MADe for Sustainment

An integrated analysis-driven sustainment process

Key benefits

- Understand lifecycle impacts (availability and cost)
- Integrated risk Identification and mitigation
- Optimize the decision process
- Knowledge capture / transfer

Key features

- Integrated analyses to support trade studies
- Automate technical validation of trade studies
- Standardized analysis workflows
- Standardized data taxonomies

The Problem: Each modern defence organizations seeks to optimize the Readiness of mission critical defence assets and reduce the Mission /Budget impact of maintenance. This means a range of inter-dependent decisions have to be made regarding technical engineering risks and their appropriate mitigation, in the context of evolving operational requirements and budgets. These decisions must be generated and configuration managed by a constantly evolving workforce (posting cycles), across the typical lifecycle (10-40 years).

Solution:
A decision support solution (process and tools) that integrates the analysis capabilities required to support trade studies on Readiness, Mission Impact and Cost. To ensure consistency in the decision process and knowledge transfer & management capability across the lifecycle with, the solution should be model based (digital) with standardized analysis workflows and data structures, a high degree of automation, and the ability to integrate with related engineering applications (e.g. PLM).

Solution Requirements:

A process and the appropriate tools to:

- Identify and categorize risks and factors that impact availability / life-cycle cost
- Analyse identified risks and their root cause
- Develop appropriate risk mitigation actions
- Document the optimal maintenance approach
- Generate required technical / safety artefacts
- Iterate this process based on operational outcomes

How MADe supports Sustainment decisions

MADe enables the user to capture and analyze the relevant sustainment parameters for a system.

- How and where systems are used (MPD, ESI)
- When failures are expected (FBD, RBD)
- What failures are occurring and why (FMECA, FTA)
- How best to avoid / mitigate the failures (RCM,B-RCM)
- Identify the optimal maintenance costs (MCE / MAR)
- Provide traceability of maintenance trade studies
- Enable automated FRACAS / DRACAS

How MADe provides validation

MADe uses a combined simulation model of the asset to compare alternate sustainment operating concepts. The model supports the following validation outcomes:

- Technical: reconcile functional capability with requirements
- Safety: to evidence the safety analysis (FMECA / FTA)
- Budget: estimates are supported by engineering calculations analysis

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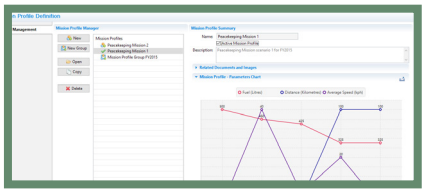
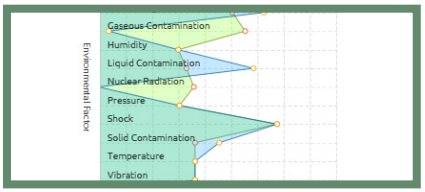
made
decisions better MADe...

MADe Sustainment Analysis Workflow

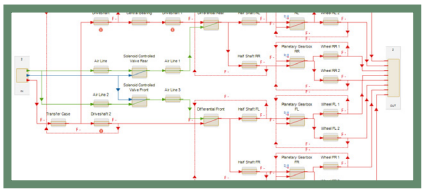
Define
How and where the system is being used

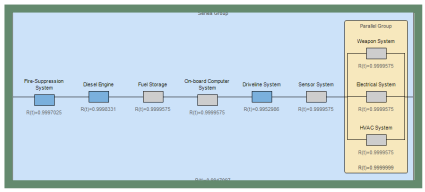

Mission Profile Definition



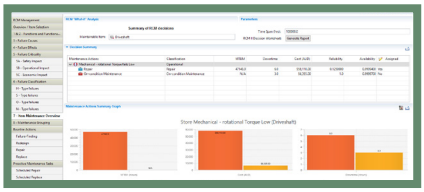
Environment Loading

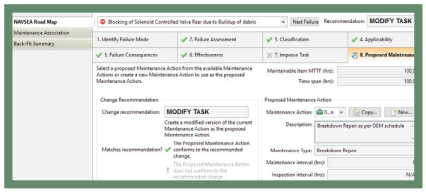
Model
Identify which failures are occurring and why


Functional / Failure analysis

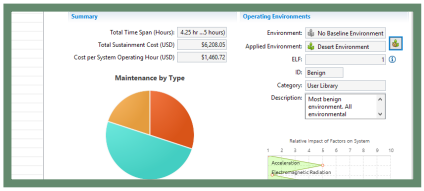

Reliability analysis

Analyze / Mitigate
Identify optimal maintenance actions and strategy

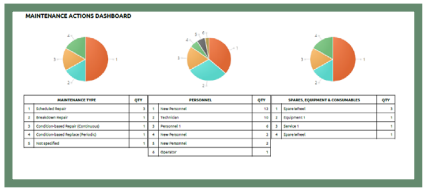

Reliability-Centered Maintenance


Back-Fit RCM

Calculate
Document the optimal maintenance approach and expected costs

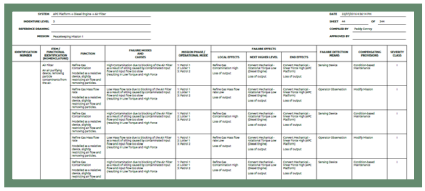


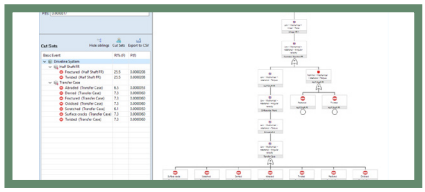
Maintenance Cost Estimate



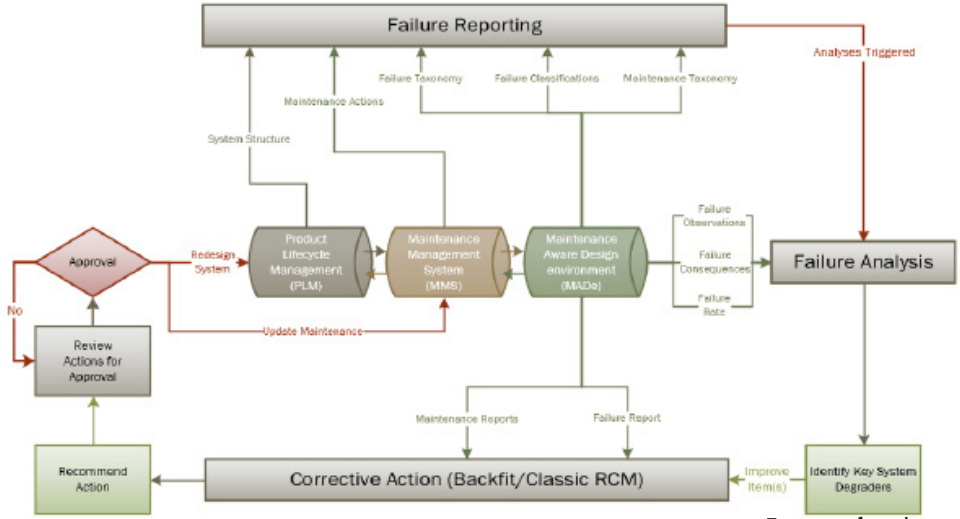
Maintenance Action Report

Report
Generate analysis validation artefacts


FMEA / FMECA


Fault Tree Analysis

SOLUTION PROCESS OVERVIEW (FRACAS / DRACAS)



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