

Power by the Hour – Make money on Outsourcing of Maintenance and Logistics Support by analysis

**Prepared for Luleå Technical University May 2001-05-28
Olof Wååk Adj Professor
Systecon AB, Luleå Technical University**

1 INTRODUCTION

In many companies and other organisations we see a concentration on their core business. Airlines do not see the need of maintaining and supporting aircraft engines. In fact they do not see the need of owning the engines. They like to pay a fix price for the usage –power by hour. A similar trend can be seen e.g. for simulations for training airline pilots. The wellknown Canadian simulator producing company CAE co-operates with a number of airlines (and also military branches like the RAF) and charge a fix price for pilot training.

This change in paradigm puts a lot of risk and responsibility on the contractors – but also a profit potential.

2. PUTTING THE INCENTIVES RIGHT

When a contractor has a fix income fix commitment contracted of a long period of time he stands a considerable risk of loosing a lot of money but also stands the possibility of making a lot of money. He now gets the incentive to handle the maintenance and logistics support at a low cost but still achieving high availability. A lot of the parameters that influences the cost and availability become interesting. He can make money by

- Building a better system
 - Modifying an existing system
 - Improve the Logistic Support Organisation
 - Optimise the spares holding
- etc, etc

The list of parameters to play with is virtually endless. The trick is to use them.

3. SPARES OPTIMISATION- THE KEY TO THE ANALYSIS

A useful tool is a multi-indenture, multi-echelon spares optimisation program

OPUS10 is the leading program in this class (more than 500 licenses within over 100 different organisations in over 18 countries) and hence we use OPUS10 as a denomination for this class of tools.

OPUS10 is not only sensitive to the system input data, it is also sensitive to the logistics support organisation (LSO). An example of an LSO is given below.

ORGANIZATION

Quantity System ID

222 EQSYS40

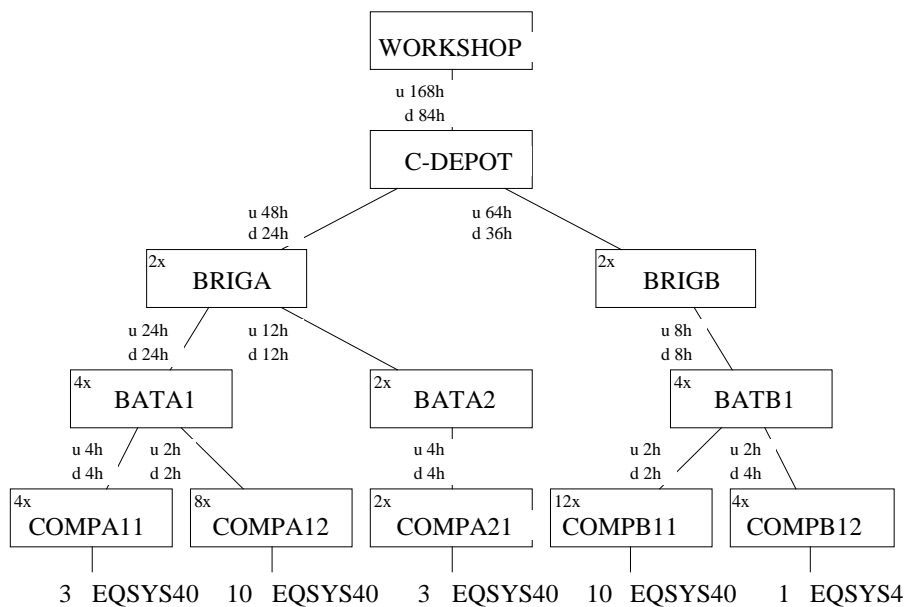


Figure 1. A multi-echelon organisation

As seen from the figure there are a number of options available like

- transportation times
 - number of nodes
 - base repair fractions
- etc

A breakdown of a system is shown below.

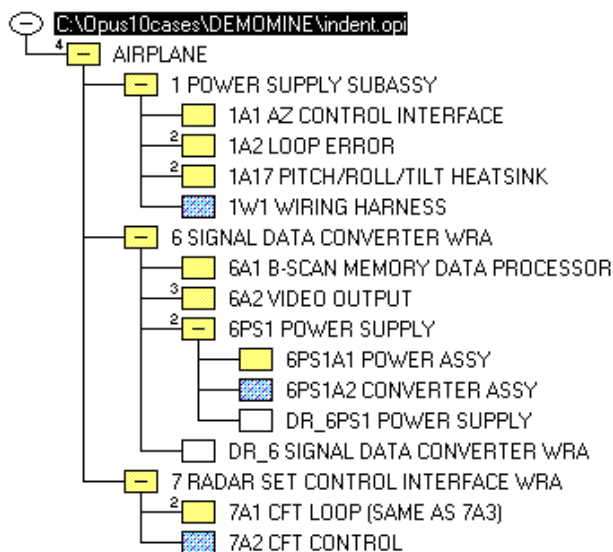


Figure 2. A multi-indenture system break-down (from OPSA)

The data related to those areas are inputted into OPUS10 as shown below.

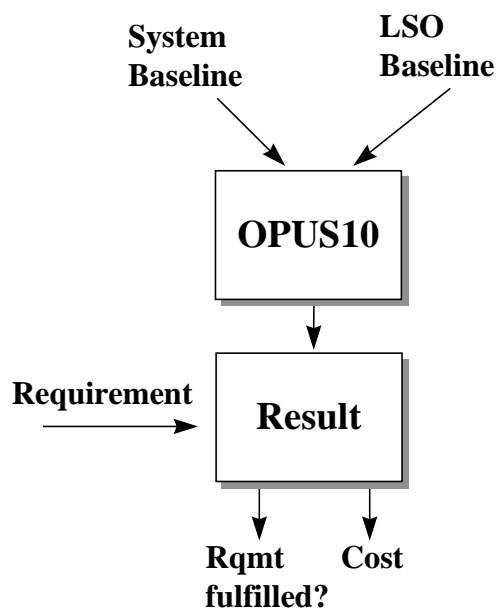


Figure 2.

First of all real world systems of course contains more blocks –many more blocks. Again there are a number of options that can be used – provided that the system is not too far ahead in the design. Examples may be

- Modularisation of units
- Design of units for repair or discard
- Failure rate/unit cost trade-offs etc

Finally one example of the outputs is as shown.

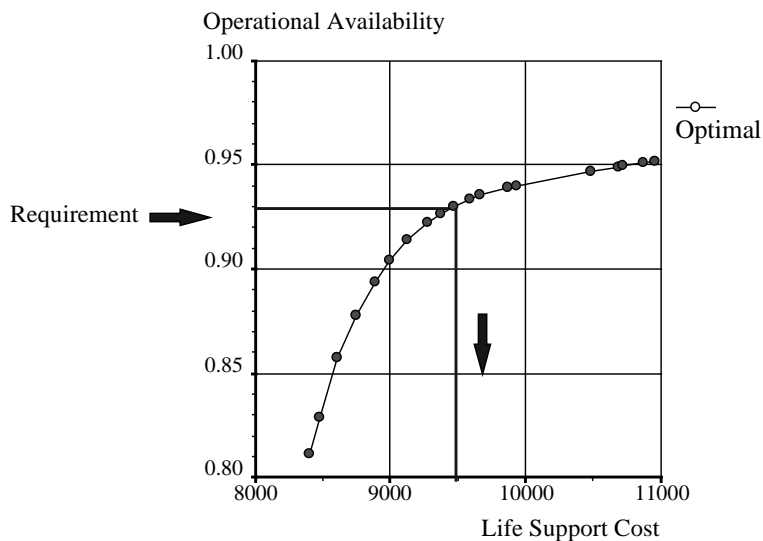


Figure 4.

We can now see how a change in the LSO lead to a change in the result i.e. we can compare different LSO:s. The same is the situation with the system. Since the program also gives the bridge between cost and effectiveness the comparison is easy to make.

4. AN OFFSHORE CASE

Attachment 1 contains case illustrating the use of analysis to compare different LSO:s. (Taken from ref 1 (and in turn from a master's thesis).)

Attachment 2 gives the results of the Spares Optimisation study for the same case. (Also taken from ref 1 and the master's thesis.)

5. IMPROVEMENT OF ANALYSIS METHODS

Attachment 3 gives an illustration on the evolution of spares optimisation methods.

6. CONCLUSION

There is a pressing need for advanced logistics support analysis in relation to the outsourcing of Maintenance and Logistics Support for two reasons.

- a) The need to use the best LSO and to have the spares optimised.
- b) To counter the impact of changes (e.g. in failure rates).

REFERENCES

Ref 1: Cut Maintenance and Logistic Support with 50%
Olof Wååk, Systecon AB