MADe-Maintenance Costs Estimates

Estimate maintenance costs across the asset life-cycle

Key benefits

▶ Optimize sustainment costs (lifecycle)

▶ Risk mitigation of sustainment budget divergence across the product life-cycle

▶ Integrate costs with the maintenance function

Key features

▶ Cost optimization based on scheduled and unscheduled maintenance

▶ Risk mitigation for operational requirements

▶ Automated estimation of lifecycle asset costs based on sustainment cost parameters

Problem: Sustainment costs of long life-cycles assets are critical as they have a significant impact on Total Cost of Ownership and represent the key technical and financial risk for In-Service Support contracts. As usage profiles and operating environments vary through the lifecycle, on-going trade studies are required at each stage of the acquisition / design process to ensure that the maintenance approach is optimised for availability and cost.

Solution: MADe Maintenance Cost Estimates (MCE) enables analysis and trade studies of sustainment costs based upon the design configuration, the associated mission profile, operating environment and maintenance approach. MCE supports program / engineering decisions with Total Cost of Ownership (TCO) analysis at each stage of the capability lifecycle (concept to operations).

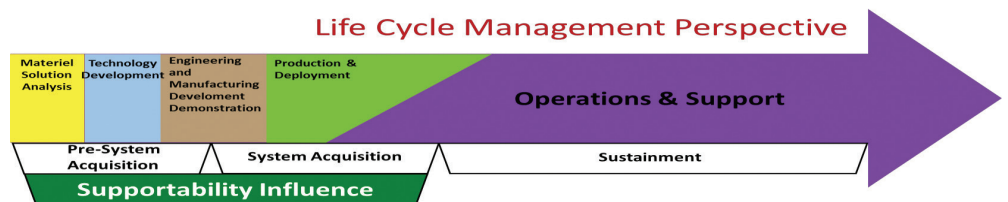**How can you identify the optimal maintenance approach during the design stage?**

Figure 1: The most significant supportability influence occurs during the design phase.

What does MADe MCE provide?

MADe MCE provides maintenance costs estimations for a system design using reliability analysis to quantify unscheduled and scheduled maintenance costs based on the expected concept of operations. Once the costs for each maintainable item are defined, MCE generates reporting outputs that includes:

▶ A summary of the overall asset costs.

▶ A maintenance cost summary for each maintainable piece of equipment.

▶ A comparison of alternate maintenance concepts.

How does MADe MCE estimate sustainment costs?

Based on the asset cost input parameters, MADe MCE reflects the user-defined maintenance approach, reliability parameters, mission profile and operating environment to automatically calculate the total cost of maintenance for the equipment lifecycle.

Why use MADe MCE?

Accuracy of analysis:

MCE uses the MADe model and the Mission Profile Definition feature to define usage profiles and identify expected duration of operation for all systems of the asset.

Trade Studies / 'What-if' Analysis:

Accurate cost estimation for the system, sub-systems, and key assemblies of an asset are established and then used to compare maintenance related through-life costs for alternate maintenance concepts.

So what?

MADe is a model based integrated toolset that enables better informed decisions. Estimating the maintenance costs of an asset as it matures enables the user to:

▶ Optimize the system design based on the maintenance requirements.

▶ Mitigate the risk of potential reliability and availability divergence.

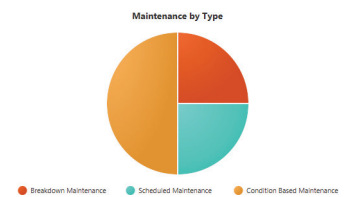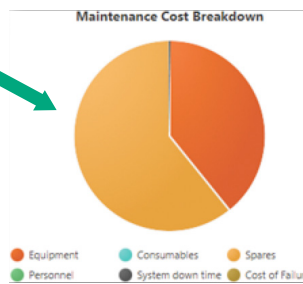▶ Understand the potential impact of maintenance changes on TCO.
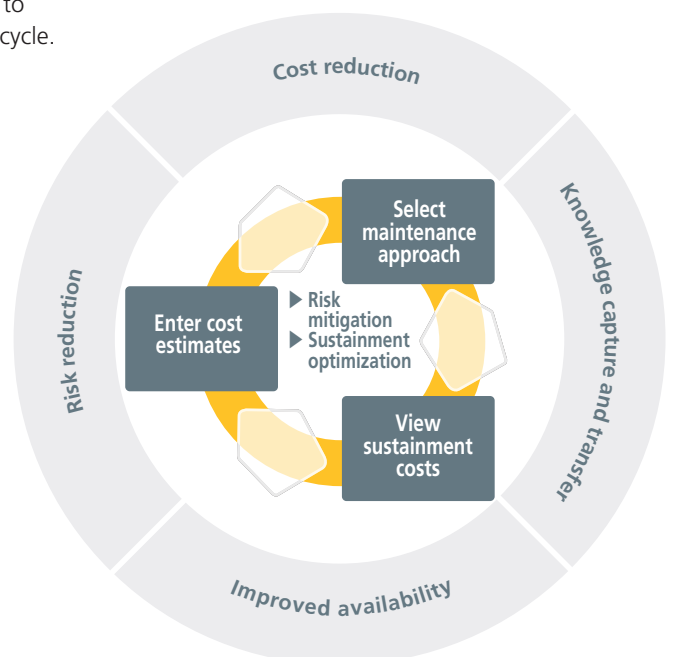
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So how does MADe MCE generate sustainment costs estimations?
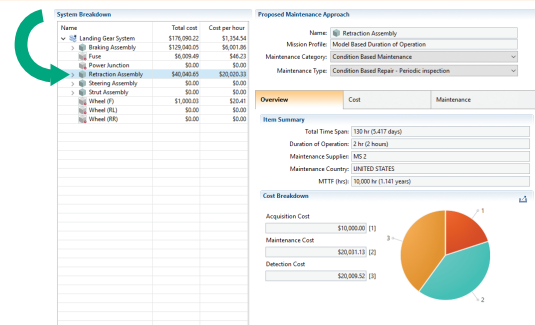
Asset Sustainment Costs Summary

▶ Aggregates sustainment costs of an asset based on the maintainable systems / subsystems / assemblies or components.

▶ Generates maintenance cost and types breakdown for the overall asset sustainment.

▶ Develops alternate scenario for sustainment approaches and related costs.

▶ Default sustainment costs values can be specified and reused for a different mission or system.

Component Sustainment Cost Estimates

▶ Generate maintenance cost and types breakdown for each maintainable system / sub-system / assembly or component.

▶ Use mission(s) duration of operation from Mission Profile Definition (MPD) editor.

Sustainment Cost Input Parameters

▶ Set each item downtime, personnel and acquisition costs independently from the maintenance type.

▶ Specifies reliability parameters and maintenance types that directly affect sustainment costs.

Maintenance & Detection Details

▶ Set the required hours and personnel for each maintenance and detection action.

▶ Determine the effects of environmental factors on Mean Time To Failure (MTTF).

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