Analyzer

Modelling and analysis to make data-driven decisions

Part of the Auxilium Suite

Pennant

Analyzer is a fast, accurate and user friendly optimisation tool that delivers value and provides analysis to support informed decisions, by understanding the life cycle costs and sustainment resources needed to meet operational demands to maximize operational efficiency.

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.

- a supportability engineering modelling and simulation tool that analyses support solutions for complex products, including multi-indenture logistics structures
- a modern technology product that simplifies the analysis process and supports many current data transfer standards
- an extensive and user definable dashboard for data-driven decision making
- 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
- supports operational readiness at an affordable life cycle cost
- generates availability simulations of product support solutions

Analyzer delivers value and provides analysis to support data driven decisions

Easily determine the best repair policy for spares	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 lifecycle.
Enhanced GUI to ensure consistency of system definitions	Analyzer's use of a central database and data management simplifies data entry and ensures consistency of system definitions.
Simplify the process	Analyzer simplifies the analysis process and interfaces with current data transfer standards.
Improve data driven decisions	It enables "what-if" analysis to compare the impacts of support options (or actual data feedback) and thus informs data-driven decisions to optimize product support solutions across the life cycle.
Intuitive availability assessment model	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).
Be operationally ready	Supports operational readiness at an affordable life cycle cost and generates availability simulations of product support solutions.
Complete all associated data with Visible (Guided) Data referencing	On display standards-based help and guidance that is user configurable.
"Measure of effectiveness"	Analyzer has five measures of effectiveness that can be applied: Expected System Delay Time; Expected Number of System Backorders; Operational Availability; Intermittent Availability; Probability of Mission Accomplishment.

Cost Effective Operational Efficiency

Maximizing operational efficiency is based on understanding the desired outcomes. These include how available the system must be to users and at what cost, within applicable constraints. Optimal design decisions are the foundation of delivering a cost-effective support solution. Analyzer, part of the Auxilium suite, is a support solution modelling and analysis tool.

When designing and managing a Product Support solution, the primary business driver is to reduce the cost of ownership. The challenge of cost-effective equipment support is pushed to the limits. Two of the most desired objectives of equipment ownership are: **reduce operating costs** and **increase equipment availability.**

Is this really achievable?

Yes, it is! Effective 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.

Analyzer's primary functions include Life Cycle Cost (LCC) Optimization, Level of Repair Analysis (LORA), Spares Optimization, and Availability Modelling. Analyzer is fully integrated with the Logistics Product Data (LPD)/Logistics Support Analysis Records (LSAR) data in GenS.

Analyzer is an important tool for managers, decision-makers, engineers, Integrated Logistics Support (ILS) teams and other staff involved in system design, system acquisition, proposal writing, support solution optimisation, in-service support management and through-life support.

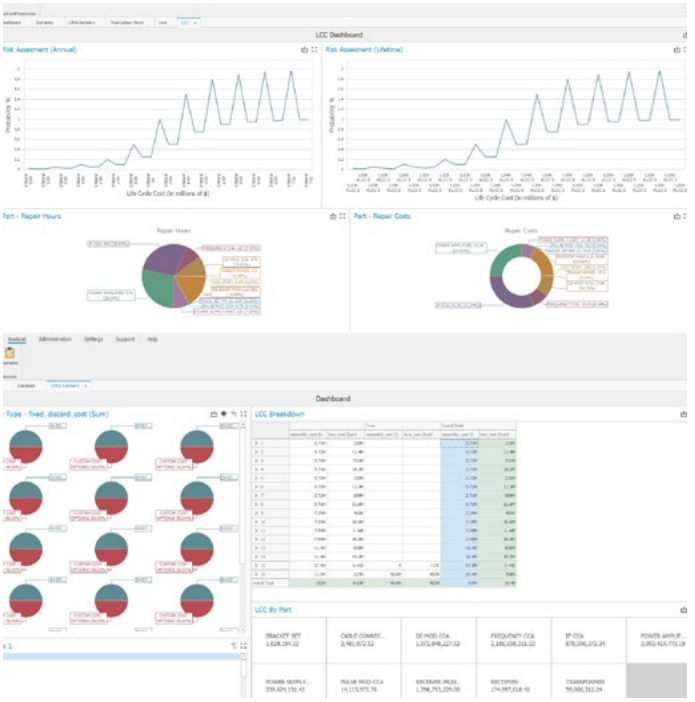
Analyzer

Analyzer will determine the best repair policy for equipment and reduce the cost of owning spare parts. Cost estimation and prediction supports decisions based on LCC. Analyzer delivers value and provides analytical and decision support at all points of a product's lifecycle.

Analyzer is either a stand-alone decision modelling and analysis tool or integrated with GenS 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, and S3000L) additionally, Analyzer can be aligned with any of your bespoke standards through data exchange.

The Analyzer Dashboard

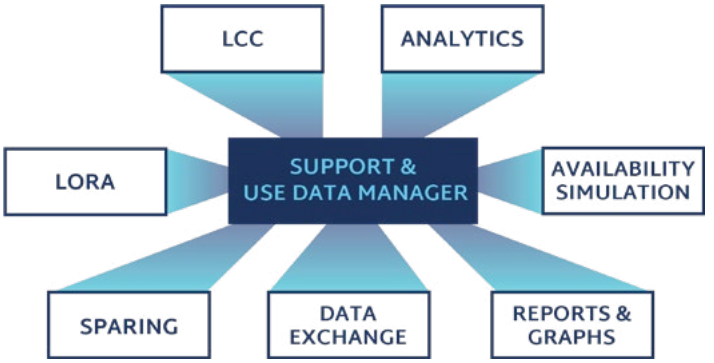
A graphical view of data is very useful when making decisions. Analyzer provides dashboards, including fully user-definable displays, that will present your data in ways that make decision making easier.

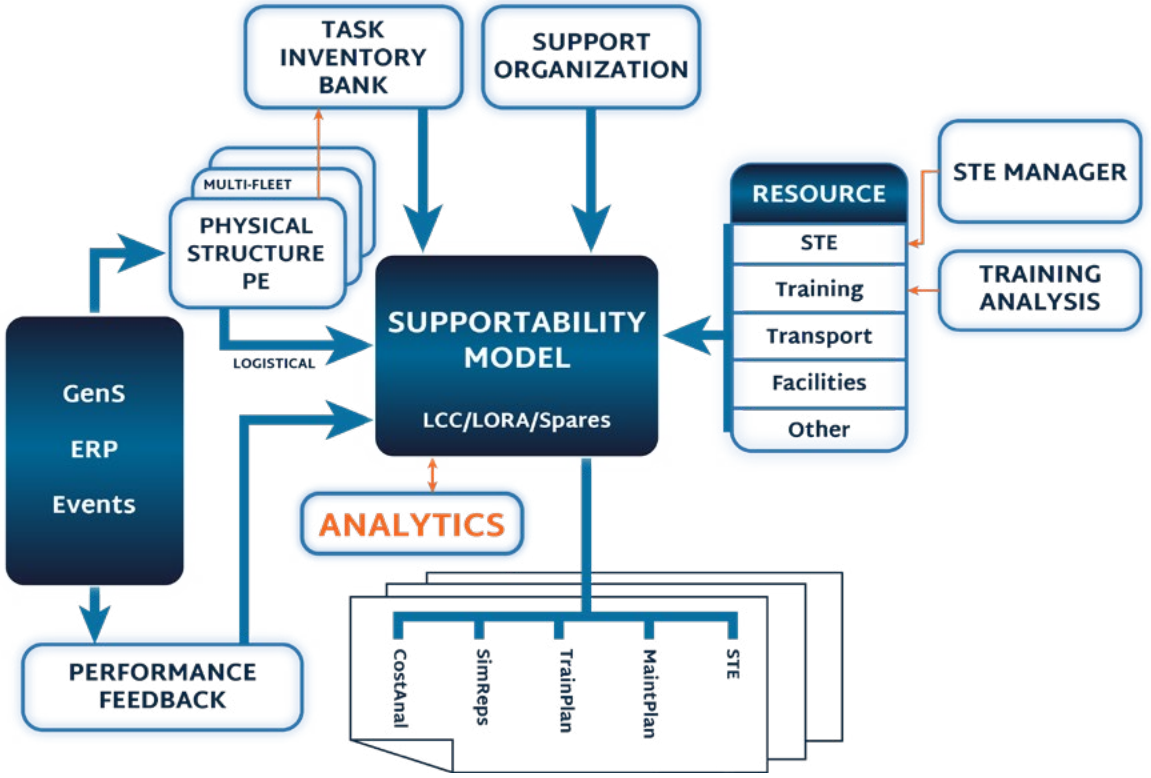


Analyzer helps decision makers by presenting the dashboard and reports. The analyst can easily go 'behind' the dashboard to populate the supportability data sets and provide the alternatives for trade-off and sensitivity analyses. All of the data and refreshing the dashboards is applied through defining operational and support scenarios.

Analysis Modes

Analyzer provides 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 management and user interface are used by each of the modelling modes of Analyzer.





The LCC Model

Analyzer is designed to determine the 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 in a cost breakdown structure 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. **The Analyzer dashboard presents graphs and reports to assist the decision-making process.**

The Sparing Model

Sparing determines the optimal allocation of the quantity of repairable and consumable spares within a defined operations and support organization, **recommending minimum inventory requirements to meet desired availability goals for least spares cost.** It handles line replaceable units that 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 uses:

- **Operational Availability**
- **Expected System Delay Time**
- **Expected Number of System Backorders**
- **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 and Repair 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.

Modelling Support Tasks

Analyzer includes the definition of support tasks to allow for the more detailed modelling of your support solution. Using GenS O & M tasks, all parts in the logistical structure can have specific tasks assigned. Each task is driven by some trigger (i.e., failure event, scheduled maintenance, inspection) and has task techs and resources assigned.

Using the task-based analysis a more detailed **LCC can be estimated and detailed labour hours determined.**

Model Based Product Support

Analyzer is a valuable modelling tool to support your Model Based Product Support (MBPS) application. As a through-life modelling capability using the Baseline Comparison System approach to analysis, Analyzer will predict outcomes of alternative solutions during Options Analysis; **determine optimal support solution designs during acquisition; and evaluate operational data feedback to assess performance providing improvements during the in-service operational life.**

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.

Analyzer provides significant benefit for the user:

Smart Designer - Designed for affordable life cycle operations

Smart Buyer - Cost-effective option from multiple bids purchased

Smart Owner - Reduced-cost support achieves operational goals

Smart Sustainment - Measure outcomes, improve performance

Analyzer