

OmegaPS Product Description



OmegaPS is a software product used to reduce the support cost of major capital equipment in the defence, aerospace and transportation markets. The true cost of ownership of a major asset such as a train, tank or airplane is much more than the purchase price. The speed and frequency of maintenance and repair has a substantial affect on overall cost. Integrated Logistic Support (ILS) is a methodology that identifies and minimises life cycle costs, by providing better information earlier and can be used to influence design at an early stage.

OmegaPS:

- is the world's leading Logistics Support Analysis package.
- conforms to current and previous standards, ssuch as GEIA-0007, Def Stan 00-60 and Mil Std 1388-2B, mandated for defence contracts.
- provides a complete system for the generation and capture of Logistics Support Analysis (LSA) data and allows engineers to re-use the data for production of technical documentation, provisioning activities and in-service analysis and assessment of recommended design changes.
- has been designed and developed using Oracle® thus ensuring longevity and platform and operating system independence.
- will operate in a stand-alone, client-server or web based architecture.
- has been designed by logistics specialists to ensure logisticians have a truly integrated user friendly tool-set allowing them to focus on the job of engineering rather than understanding software and databases. Through user interaction at international user groups, OmegaPS is now recognized as being on the world forefront, supported and maintained by dedicated developers, support personnel and design engineers.
- has many time saving features. With our work-flow navigation system enhanced with an internal 'navigator' engineers save hours of laborious data creation and manipulation tasks. Users are able to work in a logical manner addressing the various disciplines such as structures, maintenance task analysis, reliability and failure analysis, as well as data uploads, transfers and reporting.
- is currently the only LSAR that fully supports Def Stan 00-60 Issue 1, 2, 3 & 4 as well as Mil Std 1388-2B with the ability to migrate projects between the various standards. In addition, specific modules are available for Canadian Provisioning and Australian Defence Force specifications.
- OmegaPS software is currently in use by many major manufacturers worldwide including: Boeing, BAE Systems, Alenia Marconi, CAE, Thales, HII-Ingalls, Lockheed Martin, Airbus Helicopters, Oshkosh Defense, Rheinmetall, as well as government organizations including: TRW, Australian Defence Forces, and Canadian DND.

OmegaPS Suite Capabilities:

Logistic Support Analysis	Life Cycle Analysis	Provisioning	Maintenance Management	Training and Support
LSA Management	Integration with LSAR	Canadian, Australian, US and UK Defence Provisioning models	Configuration Management	Training On-Site Or Pennant Offices
Reliability, Availability and Maintainability	Level of Repair Analysis	Obsolescence Management	Reliability Centred Maintenance	Hands On Computer Training
Maintenance Task Analysis	Life Cycle Costing	NSN family identification	Point of Maintenance	Web Conference Training
Task Data Module Generation	Sparing Analysis	SAP Integration	Integration of Documentation and Multimedia	Videos and PDF Instruction Material
Change Management	System, Mission, Single Item, and Sensitivity Analysis	In-Service baseline management	Life Cycle Analysis	On-Site Installation
Commenting System	Measure of Effectiveness	Illustrated Parts Publications	Living RCM	Web Conference Support
Impact Analysis	Attrition Modeling		Integration with MMIS	User Group Meetings
Ad Hoc Reporting	Pre-System Acquisition			ILS Consulting
Data Transfer	System Acquisition			Web Downloads
Exchange RCM Logics	Sustainment of Equipment			
Def Stan 00-60, GEIA-0007, US MIL-STD-1388-2B, MIL-PRF-49506, Canadian D-01-100-214 & A-LM-505-000/AG-001-004 Australian DEF(AUST)5962 US Navy ROMIS US NAVSEA ICAPS				

OmegaPS Reliability Centered Maintenance Module



OmegaPS RCM allows you to tailor RCM logic to match user defined logic trees. Most RCM software tools are based on a specific standard such as MSG-3 or RCM 2, etc. With OmegaPS RCM module you can create and store many different logics that are then available to engineers for specific project requirements. The tailoring activity is carried out via the OmegaPS RCM editor (See Figure 1).

User named RCM Logic

Create the RCM Logic Tree

Legend:

- Q# : RCM Series Question Number
- Af : Affirmative Answer - Next Question
- AfT : Affirmative Answer - Disposition Set
- Ng : Negative Answer - Next Question
- NgT : Negative Answer - Disposition Set
- Dsp : RCM Series Disposition Letter

Question Text:

Is the occurrence of a functional failure evident to the operating crew during the performance of normal duties?

Disposition Text:

EVIDENT SAFETY EFFECTS: Tasktasks required to assure safe operation.

Record: 2/2

Define the questions for the RCM Logic

Define the disposition text for the RCM Logic

From within the OmegaPS System you can select any of the defined RCM Logic created by the OmegaPS RCM tailoring tool and complete the defined questions (See Figure 2).

RCM Logic declared in the AA table

Operations and Maintenance Requirement

Service Designator Code: A

Reqd Max Time to Repair: 5.00

Reqd Percentile: 90

Required Availability:

- Achieved: 85.000000
- Inherent: 90.000000

Mean Active Maint. Downtime:

- Operational: 1.5
- Technical: 1.2

Required MTTR:

- Operational: .70
- Technical: .90

Number of Locations: 23

Crew Size: 0

Total Systems: 1000

RCM Logic Utilized: AMCP-750-2

Interoperability

War / Peace

Shipping



From within the RCM area of OmegaPS the defined logic can be selected and the engineer can then complete his analysis in the LSAR, rather than off-line (See Figure 3).

RCM Logic for failure modules
selected from pop-up list of AA

LCN	ALC	Service Code	RCM Logic
LEAA	01	A	AMCP-750-2
LEAA	00	A	AMCP-750-2

Included for each Yes or No is a field for entering the rationalisation for recording the reason why an engineer decided on each response. A 'road map' illustrates the logic tree for review and data entry. Also included is the requirement for the application of a maintenance task (See Figure 4).

RCM Logic tree presented
to engineer for analysis

Question # 01 Logic: AMCP-750-2

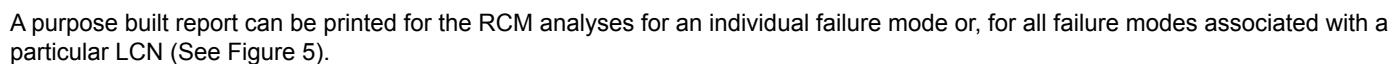
Is functional component failure critical for safety or mission?

☐ Yes ☐ No

Previous Question Next Question Suspend Analysis Quit

Rationalization Notes and Comments

Engineer can record his
reasons for yes or no answer



The screenshot shows the 'RCM Analysis Request' window. The title bar includes 'RCM Analysis Request' and 'Page: 1 of 1'. The window is divided into several sections:

- RCM Engine Head**: Contains a table with columns for 'Task', 'SOR', 'ALO', and 'Type'. The first row is 'Task: ENGINE ASSEMBLY', 'SOR: LRAA', 'ALO: 00', 'Type: F'.
- Task List**: A list of tasks, including 'ENGINE VENT START', 'ENGINE VENT STOP', 'ENGINE VENT START', 'ENGINE VENT STOP', 'ENGINE VENT START', 'ENGINE VENT STOP', 'ENGINE VENT START', 'ENGINE VENT STOP', 'ENGINE VENT START', 'ENGINE VENT STOP'.
- Task Details**: A table with columns for 'Task', 'SOR', 'ALO', and 'Type'. The first row is 'Task: ENGINE ASSEMBLY', 'SOR: LRAA', 'ALO: 00', 'Type: F'.
- Task Description**: A list of tasks, including 'ENGINE VENT START', 'ENGINE VENT STOP', 'ENGINE VENT START', 'ENGINE VENT STOP', 'ENGINE VENT START', 'ENGINE VENT STOP', 'ENGINE VENT START', 'ENGINE VENT STOP', 'ENGINE VENT START', 'ENGINE VENT STOP'.
- Task Analysis**: A table with columns for 'Task', 'SOR', 'ALO', and 'Type'. The first row is 'Task: ENGINE ASSEMBLY', 'SOR: LRAA', 'ALO: 00', 'Type: F'.
- Task Results**: A table with columns for 'Task', 'SOR', 'ALO', and 'Type'. The first row is 'Task: ENGINE ASSEMBLY', 'SOR: LRAA', 'ALO: 00', 'Type: F'.

A blue arrow points to the 'RCM Analysis Request' title bar.

OmegaPS Progress Management Module



Now you can monitor and track engineering activities in real-time within OmegaPS using the new OmegaPS: PM (Progress Management) module.

Working with BAE Nimrod team we identified a need to monitor, and track activity (called 'Actions') within the OmegaPS LSAR as data changes and/or new data is added to a project. Engineers need to be aware of the status of Actions with a visual reminder of what they need undertake, such as analyse, re-analyse, do nothing or perhaps just be aware of changes.

OmegaPS: PM achieves this and more in a unique way within the OmegaPS suite. Because OmegaPS: PM is totally integrated into the core OmegaPS: PS LSAR the status of any action on any activity is presented accurately and in real time to the engineers on-screen. In addition a history of all actions is maintained with reasons for any changes logged, providing a full audit trail of actions undertaken as the LSAR evolves.

Key Features

Cascade A powerful automatic cascade that when any progress status at a level changes then higher and lower level items identified in a user determined logic tree automatically setting the 'Actions' to a pre-defined status.

Hot Button Because OmegaPS: PM is integrated, the OmegaPS: PM status and history screens can be accessed by a hot button from any of the OmegaPS: PS data screens related to the OmegaPS: PM activity.

Configurable Project managers can set their own progress status marks, define actions and define the cascade logic. Teams can be assigned their own areas of responsibility but have visibility of the status of all actions.

Data Maturity Project managers can set their own data maturity definitions.

Audit Log On screen log of all the Actions, their status, data maturity, listed chronologically against engineer and date, with the reason for that change.

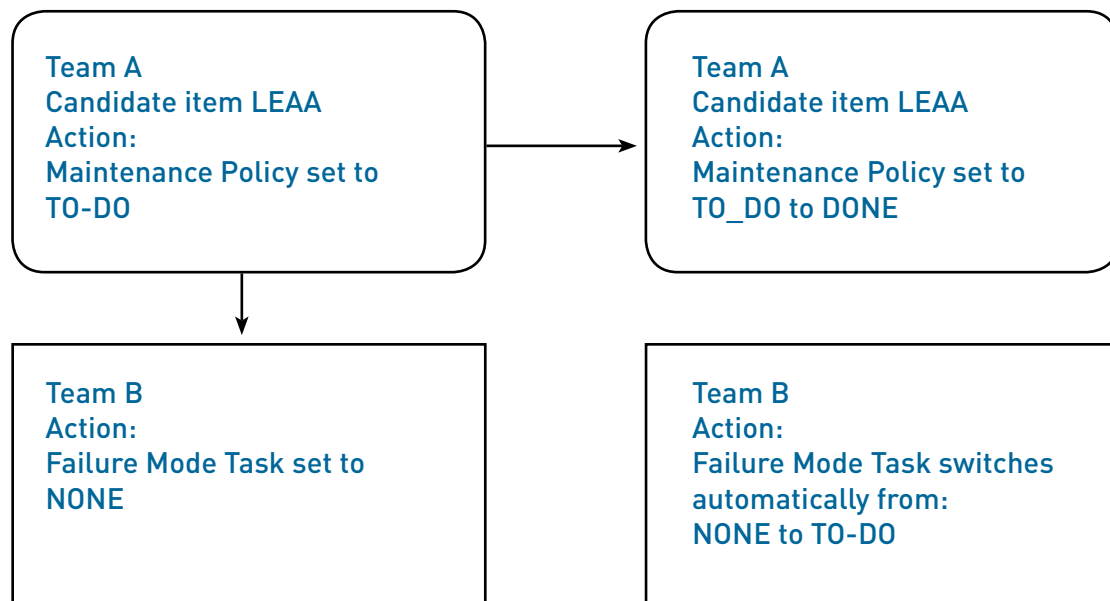
Outputs Output for any team the action status for any particular progress mark, for example to show what the 'Reliability' team have in 'Re-work'. Tailored outputs to meet additional analysis requirements such as provisioning or training can be provided.

Setting Up OmegaPS: PM

OmegaPS: PM is fully configurable to meet the specific business processes decided on by any project or program. Within the Security Administration module of OmegaPS: PS the configuration of OmegaPS: PM is carried out and covers 5 areas:

- 1. Mark Details:** Here we set up the library of the types of progress marks for the company. E.g. Work, Re-work, To-do etc. For each progress mark we can set what are the following marks allowed to be entered by the engineer once he actions the progress mark.
- 2. Action Details:** Against pre-determined 'Action Types' such as Candidate Item, or Maintenance Task, 'Actions' can be defined as a library. For example 'Support Equipment Identified', and 'Provisioned Item Identified'. Then the logic tree can be built to identify that for the status of that Action what the existing status for following actions will change to. In addition relevant data maturity levels (see Data Maturity) can be assigned for that Action.
- 3. Team Actions:** Here we set up what actions are owned by what Teams. For example 'Reliability Team' may only own the 'Reliability Prediction' Action but the 'Maintainability Team' may own 'Design Data', 'Failure Mode Task', 'Support Equipment Identified', and 'Provisioned Item Identified' Actions.
- 4. Data Maturity:** In effect a library is set up for the types of data maturity to be assigned to particular action.
- 5. Managed Projects:** Here projects are attached to the Progress Management function.

Example: This is a very simple example of how the logic would flow: Team A is responsible for Action Type 'Maintenance Policy' Team B is responsible for Action Type 'Failure Mode Task'



Team B can see they now have analysis work to do for Failure Mode Tasks for LEAA. In practise the switching from TO-DO to DONE of the Maintenance Policy may set off a large cascade through many follow on actions automatically switching their status providing visibility to the engineers of further work, re-work or whatever the logic has been set to.

In addition there are pre-defined 'Reasons for Change' displayed against each action when automatic switching through the Cascade occurs. However if an engineer manually switches the status he can enter his own reason for that change.

All changes are logged with the date and the reason for change and can be displayed on screen via a hot button, providing a full audit trail of all the changes made to any 'Actions'.

In Summary

OmegaPS: PM provides organisations with a low cost means to monitor and track their work status whilst the LSAR data evolves. It provides a fast real-time picture for engineers enabling them to carry out their analysis efficiently without having to set up external procedures to fulfil the requirement. With various outputs and downloads, data transfers, reporting and other analysis can be undertaken on data that is in the correct state. This saves much wasted re-work and re-analysis time. Being part of the OmegaPS: PS suite ensures continues compliance under our maintenance contracts as the OmegaPS: PS suite is updated.

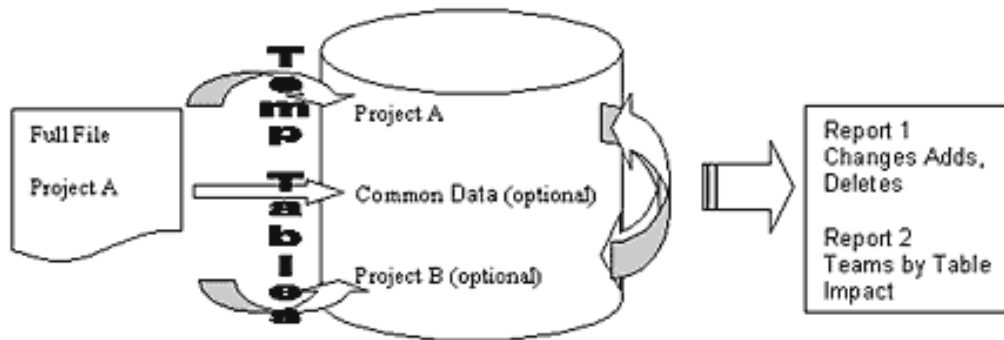
OmegaPS Impact Analysis Module



This powerful analysis module allows you to assess the impact of loading a full file into OmegaPS prior to committing the data to the database.

The load file (Project A) is stored in temporary tables and then compared with:

- The data against Project A in the database.
- Another Project (B) with which you also would like to compare. Perhaps a Master Project into which Project A is to be added later.
- The common data (parts, support equipment, skills, facilities etc.) stored in the database.



This is very useful if you are receiving sub-contractor data and need to be sure there is no risk to existing data within your database from the new data.

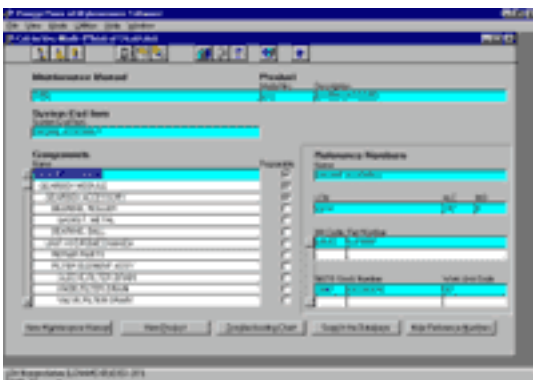
The process when finished produces 2 reports:

- **Report 1** - Identifies the additions deletions and changes that will occur if you proceed with the upload.
- **Report 2** - Lists teams against tables to review Report 1 outputs for agreement to continue or reject.

OmegaPS Point of Maintenance



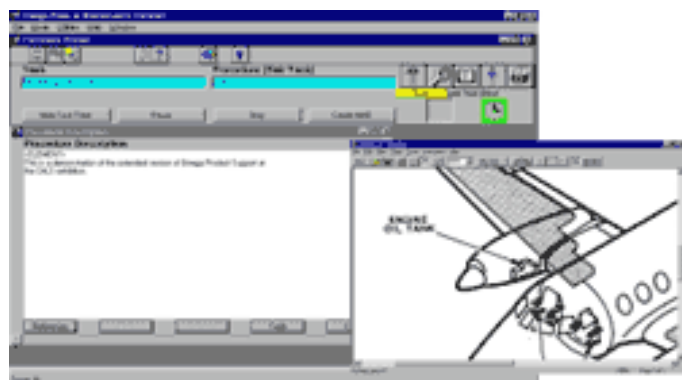
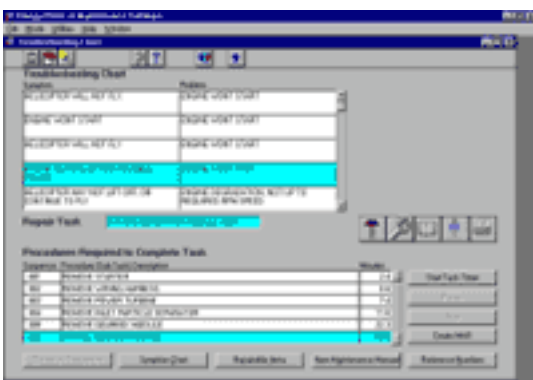
OmegaPS Point Of Maintenance directly accesses the OmegaPS supportability-engineering database to present maintenance data in the form of an IETM. Engineers can use this for carrying out their maintenance tasks or as a review process of an evolving supportability engineering analysis.



Allows searches of the physical or functional structure of the equipment; view any additional information, such as illustrations and parts details quickly.

Search by repairable items, or look up preventative or corrective maintenance actions sorted by various criteria such as 'Daily', Weekly, etc.

A troubleshooting chart leads to step-by-step procedures and identifies the tools, spares and personnel required to carry out a repair activity. In addition supporting information can be invoked.



Detailed procedure descriptions including supporting diagrams, videos etc. are available on line. Any activity can be timed and logged into a Maintenance Activity Report (MAR). The MAR is created by the engineer for feedback to improve or correct any deficiencies in the repair activity undertaken.

OmegaPS Analyzer



Cost Effective Support

In these days of economic constraint yet increasing demand for performance, the challenge of cost effective equipment support is pushed to the limits. Two of the most desired objectives in the operation of complex assets are: Reduce operating costs, and Increase equipment availability.

Is this really achievable?

Yes it is! Proper analysis and systematic processes are applied to develop Performance Based Supportability. In these processes, analytical tools are used to develop, store and evaluate information about operational equipment and the support environment. The Canadian Department of National Defence (DND) has developed a set of analytical models over the past 15 years. In a teaming arrangement with Pennant Information Services, these products have been brought to the commercial market.

OmegaPS Analyzer

Is a Windows based product that provides the power of a modern GUI and the sophistication of the embedded proven DND algorithms. OmegaPS Analyzer can determine the best repair policy for equipment and reduce the cost of spare parts. OmegaPS Analyzer comprises three analysis models: Sparing, LORA and LCC.

OmegaPS Analyzer is a stand-alone software tool. However, we have integrated OmegaPS Analyzer with OmegaPS LSAR to provide much of the equipment structure and relevant data for modeling.

OmegaPS Analyzer R4.0

OmegaPS Analyzer R4.0 was released for general use in December 2008. For more information on this new release please follow this link: [OmegaPS Analyzer R4.0](#)

The Sparing Model

Sparing is primarily designed to determine the optimal allocation of the quantity of repairable spares within a defined maintenance organization, resulting in, minimum inventory requirements for a stated equipment measure of effectiveness (MOE) or, maximum MOE for a given spares investment. In other words most availability for least cost!

The screenshot displays the OmegaPS Analyzer software interface for the Sparing Model. The window title is "E:\OmegaPS - E:\OmegaPS\OmegaPS.exe". The menu bar includes File, Edit, Data, Analysis, Options, Window, and Help. The toolbar contains icons for file operations and analysis. The main window is divided into several sections:

- Equipment Structure:** A tree view on the left lists equipment components: EQUIPMENT, COMPUTER 486, 35 FLOPPY DRIVE, 4MB RAM, ETHERNET CARD, HARD DRIVE (40MB), I/O CARD, MAINBOARD, POWER SUPPLY, VIDEO CARD, KEYBOARD, MONITOR 14 INCH, and MOUSE.
- Information for all modes of analysis:** Fields for Item Name (EQUIPMENT), Description (EQUIPMENT), Data Code (10), and a dropdown for Equipment Type (10). It also includes checkboxes for Repairability, Repair Cycle Time, Repair Time, and Training Time.
- Information for LORA and LCC analysis modes:** Fields for Repair Weighting, Maintenance Organization, and Repair Policy.
- Project Constants:** A section for setting project parameters, including Equipment Organization, Maintenance Organization, Life Cycle Data, and Scheduled Maintenance Constants.

The **Scheduled Maintenance Constants** section includes the following values:

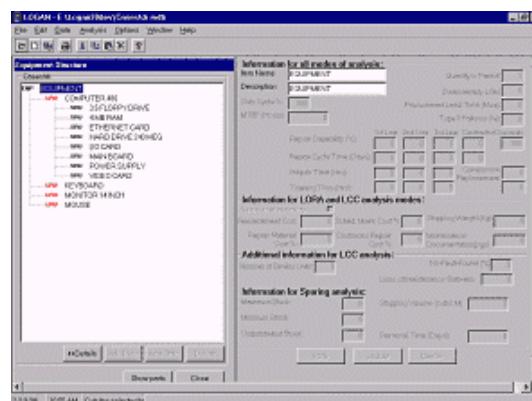
Parameter	Value
MTBM (Hrs)	1200
Down Time (Hrs)	8
Actual Repair Manhours	0.5
Training Time (Hrs)	4
PE Maintenance Constants:	
Mean Admin Time (Hrs)	8
LRU Replacement (Months)	0.5
PE Test Time (Hrs)	0.05
Training Time (Hrs)	56

The LORA Model

The Level of Repair Analysis (LORA) model, determines the most cost-effective maintenance policy for each replaceable unit of a piece of equipment. LORA examines the costs of labor, training, contractor repair, transportation, inventory, and documentation for every disassembly and repair option possible within the specified capability of the Maintenance Organization. After making the initial repair versus discard decision, LORA will select the optimal location for repair of the defective unit.

The LCC Model

This model was designed to determine the Life Cycle Cost (LCC) of a piece of equipment. The costs for R&D, Acquisition, In-Service and Disposal are considered with particular emphasis placed on the support activity costs during the In-service phase. The allocation of spares recommended by the Sparing model can also be taken into consideration. The LCC model will determine cost variance over a number of years.





Level of repair

Systems need to be maintained if they are to be ready for use when required. When new equipment is fielded, decisions must be made as to whether a failed item should be repaired or discarded. OmegaPS Analyzer enables the user to choose a maintenance policy based on experience and design, then use the LORA model to improve it.

Cost Savings

The LORA model compares costs between the optimal disassembly and repair policy and the cost of the original maintenance policy. It provides the user with the possible net savings (if any) for each component and the total savings possible if every maintenance recommendation is adopted. The user has the capability of assessing the inflationary effects on the maintenance policy, essential for long term planning. The inflation categories are:

- Consumables;
- Manpower;
- Maintenance;
- Transportation;
- Administration.

The screenshot shows the LORA Program window with the following data:

Project name:		Phase Equipment		Maintenance Organization	
Project name:	TANK	SRU:	4	1st Line:	4
System Life (Yrs):	5	SRU:	4	2nd Line:	2
Sensitivity factors:		Module:	2	3rd Line:	3
Last Run:	15/11/96 11:25:01 PM	Total:	10		
Last Chg:	16/07/97 11:04:13 AM				

Work Hrs/Month/Tests	Line of Maintenance			
	PE	1st	2nd	3rd
Training Rate:	150	150	150	150
Maintenance Turnover (1/Yr)	4	2	2	2
	25	25	25	25

Buttons: Update, Cancel, Close

Substantial savings can be realized when an optimal disassembly and repair policy is chosen. The LORA model provides disassembly levels for all components of an equipment. It compares the cost of the optimal disassembly policy with the cost of the original disassembly policy provided by the user. In the case of any replaceable unit, the optimal disassembly policy is conditional on the disassembly policy of its parent.

Shared Assets

Support and Test Equipment that can be shared among several items have their allocation to echelons coordinated with the maintenance plans of these items, with infeasible combinations being eliminated.

Although fixed set-up costs are ignored in the analysis, the module does provide the user with the ability to perform marginal value analysis on the costs of facilities with respect to the number of repairs performed at a specified site.

Complete LCC

Provides the Life Cycle Cost of the project along with details in the form of a breakdown of recurring costs, a tally sheet of all fixed and recurring costs with the cost categories directly captured by the module and an annual expenditure summary. It also provides information on manpower i.e. the number of direct maintenance man-hours required by repair site and repair echelon. This helps to define the number and skill levels of equipment maintainers. Also, the annual cost of maintaining each item in the system is provided. Costs are evaluated per annum and per failure. The model makes use of the number of spares per site recommended by Sparing. It accounts for acquisition costs of the spares and cost of transporting the spares to their maintenance or storage site.

LCC Project

Project name: LANT

Analysis Mode:
☒ Complete LCC
☐ No Spares LCC
☐ Quick Cost

Last Run: 23/06/97 12:37:58 PM
 Last Chg: 16/07/97 2:21:32 PM

Prime Equipment:
 LPU: 4
 SRU: 4
 Module: 2
 Total: 10

Maintenance Organization:
 1st Line: 4
 2nd Line: 2
 3rd Line: 1
 Total: 8

Sensitivity factors: ☒
 Use test equipment: ☒

	PE	1st	2nd	3rd
Work Hrs/Month/Tech	150	150	150	150
Low (%)	100	100	100	100
High (%)	100	100	100	100
Maintenance Turnover (1/A)	25	25	25	25
Training Ratio	4	2	2	2

Accept Cancel Close

No Spares

Equivalent to the complete LCC analysis but without the initial spares - the sparing model is not used.

Quick Cost

Assesses the LCC without much knowledge of the maintenance organization or the hardware breakdown structure. It can be particularly useful at the beginning of a project when the available information is limited.

Risk Analysis

A capability to express uncertainty of cost and failure rate is provided. If used, a risk assessment can be conducted to determine the uncertainty around the LCC estimates obtained. A cumulative probability distribution of LCC is calculated which expresses the likelihood that the life cycle cost does not exceed a given dollar amount.

Other Life Cycle Costs

Allows the user to define any other specific costs. The costs are defined based on the cost measure, class and type. With two modifiers available, this feature allows for almost any additional cost to be modeled accurately.

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. OmegaPS 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 effected either globally on all values of a parameter or can automatically assess a sequence of changes to a specific value.

Trade Off Analysis

OmegaPS 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.



OmegaPS ADO represents an evolutionary step in logistics data management forming the core repository for the tri-service requirements of the Australian Defence Organisation (ADO) as specified in DEF(AUST)5692 [Logistic Support Analysis Record Requirements for the Australian Defence Organisation]. OmegaPS ADO sets the foundation for the next generation of Logistics Information Systems within the ADO.

Features

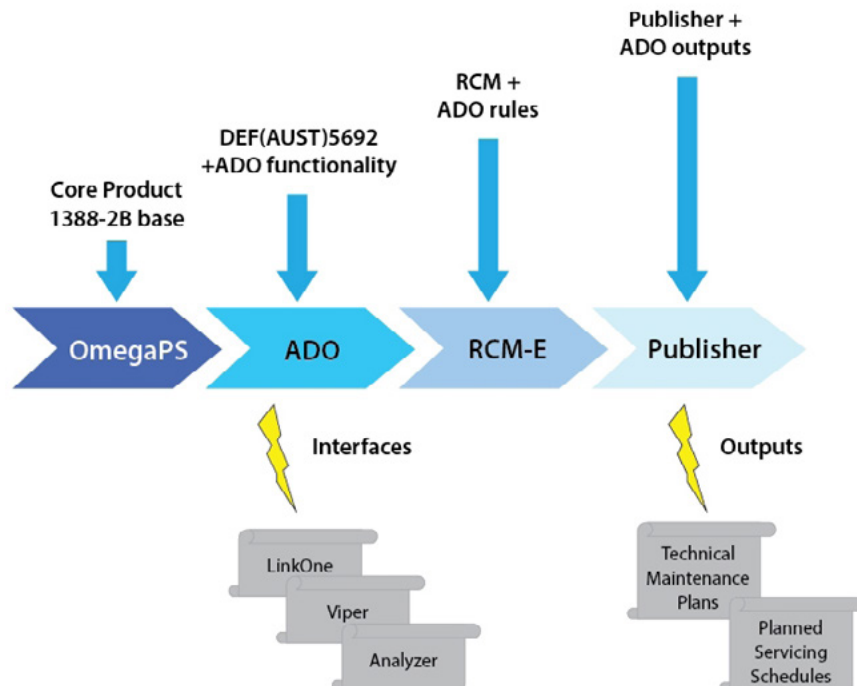
- World leading logistics data management supplemented with DEF(AUST)5692 compliant functionality.
- Implements all DEF(AUST)5692 extended data tables, business rules, and functional requirements.
- Produces Technical Maintenance Plans (TMP) conforming to DI(AF) AAP7001.031 via the Publisher module.
- Produces Planned Servicing Schedules (PSS) conforming to DI(AF) AAP7001.064 via the Publisher module.
- Interfaces with the ADO approved supportability model OmegaPS Analyzer for Level of Repair Analysis (LORA), Life Cycle Costing (LCC), & Sparing Analysis.
- Implements ADO functionality for Reliability Centred Maintenance criticality via the OmegaPS RCM Editor module

Benefits

- Built by Pennant and selected by the ADO as the default browser enabled LSAR application for the Defence Restricted Network.
- OmegaPS ADO sets the standard as the first commercial product to implement DEF(AUST)5692.
- Integrates with OmegaPS corporate solutions providing faster, more efficient data management.

The OmegaPS ADO package

- OmegaPS.
- OmegaPS ADO.
- OmegaPS RCM-E.
- OmegaPS Publisher.



Omega Technical Support



This area is intended to provide a new dimension to our support services.

Contact

Technical Support Email Contacts

- **UK and Europe** support@pennantplc.co.uk
- **Australia** support@pennantaust.com.au
- **North America** omegasupport@pennantcanada.ca

For OmegaPS system configuration details, please contact your Technical Support centre.