment.

The LORA Model

Level of Repair Analysis (LORA) determines the most cost-effective repair policy for each replaceable unit of a Prime Equipment. LORA examines the costs of labour, training, test equipment, contractor repair, transportation, inventory, and documentation for every disassembly and repair option possible within the specified capability of the Maintenance Organization. After making the repair versus discard decision, LORA will select the optimal location for repair of the defective unit. As a multi-indenture model, LORA will determine the repair options for the whole assembly of a removed item (e.g. LRU, SRU, or SSRU).

LORA uses cost estimates based on the LCC model and includes user defined values that are unique to the product analysis undertaken.

LORA includes non-economic overrides to drive the repair decision based on operational and support constraints.



Availability Assessment Model

Analyzer provides an availability assessment function for the analyst to review the influence of the designed support solution with product usage and availability targets.

- Allocate Availability system targets to Prime Equipment and systems
- Determine realistic availability targets to be required from system designs
- Assess the Availability achievable from proposed system designs at key design review milestones (e.g. PDR, CDR)
- Estimate supportability costs from optimized support solutions

TLAS - THROUGH LIFE AVAILABILITY SIMULATION

TLAS is an event based, Monte Carlo simulation of the product's support solution design within mission scenarios over its life cycle. TLAS provides outputs of the supportability and mission capabilities to assist in assessing the support solution design.

DATM – DESIGN AVAILABILITY TARGET MODEL

DATM is used to allocate a required availability target, usually at the system, or system of systems level, to the Prime Equipment and its sub-systems. Then it measures and tracks the ability to achieve that availability through the design process.

Sensitivity Analysis

In cases where input data is based on engineering or contractor estimates as opposed to actual data, it is recommended that a study be conducted to determine how sensitive the solution is to variations in some input parameters. Analyzer provides a convenient method of performing sensitivity analysis by providing the user with a wide range of sensitivity factors that are applied at run-time and do not affect the data stored in the databases. Sensitivity analysis can be applied either globally on all values of a parameter or can automatically assess a sequence of changes to a specific value.

Trade-Off Analysis

Analyzer provides for full trade off analysis to test the "what if?" scenarios. By comparing the results of a comparative analysis against the baseline, the user can determine the relative merit of different decisions.

User benefits

Analyzer has been a tool of choice for many customers and various applications for over 30 years. Over this time users have recognized the many benefits from using this flexible and intuitive modelling environment.

"We Use Analyzer..."

Pennant recognizes that there are many choices for supportability modelling tools – so why choose OmegaPS Analyzer:

- Long history of development supported by DND defence scientists.
  - Engineering tool integrated with the Equipment Supportability Baseline, including all LSAR data standards.
    - Optimizes to system level objectives
- International user base on various product developments.
  - Supported by Pennant's experienced analysts and engineers.
    - More than just a spreadsheet!

- a supportability engineering modelling and simulation tool that analyses support solutions for complex products, including multi-indenture logistics organizations
- a modern technology product that simplifies the analysis process and interfaces with current data transfer standards
- identifies preferred product sustainment strategies through options analysis
- applies sensitivity and risk analyses to improve awareness of variance and data quality impacts and of major cost drivers
- conducts through-life performance assessment of operational supportability solutions
- supports operational readiness at an affordable life cycle cost
- generates availability simulations of product support solutions

Optimize product maintenance and support solutions by understanding life cycle costs and sustainment resources needed to meet your operational demands.

For more information and to learn more about the IPS Product Suite, visit us at www.pennant.com or email us at sales@pennant.com to schedule a demonstration.