One MSc project Industrial Engineering & Management
Supply chain control tower for performance based service contracts

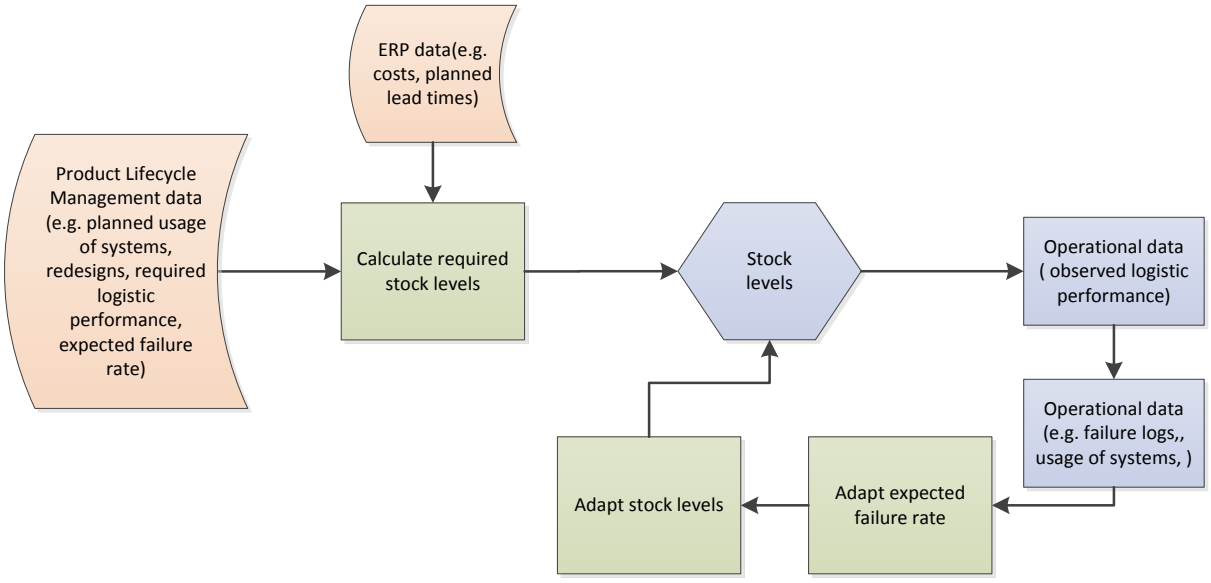
Starting date: Upon availability of a student
Location: Hengelo (Overijssel)

Thales Netherlands

The Thales Group is an international electronics and system group, serving defence, aerospace and security markets worldwide. The Thales group employs 60.000 people in 50 countries. Thales Netherlands is a smaller member of the Thales group, employing about 3000 people in fields like Naval, Air Defence, Communications, Optronics, Cryogenics, Services and Navigation. The assignment is done at Thales Hengelo, which is specialised in Naval technology.

Context

This assignment is part of a research project in operational supply chain control of resources (e.g. service parts) for maintenance of assets, where tactical decisions (e.g. inventory levels) are given. Based on measured failure rates, upcoming issues like understocking or overstocking should be identified early, such that preventive actions can be taken. To this end, Thales would like have an information and decision support system that minimizes risk of under/overstocking while at the same time limits the number of stock mutations to a minimum. For parts with different risk and failure characteristics, different rules to adapt stock can be used. A rough logic of this system is sketched in the figure below. Such a system is important when Thales has performance based service contracts with its customer, since Thales has increased responsibility over supply chain performance.



THALES

The assignment:

Thales would like to bring a service control tower a step further:

Assignment: Protocol to dynamically adapt stock-levels to real time failure data.

Real-time failure data is collected and or generated. Using the data the stock levels are adapted with a frequency that limits the number of stock mutations while at the same time limits the risk of running out of stock. Deviations from "normal" failure behavior need to be analyzed to see under which circumstances the deviations result in unacceptable risk with regard to levels of stock. For parts with different failure characteristics, different stock update policies can be defined. Such deviations may primarily be e.g. (i) a mean time between failures that is larger / smaller than foreseen, (ii) unexpected wearout behavior, but is not restricted to and may include (iii) replenishment and repair lead times that are structurally longer / shorter than expected, (iv) incidental extra failures leading to stockouts, (v) system usage profiles that differ from expectations. Based on this analysis, a process should be developed that identifies the frequency of the stock updates, the performance indicator that is used to calculate stock and the initial stock level that allows one to manage the stock, allowing for delays in the feedback loop and purchase lead time.

The proposed method can be tested and tuned by running Discrete Event Simulations of the feedback loop. Standard software tools available at Thales for spare part optimization (Opus10) and simulation (SimLox) may be used for this project.

Requirements

You are an enthusiastic MSc student Industrial Engineering and Management with specific interest Production and Logistics Management and good study results for the corresponding modules. You are able to work independently and to organize and run your own MSc project smoothly. You are able to write a good MSc report in English.

Contact person:

If you are interested, please send a CV and motivation letter to:
Matthieu van der Heijden, Ravelijn 3357; : 053-4892852; : m.c.vanderheijden@utwente.nl