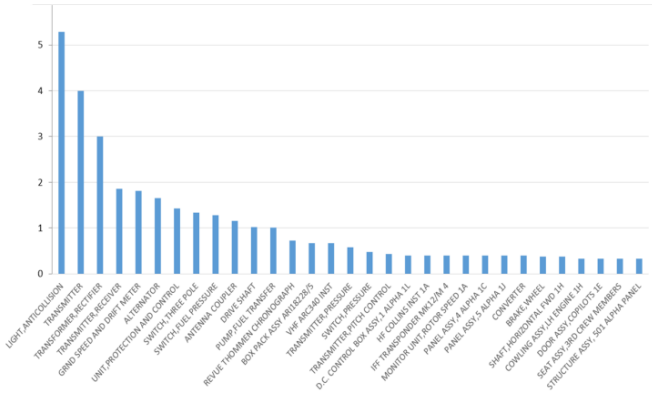
How Can you Measure and Improve Supportability?

What is Supportability?

Supportability is similar to Reliability (R), Maintainability (M), Testability (T) and Availability (A) but, while the term is widely used, it is not commonly defined.

We define Supportability (S) as the responsiveness to unreliability that prevents a system's use. In other words, *'when there's a problem on a system, how quickly can its utility be restored.'* S can be seen as the sum of all system downtime – the shorter the downtime, the better the S.



$$A = \frac{Uptime}{Uptime + Downtime}$$

$$= \frac{MTBA}{MTBA + MTTR + PM\ Time + ALDT}$$

The critical point is that S is indirectly linked to A, M & T, but is independent of R and cost. Improved R does not make a system more supportable. Spending money does not, of itself, make a system more supportable. However, they can mitigate the operational impact of poor S or, as we commonly know it, Un-supportability (US).

US is the sum of all *system downtime* for preventative and corrective maintenance including condition-based monitoring, and the associated Administrative and Logistic Delay Times (ALDT).

$$US = \sum(TTR + PM\ Time + CBM\ Time + ALDT)$$

Using US as a metric enables the most important and cost-effective improvements to identified.

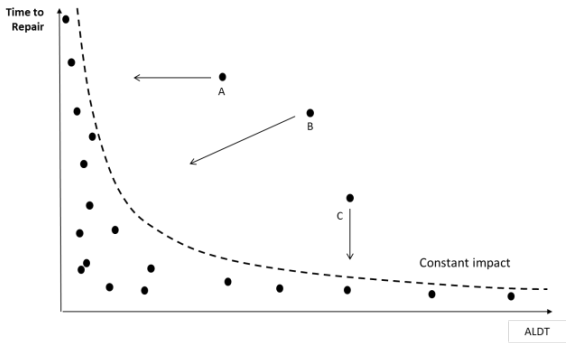
Reducing US

This approach allows us to identify which specific components have the worst US as illustrated below.

More importantly, measures to improve S must be considered **before** resorting to spending money on the only remaining mitigation of more resources.

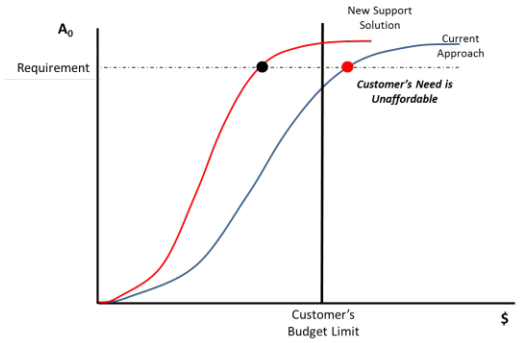
Evaluating Potential S Improvements

Ideally, one should evaluate the potential impact of improvements before knowing how those improvements would be achieved. The sum of the resources needed for all the maintenance activities is the remaining Through Life Cost (TLC) of the system. Postulating changes in the underlying data allows calculation of the revised TLC and informs the business case in a value for money filter.



Overall S Optimization

Marginal analysis techniques introduce the economic factors to optimize resources to meet an A_o target by calculating the best possible choices to drive an optimum locus as illustrated below.



For a particular support solution, cost and availability are intrinsically linked. To achieve more availability for less money, a different support solution must comprise different maintenance activities. Of course, there is a balance between the cost of different maintenance and the cost of additional resources but that is an implicit part of the marginal analysis approach. Only, and only then, should the activities and resources be matched and optimized to ***Do More for Less***.