MADe MPD (Mission Profile Definition)

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Define and manage mission operations / objectives across the product life-cycle

Key benefits

- Optimise sustainment costs (lifecycle)
- Risk identification early in the design and across the product life-cycle
- Integrate operational planning with the engineering function

Key features

- Maintenance schedule and cost optimization based on the expected usage profile
- Risk mitigation for operational requirements and objectives completion
- Automated mapping of asset usage based on mission parameters

The specific usage profile for a new asset is defined during the acquisition process. Ideally, the asset design will be optimized for this intended use and requirements.

However, the operational usage of an asset often varies from its initial goals and this significantly effects availability and supportability costs.

How can you keep track of the missions defined for a platform and understand the impacts of these changes in operational usage on total ownership costs can be managed?

Alternate mission profiles: force protection / surveillance.

What does MADe MPD provide?

MADe MPD enables the user to define the usage of a system in terms of operational requirements and constraints that exist within one or multiple missions.
Once the missions are defined, MPD generates reporting outputs that include:

- A Summary of the mission objectives and related success criteria.
- Time-phased description of the mission including phases/segments.
- Summary of the mission parameters defined for each phase.
- List of systems / components required to fulfill the mission (Mission Functional List).

How does MADe MPD generate key asset usage information?

Based on the mission(s) input parameters, MADe automatically maps asset usage across the expected life to provide a more accurate assessment of the expected duration of operations for each element in the system.

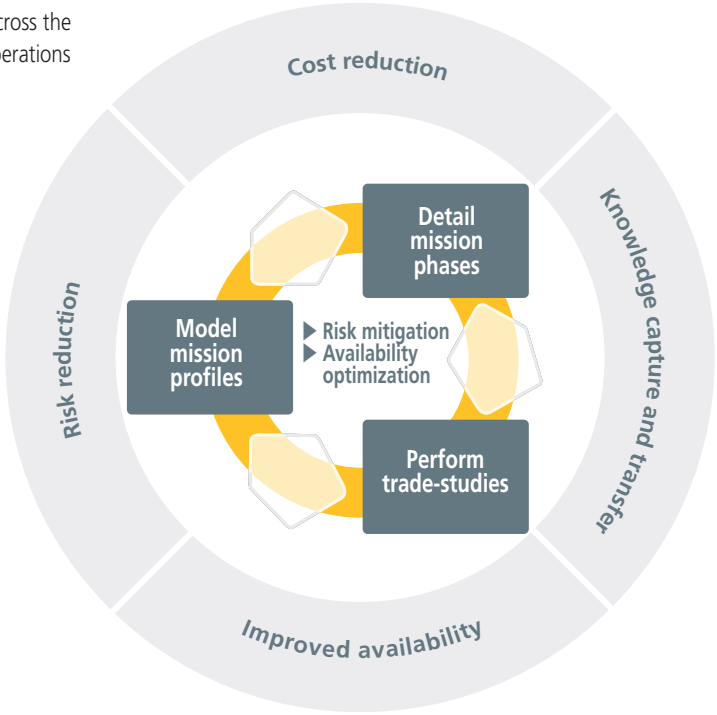
Why use MADe MPD?

MADe is a model-based integrated toolset that enables better informed decisions. Understanding the exact duration of operation for equipment based on a mission enables more accurate understanding of maintenance requirements.

So what?

Understanding the usage of an asset as it matures enables the user to:

- Optimize sustainment costs for the expected usage profile.
- Mitigate the risk of potential reliability and availability divergence.
- Understand the potential impact of mission changes on Total Cost of Ownership.



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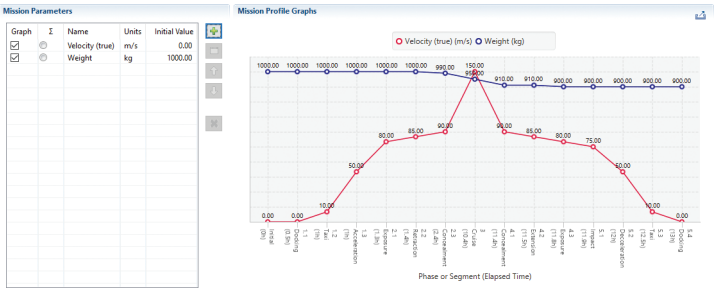
How does MADe MPD generate key asset usage information?

Mission Profiles

- Create, edit and manage missions or groups of missions for an asset.
- Develop alternate scenario missions
- Generate a summary graph of key parameters for each mission phase / segment.



Mission Profile Group

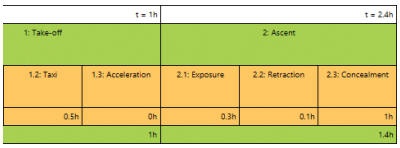
- Aggregates multiple missions and calculates each mission as a proportion of total expected utilization.
- Automatically generates the overall duration of operation of the group based on each (sub-set) mission duration.

Mission Profile Groups

Active	Name	Σ Parameter	Σ Total	Mission Duration	Mission Cycles	Group Cycles	Group Ratio	Group Duration
☐	Landing	N/A	0.00	13h	10.0			
☑	Maintenance	N/A	0.00	29h	1.0	2.0	0.4%	58h
☑	Operation 1	N/A	0.00	13h	1.0	350.0	34.8%	4,550h
☑	Operation 2	N/A	0.00	13h	1.0	650.0	64.7%	8,450h

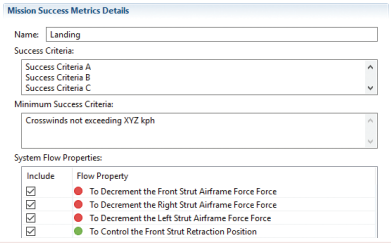
Mission Phases and Segments

- Set each phase / segment duration and description so as to generate a time-phased diagram of the mission.



Objectives/Capabilities

- Define the mission objectives and link them to defined success criteria.
- Map the objectives to specific output flow properties of the system / sub-system / assembly or component.



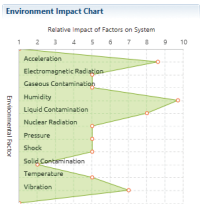
Functional Profile

- Defines the functional requirements for each phase/segment so as to set acceptable limits for the output flows of each function.
- Maps the importance ranking of the objective completion to a particular phase.

Name	1: Take-off	2: Ascent	3: Cruise	4: Descent	5: Landing
To Decrement the Front Strut Airframe Force					
Acceptable upper limit (lbF)	240.00	0.00	0.00	0.00	
Acceptable lower limit (lbF)	220.00	0.00	0.00	0.00	
1: Landing - Importance to mission	**Very High**	**High**	High	**Moderate**	**Very High**
2: Retraction - Importance to mission	**High**	**Low**	Low	Low	Low
3: Extension - Importance to mission	**None**	None	None	None	None

Environmental Profile

- Assigns an operating environment to each item involved in a particular phase / segment.
- Edits the operating environment properties to suit the operating conditions.



Operating Modes

- Set operating modes for each item in each phase/segment of the mission.
- Determine duration of operation for each system composing an asset based on the items operating modes.

		1		
Item	Duration (h)	1.1	1.2	1.3
Duration (h):	13.0	0.50	0.50	0.00
Landing Gear System	13.0	100%	100%	100%
Braking Assembly	2.1	100%	100%	100%
Brake Servo (F)	1.9	100%	**50%**	**2%**
Brake Servo (RL)	1.9	100%	**50%**	**2%**
Brake Servo (RR)	1.9	100%	**50%**	**2%**
Hydraulic Actuator (F)	2.1	100%	100%	100%
Hydraulic Actuator (RL)	2.1	100%	100%	100%
Hydraulic Actuator (RR)	2.1	100%	100%	100%

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